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Waste Isolation Pilot Plant Actinide Source Term Test Program: Solubility Studies and Development of Modeling Parameters

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Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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Gregory R. Choppin, Andrew H. Bond, Marian Borkowski, Michael G.Bronikowski, Jian Feng Chen, Stefan Lis, Jiri Mizera, Oleg Pokrovsky, Nathalie A. Wall and Yuan-Xian Xia
Chemistry Department
The Florida State University
Tallahassee, FL 32306

Robert C. Moore
Nuclear Waste Management Programs
Sandia National Laboratories
P.O. Box 5800
Albuquerque, NM 87185-0779

Abstract

As part of the Waste Isolation Pilot Plant (WIPP) Actinide Source Term Program (ASTP), this report presents data provided by Florida State University on thermodynamics parameters required to predict the actinide mobility within the WIPP horizon. This document presents the acid dissociation constants of WIPP representative ligands, such as acetic acid, lactic acid, oxalic acid, citric acid, ethylenediaminetetraacetic acid (EDTA), humic and fulvic acids and complex stability constants of these ligands complexed to Mg(II), Th(IV), U(VI), Np(V) or Am(III).

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DOCUMENT ORGANIZATION

The data reported herein were obtained in the work performed at Florida State University contract AH-5590 as a part of the Waste Isolation Pilot Plant (WIPP) Actinide Source Term Program, supported at Sandia National Laboratories by the United States Department of Energy under contract DE-AC04-94AL85000. This document has been assembled and organized to comply with the quality assurance and traceability criteria established for data used in performance assessment calculations for WIPP. This document contains three major sections: (1) an Introduction and brief Discussion of the general trends in complex metal-ligand stability as a function of ionic strength, (2) Tables of the dissociation and stability constants, as well as, thermodynamic data which were calculated on the base of potentiometric and solvent extraction data, and (3) an Appendix containing comprehensive potentiometric and extraction data. The acid dissociation and stability constants are traceable to the experimental data contained within this document using information in the "Table" column of Tables 1-42 or in the text, and to Florida State University (FSU) laboratory research notebooks using information in the "Notebook" column of Tables 1-42. For the latter, the FSU laboratory notebook series are stored at Sandia National Laboratories and the table of contents of the notebook can be used to locate data.

INTRODUCTION

Work performed at FSU supports performance assessment calculations relating to actinide migration in the WIPP repository and is part of the overall thermodynamic model under development for the WIPP. Knowledge of the composition and concentration of dissolved actinide species is required to predict actinide mobility within the WIPP horizon, and the research at FSU has provided fundamental thermodynamic parameters for use in modeling. The

Am(III), Th(IV), $Np(V)O_2^+$, and $U(VI)O_2^{2+}$ cations have been studied as these species represent the range of stable oxidation states expected for actinides [1] under WIPP conditions. Plutonium will be present in wastes to be placed to the WIPP repository, but its redox interchange and disproportionation chemistry complicate measurements of its solution behavior. By use of the cations above as oxidation state analogs of plutonium [2] with application of suitable small corrections to the stability constants, thermodynamic parameters for the An(III)-(VI) cations can be used to model the behavior of plutonium in each oxidation state.

Data provided by the FSU research include acid dissociation constants and metal complex stability constants, both measured as a function of ionic strength, I, at 25°C. In all but a few studies, the ionic strength is defined on the molal concentration scale, m. Acid dissociation constants, K_{ai} of an n-protic acid, vary as a function of ionic strength and temperature. For a general acid dissociation reaction

$$H_{n-i+1}A^{(i-1)-} \quad H^+ + H_{n-i}A^{i-} \tag{1}$$

where i= 1, 2, ..., n, the K_{ai} of reaction (1) is defined (neglecting charges) as:

$$K_{ai} = ([H]\,[H_{n-1}A]) / [H_{n-i+1}A]$$

and reported as $pK_{ai} = -\log K_{ai}$.

All "stability constants" reported in this document are apparent overall stability constants, β_{pqr}, and for complexation reaction

$$pM^{l+} + qH^+ + rL^{k-} \leftrightarrow M_pH_qL_r \tag{2}$$

are defined (neglecting charges) as:

$$\beta_{pqr} = [M_pH_qL_r] / ([M]^p[H]^q[L]^r)$$

where M denotes metal cation, H - proton, L - unprotonated ligand and p, q, r, k and l = 0, 1, 2 ..., (a negative value of q corresponds to an $M_p(OH)_qL_r$ hydrolyzed species from a reaction

$pM^{l+} + qH_2O + rL^{k-} \leftrightarrow M_p(OH)_qL_r + qH^+$). Such stability constants are specific for the ionic strength, background electrolyte, and temperature of measurement.

In Tables 1-42, the average values from multiple measurements with standard deviation are reported . Where no estimated standard deviation is reported, duplicate experiments have not been performed. The acid dissociation constant and complexation stability constants measured in this work were compared with those from literature [3]. The values of some of the stability constants reported in this document may change slightly as further experiments are performed and the data evaluated; however, there should be few and relatively small changes as we have already critically reviewed the enclosed data for acceptability.

Data collected at FSU focused primarily on the complexation of Th^{4+}, UO_2^{2+}, NpO_2^+, and Am^{3+} by acetate, lactate, oxalate, citrate, and ethylenediaminetetraacetate (EDTA). These carboxylates represent a series of mono- to tetrabasic ligands that will be present in the WIPP due to their use in processing and decontamination operations or that may arise from biodegradation processes, groundwater intrusion, or repository breach events. The complexation studies were conducted at six ionic strengths, I = 0.3; 1.0; 2.0; 3.0; 4.0 and 5.0 m NaCl and results are reported in Tables 8 - 37. For a few additional systems data are presented in Tables: Np15, Np49, Np53-56, Th44. This range in ionic strengths provides a suitably broad data set for Pitzer modeling which can successfully describe the variation of stability constants with ionic strength. The stability constants of the tri- through hexavalent actinides with these carboxylate ligands at various ionic strengths can be combined with stability constants of inorganic anion-actinide complexes and used in the development of an overall thermodynamic model describing actinide behavior in various WIPP brines. Thermodynamic constants calculated using our experimental data are listed in Tables 43-45.

Magnesium cations are present in certain WIPP brines up to concentrations as high as 2 m, and MgO is being considered as a component of disposal room backfill to limit the range of possible chemical conditions in the repository. If MgO is employed as backfill, Mg^{2+} will compete with the actinides for carboxylate complexation, thereby decreasing actinide migration by this pathway. In order to include the influence of Mg^{2+} in the WIPP thermodynamic model, the stability constants of Mg^{2+} with acetate, oxalate, citrate, and EDTA in 0.3-5 m NaCl at 25°C have been determined using potentiometric methods.

Naturally occurring polyelectrolytes such as the humates and fulvates are capable of increasing radionuclide mobilization in natural waters [4, 5]. Humic substances form very strong complexes with actinides in the (III), (IV), and (VI) oxidation states, and the water solubility of these ligands and their complexes may result in high concentrations of dissolved actinide species and enhanced mobility [4, 5]. Dissociation constants and stability constants for Am^{3+} and UO_2^{2+} complexation by Lake Bradford and Gorleben humic acids and a Suwannee River fulvic acid are reported.

DISCUSSION

This discussion is an overview of the data presented in Tables 1-45, as well as some tables from Potentiometric and Extraction Data section (Appendix) which are not referenced in Tables 1-42. The objective is to describe briefly the data and the general trends for the overall series, while detailed experimental and discussion sections appear in already published papers [6-12].

Acid dissociation constants

Acid dissociation constants for acetic, lactic, oxalic, citric, and ethylenediaminetetraacetic acids have been determined at 25°C in the ionic strength range 0.1-5 m (NaCl) and are listed in Tables 1-7. All acid dissociation constants were determined from potentiometric titration data and were refined using a derivative analysis method developed in this research and described in ref. [6].

Acid dissociation constants for the monoprotic acetic and lactic acids remain essentially constant for 0.3 and 1 m (NaCl), and then show a steady increase to 5 m (NaCl). The ranges in pK_{a1} for acetic and lactic acids are 4.50±0.01 to 5.13±0.01 and 3.47±0.03 to 4.22±0.05, respectively, with the highest values observed in 5 m NaCl. Acetic acid shows its lowest pK_{a1} at 0.3 m NaCl while for lactic acid the minimum is observed at I = 1 m.

The investigation of diprotic oxalic acid presented some experimental challenges [7]. Oxalic acid is so acidic that the pK_{a1} values were difficult to measure by normal base titration and are reported only in 0.3 and 1 m ionic strength (NaCl). Potentiometric titrations were carried out in both the forward and reverse directions, but consistent refinement of pK_{a1} could not be achieved above 1 m NaCl. The pK_{a1} values decrease from ~1.20 for I = 0.1- 0.5 m to 1.0±0.2 in I = 1 m (NaCl). The second acid dissociation constants show a minimum value of 3.63 in I = 1 m (NaCl) which increases steadily to 3.95±0.02 in I =5 m (NaCl). However, the lack of values for pK_{a1} does not affect the values of β_{pqr} at the pcH values used for determination of the stability constants.

All three dissociation constants of citric acid [8] show minima in I = 2-3 m, and the pK_{a1}, pK_{a2}, and pK_{a3} values are 2.87±0.01, 4.18±0.03, and 5.12±0.01, respectively. The values of pK_{a1} are essentially constant through I = 2 m and increase up to I = 5 m, whereas both pK_{a2} and pK_{a3} show well defined minima. The highest pK_a values in the high ionic strength region occur in I = 5 m (NaCl): pK_{a1} = 3.13±0.02, pK_{a2} = 4.490±0.006, and pK_{a3} = 5.351±0.005 and it is similar as observed for the previous three acids.

The values of EDTA show less uniformity in pK_{a1} and pK_{a2} than the other carboxylic acids, although the variation in the 0.1-2 m ionic strength region is within statistical limits. The minimum pK_{a1}, pK_{a2}, and pK_{a4} values of 1.87±0.08, 2.23±0.04, and 8.60±0.01 occur in I = 3 m (NaCl). The pK_{a3} data show a linear increase from a low of 5.89±0.01 in I = 0.3 m to a high of 6.95±0.01 in I = 5 m. This trend is interesting in that the pK_a values for the other polyprotic acids do not show such a linear dependence on ionic strength. This variation is probably due to Na^+ interaction with the nonprotonated carboxylate group at high Na^+ concentrations (> 2 m). We investigated this possibility by NMR studies and do find strong evidence for such interaction but we have not determined the complexation constant at this time.

Overall assessment of the variation of pK_{a1} for acetic and lactic acids shows that the values remain essentially constant at low ionic strength and then increase. The large (compared to the differences observed for typical metal-ligand systems) increase in pK_a for monoprotic acids at high ionic strengths has been attributed to diminished contributions from the activity coefficient term for the neutral acid. For acid dissociation, the log γ_{HL} contribution is small and does not significantly affect the sum of the $\log \gamma_H + \log \gamma_L - \log \gamma_{HL}$ term; hence, large increases in pK_{a1} at high ionic strengths can be observed. For polyprotic acids, trends in decreasing acidity of pK_{a1} with increasing ionic strength are less obvious.

In general, the minimum pK_a values of the di-, tri-, and tetraprotic acids shift toward higher ionic strengths. Oxalic acid, citric acid, and EDTA show minima in approximately 1, 2, and 3 m NaCl, respectively. The trend for EDTA, however, is less obvious due to the scatter in the pK_{a1} and pK_{a2} values and the unusual linear increase of pK_{a3} with ionic strength.

Complexation of thorium

Stability constants for thorium complexation by acetate, lactate, oxalate, and citrate are reported in Tables 8 - 13. These stability constants were determined at 25°C in the range I = 0.3-5 m (NaCl) using a solvent extraction technique.

Both 1:1 and 1:2 metal:ligand complexes are observed for Th^{4+}/carboxylate complexation. The minimum values of log β_{101} and log β_{102} for acetate complexation occur in I = 1 m (NaCl) and are 3.85±0.02 and 6.56±0.03, respectively. Above I = 1 m (NaCl), a discontinuous increase in log β_{101} for acetate is observed up to the maximum of 4.51±0.03 in I = 5 m (NaCl), while a rather steady increase in log β_{102} is observed up to the maximum 7.66±0.03 in I = 5 m.

Lactate forms relatively weak complexes with Th^{4+}, and log β_{101} remains nearly constant (≈ 3.8) in the range I = 0.3-2 m (NaCl), above which it increases to a maximum of 4.28±0.02 in I = 5 m. The minimum of log β_{101} = 3.81±0.02 coincides with that of log β_{102} = 6.43±0.08 in I = 2 m. The stability constants for the $Th(Lac)_2^{2+}$ complexes are similar in I = 0.3 and 1 m, and decrease sharply in I = 2 m. This behavior contrasts with that of acetate where there is a rapid drop of nearly one-half log unit from I = 0.3 to 1 m (NaCl). In 5 m NaCl log β_{102} = 7.23±0.04.

Oxalate complexation of Th^{4+} [7] remains constant with log β_{101} ≈ 7.0-7.1 in the range I = 0.3 - 3 m (NaCl), after which it increases to 7.47±0.02 in I = 5 m. Values of log β_{102} show a minimum of 13.42±0.04 in I = 1 m and reach a high of 14.63±0.03 at I = 5 m.

Citrate forms strong complexes with Th^{4+} and both log β_{101} and log β_{102} vary smoothly as a function of ionic strength [8] with low values of log β_{101} = 9.31±0.04 in 2 m NaCl and log β_{102}

= 17.33±0.04 in I = 3 m (NaCl). Maximum values of log β_{101} and log β_{102} of 10.18±0.03 and 19.12±0.04, respectively, are observed in I = 5 m.

For Th^{4+} with EDTA, our solvent extraction data, Tables Th 55-63 (Appendix), yield values of ~17. A second constant, β_{102} was included in the regression analysis but it is unlikely $Th(EDTA)_2^{4-}$ forms. The variation from simple 1:1 complexation in the regression probably reflects formation of a small extent of $Th(OH)EDTA^-$, $Th(Cl)EDTA^-$, $ThEDTANa^+$, etc. The likelihood of Na - EDTA interaction is discussed above in the section of pK_a values of EDTA in 5 m NaCl. The value of ca. 17 for log β_{101} for Th(IV)EDTA seems low since values of 23.2 have been reported for measurements at I = 0.1 m and 22.3 at I = 0.5 m. Also U(IV)EDTA has been measured to have a log β_{101} of 23.2 and Np(IV)EDTA, of 24.6, both for I = 1 m. A value of log β_{101} (Th(IV)EDTA) of 23 ± 2 would seem more reasonable. Measurements of log β_{101} in I = 5 m NaCl and pcH > 3 have major problems due to the Th^{4+} hydrolysis and chloride complexation as well as H_nEDTA^{n-4} complexation by Na^+. We are conducting further measurements to attempt to correct our measured log β_{101} of ~17 to more realistic values. However, our value of ~17 should be used in the modeling for performance assessment as it takes into account the side effects of thorium hydrolysis and complexation by chloride plus the complexation of EDTA by Na^+ which would compete in WIPP brines with the interaction of Th(IV) and EDTA.

The same concerns are valid for the measured values of Am^{3+}+EDTA and UO_2^{2+}+EDTA. These measured values for log β_{101} should be used in the performance assessment modeling.

The lowest stability constants for the 1:1 complexes of Th^{4+} with carboxylate generally occur at I = 1 m (NaCl), while those of the 1:2 species fall in the range 1-3 m. In all cases, the highest stability constants for 1:1 and 1:2 complexes of Th^{4+} with carboxylates occur in I = 5 m.

Complexation of uranyl

Apparent stability constants were measured for the complexation of UO_2^{2+} by acetate, lactate, oxalate, citrate, and EDTA [7, 9] using a tracer level solvent extraction method in 0.3-5 m NaCl at 25°C. The resulting stability constants are presented in Tables 14-19 and, for all but the EDTA system agree with the literature values.

Both acetate and lactate systems contain a single carboxylate group and,consequently, have similar log β_{101} values up to I = 3 m. In I = 0.3 m, log β_{101} for acetate and lactate complexation of UO_2^{2+} are the same, equal to 2.60 (Table 14). The log β_{101} values for acetate complexation increase smoothly above I = 1 m to a maximum of 3.14±0.04 in 5 m NaCl, while lactate shows a discontinuous increase with a maximum of log β_{101} = 2.73±0.04 in 3 m NaCl, and then decrease to log β_{101} = 2.64±0.01 in 5 m NaCl.

Although only a single measurement for each stability constant has been performed for the oxalate containing systems, the data agree well with literature values [7]. The log β_{101} value is 5.94±0.01 at I = 0.3 m (NaCl) and reaches a maximum of 6.70±0.01 at I = 4 m NaCl. A decrease of nearly one unit in log β_{101} is observed in I = 5 m, probably because of an increase in the log β_{111} due to the lower pH at which this experiment was run.

The behavior of the UO_2^{2+} in citrate systems differs from the other ligands studied. Citrate complexation shows little variance in log β_{101} for the entire studied range of NaCl concentrations. The stability constants decrease from 7.30±0.04 at I = 0.3 m to 7.08±0.01 at I = 1 m, rise slightly to 7.25±0.02 in 2 m NaCl and decrease steeply at higher ionic strengths.

The log β_{101} values for the UO_2^{2+}/EDTA systems decrease from 12.72±0.25 at I = 0.3 m to 9.82±0.04 in 1 m and discontinuously increase to 10.48±0.04 in 5 m NaCl. A pH dependence of log β_{101} for uranyl complexation has been observed, and experiments at I = 3 m (Table 17) between pcH (-log [H^+]) 2.5 and 4.4 gave values of log $\beta_{101} \approx 10$ and log $\beta_{111} \approx 15$, respectively. These values do not agree well with the literature and this data is currently being reevaluated. The discrepancies are probably attributable to the factors discussed in the Th-EDTA section.

Complexation of neptunyl

The stability constants of neptunyl(V)-carboxylate complexes in I = 0.3-5 m (NaCl) at 25°C were obtained using a solvent extraction method [9, 10] and are presented in Tables 20-25. The log β_{101} values for NpO_2^+/acetate complexes increase steadily with increasing ionic strength from 1.05±0.05 in 0.3 m to 1.80±0.02 in 5 m. These values are somewhat higher than average scattered literature data, but the thermodynamic stability constants calculated using these data agree well with literature values.

The stability constants for lactate complexes of neptunyl pass through a minimum of 1.43±0.04 in I = 1 m (NaCl) and increase to 1.93±0.06 in 4 m, where the values become constant. The stability constants at low ionic strengths are slightly higher than the available literature data.

The log β_{101} values for oxalate complexation increase steadily from 3.62±0.03 in I = 0.3 m NaCl to 4.63±0.05 in 5 m. The log β_{102} reported for 2, 3, and 4 m NaCl deviates only slightly from a value of 7.

Citrate complexation of NpO_2^+ starts at log β_{101} = 2.62±0.05 in I = 0.3 m (NaCl), passes through a minimum of 2.39±0.01 in 1 m NaCl, and increases to 2.50±0.07 in 2 m where it remains constant, within experimental error, up to I = 5 m. The pcH independent stability constant derived from solvent extraction data suggests that the $NpO_2(HCit)^-$ complex is not present under the conditions of these experiments.

The stability constants for EDTA complexation of NpO_2^+ were calculated by analyzing the pcH dependence of the apparent stability constants and derived from extraction experiments. The log β_{101} values decrease from a high of 7.1±0.1 in 0.3 m to 5.5±0.1 in 5 m (NaCl), and log β_{121} increases from 18.04±0.05 in 0.3 m to 19.10±0.01 in 5 m. Values of log β_{111} decrease from 13.48±0.06 in 0.3 m to 12.90±0.05 in 3 m (NaCl) to remain constant at ~12.90 from I = 3 to 5 m (NaCl).

Complexation of americium

Carboxylate complexation of Am^{3+} was studied [11] using a solvent extraction technique at 25°C in the range I = 0.3-5 m (NaCl). The stability constants are presented in Tables 26-31.

Acetate complexation of Am^{3+} shows a minimum of log β_{101} = 1.44±0.02 in I = 2 m (NaCl), after which it increases to a high of 2.2±0.1 in 5 m. Americium complexation by lactate is slightly stronger than acetate at the extremes of low and high ionic strengths, but the log β_{101} values for both monocarboxylates are similar and low in the intermediate ionic strength region. The log β_{101} values for the $Am(Lac)^{2+}$ complex decrease consistently from 2.52±0.07 in I = 0.3 m to a low of 1.68±0.03 in I = 3 m and then increase to a maximum of 2.55±0.06 in 5 m NaCl. The 1:2 Am^{3+}: lactate stability constants have values of log β_{102} = 3.65±0.02 in 0.3 m, reach a minimum of 3.40±0.08 in 4 m, and increase to 3.80±0.03 in 5 m NaCl. Literature data for acetate and lactate complexes of Am^{3+} are available only for low ionic strength $NaClO_4$ media, and our values from NaCl media are consistently lower than these literature data.

In oxalate systems both, 1:1 and 1:2 complexes of Am^{3+} are observed. The minima of logβ_{101} = 4.17±0.05 and log β_{102} = 7.77±0.08 both occur in I = 1 m (NaCl). Above I = 1 m values of log β_{101} increase to a maximum of 4.63±0.04 in 4 m after which they show no dependence. The log β_{102} increases smoothly from 1 m to 5 m NaCl reaching a value of 8.6±0.1 in I = 5 m.

Citrate complexation of Am^{3+} passes through a minimum of log β_{101} = 4.84±0.02 in I = 3 m (NaCl) and then rises to 5.38±0.06 in 4 m. The value of log β_{101}= 5.1±0.2 in 5 m shows a leveling similar to that observed in the dependence of log β_{101} for oxalate.

The range in log β_{101} for Am^{3+}/EDTA complexes is 13.76±0.02 to 15.1±0.1. The stability constants for complexation of Am^{3+} by EDTA in NaCl media are significantly lower than the literature values measured in ammonium chloride. For good comparison of our stability constants with those from the literature, a possible complexation of the Na^+ with EDTA and Am^{3+} with Cl^- have to be taken into consideration. Unfortunately, the stability constants of the Na^+ complexes of carboxylate ligands have been reported at low ionic strengths. As discussed in the Th-EDTA section, the measured values should be used in the performance assessment modeling in which both kinds of interactions are considered.

Complexation of magnesium

Stability constants for magnesium complexes of acetate, oxalate, citrate, and EDTA in I = 0.3-5 m (NaCl) at 25°C are listed in Tables 32-37. These constants have been obtained from pH potentiometric titration data and refined using the program BEST.

The log β_{101} values for the acetate complexes increase with increasing ionic strength from 0.53±0.03 in 0.3 m to 0.74±0.01 in 3 m (NaCl), and then decrease to 0.71±0.01 in 5 m. These stability constants are consistent with the available literature data.

The log β_{101} values for oxalate complexes of Mg^{2+} decrease from 2.33±0.04 in I = 0.3 m to 1.77±0.08 in 3 m (NaCl), after which they increase to about 2.00 and level as ionic strength increase from 4 m to 5 m. The log β_{102} values decrease from 4.00±0.01 in 0.3 m to 3.71±0.01 in 1 m (NaCl), and then increase to and level above 4.07±0.08 in 4 m (NaCl).

The log $\beta_{1\text{-}10}$ (the first hydrolysis constant) values calculated using titration data in the carboxylate systems were necessary to achieve successful refinement, but are probably less reliable. Preliminary speciation calculations indicate that $Mg(OH)^+$ is present to a maximum of approximately 15%; however, the measured stability constants agree with the available literature data. In general, the first hydrolysis constant of magnesium decreases as the ionic strength increases, and the values range from -11.10±0.07 at I = 0.3 m in the citrate system to -12.1±0.1 in the acetate system at 5 m NaCl, excluding values from EDTA system for which speciation was less reliable.

Interaction of actinides with humic substances

The pK_a values and capacities of the humic and fulvic acids were determined using potentiometric titration. The data were refined using a derivative analysis method developed in this research and described in ref. [6]. The dissociation constants for different humic substances and ionic strengths are listed in Table 38.

Stability constants for Am^{3+} and UO_2^{2+} interactions with humic substances are listed in Tables 39-41. Humic and fulvic acid complexation of Am^{3+} and UO_2^{2+} in NaCl were studied using solvent extraction. A Suwannee River fulvic acid (SRFA) was studied, as were Lake Bradford (LBHA) and Gorleben (GHA) humic acids (the former representative of more aliphatic and the latter more aromatic humate). The experiments were conducted in I = 3 and 6 m (NaCl) at 25°C and pcH from 5.5 to 7.6.

Measurement of the stability constants for actinide/humate interactions are being completed. Nevertheless, the results obtained thus far are in agreement with the literature. These results show several general trends that are supported in the literature [4]:

- increasing pH or ionic strength results in an increase in the binding constants,
- the aromaticity and other compositional differences only slightly affect actinide binding by humic substances, and
- the binding constants of actinide complexes with fulvic acids are lower than those of the humic acids.

Complexation of actinides studied in other systems

Complexing properties of some other ligands such as oxine, thenoyltrifluoroacetone and 1,10-phenanthroline, which are expected to be present in WIPP brine, were studied and the potentiometric titration data are presented in Table AD91-159. The complexation of actinides by these ligands in 5 m NaCl solution were compared with hydrolysis [9, 11] and the ligands were rejected from further investigations due to a negligible impact on the actinide speciation in WIPP conditions.

The dissociation constants of lactic, oxalic, citric and EDTA acids and complexation of neptunyl ion in $NaClO_4$ media were measured and the data are presented in Tables AD160-222 and Np67-80. These systems were studied to compare the data measured using the techniques in our lab with those in literature where perchlorate media are predominant [3], as well as, to determine the complexation of actinide with chloride ion for thermodynamic modeling purposes. The neptunyl ion extraction was studied also as a function of pHr and ionic strength (NaCl) in absence of complexing agent and data are listed in Tables Np162-167.

Data modeling

The experimental data determined in this work in NaCl media were used to calculate parameters for the Pitzer model [13]. Standard state chemical potentials and Pitzer parameters were calculated using a nonlinear least-squares analysis based on an algorithm for calculating the minimum Gibbs free energy change for the solution. The minimization algorithm is described in detail elsewhere [14, 15]. All data points were given equal weight in the calculations. The standard chemical potentials used in this work are listed in Table 43, while Pitzer interaction parameters are listed in Table 44. Table 45 gives neutral-ion pair interaction parameters. For the second apparent stability constants for UO_2^{2+} complexation with acetate and lactate and Am^{3+} complexation with acetate, an insufficient number of data points were available to regress model parameters.

Model parameters describing the solubility and deprotonation of acetic acid were taken from the literature [10, 16, 17]. For lactic acid deprotonation, a standard state chemical potential and Pitzer parameters for the lactate ion are reported by Mizera et al. [18]. The authors report insufficient data were available to determine parameters to describe solubility of lactic acid in NaCl solution. Therefore, the authors set the standard chemical potential of the fully protonated acid equal to 0. The standard chemical potentials of the organic ligands and all complexes were calculated with reference to this value.

Since our data is mainly in the high ionic strength region we chose to estimate the $\beta^{(1)}$ Pitzer parameter and obtain by regression the standard chemical potential and the $\beta^{(0)}$ and c^{φ} parameters from the data. The $\beta^{(1)}$ parameter has its greatest effect on data modeling in the dilute region, whereas c^{φ} is typically required to model data taken in very high ionic strength media. Recent work has demonstrated that setting $\beta^{(1)}=0$, however, can potentially introduce systematic model deviations in the concentration dependence of the activity coefficients [19]. The data collected in this work includes only a single data point at ionic strength of 0.3 in the dilute region for each data set. This makes extrapolation to 0 ionic strength very questionable using either the SIT or the Pitzer model. Much more data in the dilute region is required for an accurate extrapolation. In this work, the main goal was to accurately model the data over the concentration range where it was collected, 0.3 to 5 m NaCl. Therefore, average $\beta^{(1)}$ values were calculated for the different electrolyte charges using data compiled by Pitzer. For 1-1 electrolytes a value of 0.29 was used for $\beta^{(1)}$ based on an average of the values reported for salts of carboxylic acids. For 2-1 electrolytes a value of 1.74 was used based on an average of 2-1 organic electrolytes. A value of 5.22 was used based on an average of the data for 3-1 electrolytes and 11.6 was used for 4-1 interactions. All other parameters were calculated based on these approximations. This strategy of using "average" value of $\beta^{(1)}$ has been used in this laboratory to model protonation data of lactic acid, oxalic acid, citric acid, and EDTA measured in 0.3 to 5m NaCl solutions with excellent results [18].

A model for Th-EDTA was not included in this work as the data on Th-EDTA complexation is still being collected.

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Table 1. Acid Dissociation Constants of Carboxylic Acids in 0.1 m NaCl at 25°C.						
Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	4.55±0.02				AD 1-3	JC#2[a]
Lactic	3.68±0.01				AD 25-26	JC#4
Oxalic	1.27±0.04	3.87±0.04			AD 40-43	JC#4A
Citric	2.93±0.02	4.36±0.01	5.63±0.01		AD 61-62	JC#4
EDTA	2.18±0.13	2.62±0.04	5.99±0.03	9.11±0.01	AD 76-78	JC#3

[a]JC# represents J.F.Chen's notebook and the number corresponds to the notebook volume.

Table 2. Acid Dissociation Constants of Carboxylic Acids in 0.3 m NaCl at 25°C.						
Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	4.51±0.01				AD 4-9	JC#2
Lactic	3.55±0.03				AD 27-28	JC#4
Oxalic	1.19±0.06	3.75±0.02			AD 44-47	JC#4A
Citric	2.88±0.02	4.25±0.01	5.38±0.01		AD 63-64	JC#4
EDTA	2.03±0.04	2.4±0.2	5.89±0.01	8.83±0.04	AD 79-80	JC#3

Table 3. Acid Dissociation Constants of Carboxylic Acids in 0.5 m NaCl at 25°C.						
Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	4.50±0.01				AD 10-12	JC#2
Lactic	3.48±0.01				AD 29-30	JC#4
Oxalic	1.26[b]	3.64±0.02			AD 48-50	JC#4A
Citric	2.90±0.02	4.23±0.01	5.27±0.01		AD 65-66	JC#4
EDTA	2.03±0.05	2.38±0.22	5.89±0.01	8.83±0.06	AD 81-82	JC#3

[b]where standard deviation was not estimated, the duplicate experiments have not been performed

Table 4. Acid Dissociation Constants of Carboxylic Acids in 1 m NaCl at 25°C.						
Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	4.52±0.01				AD 13-15	JC#2
Lactic	3.47±0.03				AD 31-32	JC#4
Oxalic	1.0 ± 0.2	3.63			AD 51-54	JC#4A
Citric	2.88±0.05	4.18±0.03	5.20±0.02		AD 67-69	JC#4
EDTA	1.92±0.01	2.27±0.03	5.99±0.01	8.69±0.01	AD 83-84	JC#3

Table 5. Acid Dissociation Constants of Carboxylic Acids in 2 m NaCl at 25°C.

Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	4.62±0.01				AD 16-18	JC#2
Lactic	3.57±0.02				AD 33-34	JC#4
Oxalic		3.64±0.02			AD 55-56	JC#4A
Citric	2.87±0.01	4.19±0.01	5.12±0.01		AD 70-71	JC#4
EDTA	1.95±0.04	2.34±0.03	6.19±0.01	8.62±0.01	AD 85-86	JC#3

Table 6. Acid Dissociation Constants of Carboxylic Acids in 3 m NaCl at 25°C.

Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	4.77±0.01				AD 19-21	JC#2
Lactic	3.76±0.01				AD 35-36	JC#4
Oxalic		3.72±0.01			AD 57-58	JC#4A
Citric	2.98±0.03	4.28±0.01	5.17±0.01		AD 72-73	JC#4
EDTA	1.87±0.08	2.23±0.04	6.41±0.01	8.60±0.01	AD 87-88	JC#3

Table 7. Acid Dissociation Constants of Carboxylic Acids in 5 m NaCl at 25°C.

Acid	pK_{a1}	pK_{a2}	pK_{a3}	pK_{a4}	Table	Notebook
Acetic	5.13±0.01				AD 22-24	JC#2
Lactic	4.22±0.05				AD 37-39	JC#4
Oxalic		3.95±0.02			AD 59-60	JC#4A
Citric	3.13±0.02	4.49±0.01	5.35±0.01		AD 74-75	JC#5
EDTA	1.97±0.01	2.46±0.01	6.95±0.01	9.01±0.03	AD 89-90	JC#3

Table 8. Stability Constants for Thorium Complexes with Carboxylate Ligands in 0.3 m NaCl at 25°C.

Ligand	$\log \beta_{101}$	$\log \beta_{102}$	Table	Notebook
Acetate	4.41±0.02	7.47±0.03	Th 1-2	YX#4[d]
Lactate	3.85±0.03	7.08±0.05	Th 13	YX#4
Oxalate	7.08±0.04	13.63±0.04	Th 25-28	YX#3
Citrate	9.67±0.03	18.72±0.04	Th 45-46	YX#4
EDTA[c]				

[c]Data involving EDTA complexes with thorium are being evaluated (see Tables Th55-63).
[d]YX# represents Y.X. Xia's notebook and the number corresponds to the notebook volume.

Table 9. Stability Constants for Thorium Complexes with Carboxylate Ligands in 1 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	3.85±0.02	6.56±0.03	Th 3-4	YX#4
Lactate	3.83±0.03	6.97±0.07	Th 14	YX#4
Oxalate	7.07±0.02	13.42±0.04	Th 29-31	YX#3
Citrate	9.56±0.03	18.28±0.03	Th 47-48	YX#4

Table 10. Stability Constants for Thorium Complexes with Carboxylate Ligands in 2 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	3.92±0.03	6.82±0.03	Th 5-6	YX#4
Lactate	3.81±0.02	6.43±0.08	Th 15-17	YX#4
Oxalate	7.04±0.02	13.49±0.05	Th 32-34	YX#3
Citrate	9.31±0.04	17.41±0.06	Th 49-50	YX#4

Table 11. Stability Constants for Thorium Complexes with Carboxylate Ligands in 3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	4.26±0.03	7.19±0.02	Th 7-8	YX#4
Lactate	3.91±0.02	6.62±0.05	Th 18-20	YX#4
Oxalate	7.13±0.01	13.83±0.06	Th 35-38	YX#4
Citrate	9.55±0.02	17.33±0.04	Th 51-52	YX#4

Table 12. Stability Constants for Thorium Complexes with Carboxylate Ligands in 4 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	4.29±0.03	7.30±0.03	Th 9-10	YX#4
Lactate	4.17±0.03	6.98±0.02	Th 21-22	YX#4
Oxalate	7.26±0.03	13.95±0.04	Th 39-40	YX#4
Citrate	10.07±0.02		Th 53	YX#4

Table 13. Stability Constants for Thorium Complexes with Carboxylate Ligands in 5 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	4.51±0.03	7.66±0.03	Th 11-12	YX#4
Lactate	4.28±0.02	7.23±0.04	Th 23-24	YX#4
Oxalate	7.47±0.02	14.63±0.03	Th 41-43	YX#4
Citrate	10.18±0.03	19.12±0.04	Th 54	YX#4

Table 14. Stability Constants for Uranyl Complexes with Carboxylate Ligands in 0.3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	Table	Notebook
Acetate	2.6 ± 0.2			U 1-2	MGB#1[e]
Lactate	2.60±0.01			U 12	MGB#2
Oxalate	5.94±0.01	10.13±0.06		U 22	MGB#1,3
Citrate	7.30±0.04			U 28	MGB#2
EDTA	10.72±0.25		15.81±0.03	U 56-68	MGB#1,2; OG#7[f]

[e]MGB# represents M.G. Bronikowski's notebook and the number corresponds to the notebook volume.
[f]OG# represents O. Pokrovsky's notebook and the number corresponds to the notebook volume.

Table 15. Stability Constants for Uranyl Complexes with Carboxylate Ligands in 1 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	Table	Notebook
Acetate	2.3 ± 0.1			U 3-4	MGB#1
Lactate	2.36±0.02			U 13	MGB#2
Oxalate	5.92±0.01			U 23	MGB#1, 3
Citrate	7.08±0.01			U 29-30	MGB#2
EDTA	9.82±0.04		15.10±0.04	U 69-82	MGB#1,2; OG#7

Table 16. Stability Constants for Uranyl Complexes with Carboxylate Ligands in 2 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	Table	Notebook
Acetate	2.52±0.07	5.12±0.02		U 5-6	MGB#1
Lactate	2.45±0.02	3.79±0.04		U 14-15	MGB#2,3
Oxalate	5.89±0.01	10.21±0.08		U 24	MGB#1,3
Citrate	7.25±0.02			U 31-34	MGB#1,3
EDTA	10.1±0.1		15.2±0.1	U 83-91	MGB#1,2; OG#8

Table 17. Stability Constants for Uranyl Complexes with Carboxylate Ligands in 3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	Table	Notebook
Acetate	2.84±0.09	5.2±0.1		U 7-8	MGB#1
Lactate	2.73±0.04			U 16-17	MGB#2,3
Oxalate	6.61±0.02	10.98±0.07		U 25	MGB#1,3
Citrate	7.10±0.02			U 35-51	MGB#1,3
EDTA	10.20±0.06		15.31±0.02	U 92-102	MGB#1,2; OG#4

Table 18. Stability Constants for Uranyl Complexes with Carboxylate Ligands in 4 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	Table	Notebook
Acetate	3.09±0.04	5.72±0.06		U 9-10	MGB#1
Lactate	2.50±0.03			U 18-19	MGB#2
Oxalate	6.70±0.01			U 26	MGB#1,3
Citrate	7.02±0.01			U 52-53	MGB#1,3
EDTA	10.27±0.15		15.33±0.07	U 103-111	MGB#1,2; OG#7

Table 19. Stability Constants for Uranyl Complexes with Carboxylate Ligands in 5 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	Table	Notebook
Acetate	3.14±0.04			U 11	MGB#1
Lactate	2.64±0.01			U 20-21	MGB#2
Oxalate	5.82±0.02			U 27	MGB#1,3
Citrate	7.03±0.01			U 54-55	MGB#2,3
EDTA	10.48±0.15		15.39±0.02	U 112-121	MGB#2; OG#7

Table 20. Stability Constants for Neptunyl Complexes with Carboxylate Ligands in 0.3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log β_{121}	Table	Notebook
Acetate	1.05±0.05				Np1-3	MB#2
Lactate	1.78±0.03				Np16-17	MB#2, OG#1
Oxalate	3.62±0.03				Np35-36	MB#3, OG#3
Citrate	2.62±0.05				Np50-52	MB#3, OG#2
EDTA	7.1±0.1		13.48±0.06	18.04±0.05	Np81-99	OG#1, 3

Table 21. Stability Constants for Neptunyl Complexes with Carboxylate Ligands in 1 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log β_{121}	Table	Notebook
Acetate	1.13±0.04				Np 4-5	MB#2[g]
Lactate	1.43±0.04				Np 18-20	MB#3, OG#1
Oxalate	3.8±0.2				Np 37-40	MB#3, OG#2, 3
Citrate	2.39±0.01				Np 57-58	MB#3, OG#2
EDTA	6.30±0.1		13.21±0.03	18.10±0.05	Np 100-116	MB#3, OG#1, 3

[g]MB# represents M. Borkowski's notebook and the number corresponds to the notebook volume.

Table 22. Stability Constants for Neptunyl Complexes with Carboxylate Ligands in 2 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log β_{121}	Table	Notebook
Acetate	1.25±0.05				Np 6-7	MB#2
Lactate	1.48±0.05				Np 21-23	MB#3, OG#1
Oxalate	3.89±0.02	6.96±0.01			Np 41-42	MB#3
Citrate	2.50±0.07				Np 59-60	MB#3, OG#2
EDTA	6.00±0.1		13.10±0.05	18.40±0.05	Np 117-123	OG#1, 3

Table 23. Stability Constants for Neptunyl Complexes with Carboxylate Ligands in 3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log β_{121}	Table	Notebook
Acetate	1.55±0.05				Np 8-10	MB#2
Lactate	1.76±0.02				Np 24-26	MB#3, OG#1
Oxalate	4.05±0.02	7.07±0.06			Np 43-44	MB#3
Citrate	2.52±0.01				Np 61-62	MB#3, OG#2
EDTA	5.80±0.1		12.90±0.05	18.55±0.07	Np 124-140	OG#1, 2

Table 24. Stability Constants for Neptunyl Complexes with Carboxylate Ligands in 4 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log β_{121}	Table	Notebook
Acetate	1.7±0.2				Np 11-13	MB#2
Lactate	1.93±0.06				Np 27-29	MB#3, OG#1
Oxalate	4.18±0.02	6.99±0.05			Np 45	MB#3
Citrate	2.56±0.05				Np 63-64	MB#3, OG#2
EDTA	5.6±0.1		12.86±0.06	18.75±0.08	Np 141-146	OG#3

Table 25. Stability Constants for Neptunyl Complexes with Carboxylate Ligands in 5 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log β_{121}	Table	Notebook
Acetate	1.80±0.02				Np 14	MB#3
Lactate	1.95±0.04				Np 30-34	OG#1
Oxalate	4.63±0.05				Np 46-48	MB#3, OG#2,3
Citrate	2.56±0.03				Np 65-66	MB#0,3
EDTA	5.5±0.1		12.95±0.01	19.10±0.01	Np 147-161	OG#1,2

Table 26. Stability Constants for Americium Complexes with Carboxylate Ligands in 0.3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	1.73±0.02		Am 1-4	JC#5
Lactate	2.52±0.07	3.65±0.02	Am 27-34	JC#7
Oxalate	4.53±0.01	8.22±0.02	Am 69-72	JC#6
Citrate	5.9±0.1		Am 93-96	JC#6
EDTA	15.1±0.1		Am 123-126	JC#8

Table 27. Stability Constants for Americium Complexes with Carboxylate Ligands in 1 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	1.51±0.05		Am 5-8	JC#5
Lactate	2.1±0.1	3.56±0.08	Am 35-44	JC#7
Oxalate	4.17±0.05	7.77±0.08	Am 73-76	JC#6
Citrate	5.2±0.1		Am 97-102	JC#6
EDTA	13.96±0.07		Am 127-130	JC#8

Table 28. Stability Constants for Americium Complexes with Carboxylate Ligands in 2 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	1.44±0.02		Am 9-12	JC#5
Lactate	1.8±0.2	3.43±0.02	Am 45-50	JC#7
Oxalate	4.40±0.04	8.22±0.03	Am 77-80	JC#6
Citrate	5.0±0.1		Am 103-110	JC#6
EDTA	14.04±0.09		Am 131-134	JC#7

Table 29. Stability Constants for Americium Complexes with Carboxylate Ligands in 3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	1.65±0.03		Am 13-16	JC#5
Lactate	1.68±0.03		Am 51-58	JC#7
Oxalate	4.56±0.04	8.42±0.07	Am 81-84	JC#6
Citrate	4.84±0.02		Am 111-114	JC#6
EDTA	13.76±0.02		Am 135-138	JC#8

Table 30. Stability Constants for Americium Complexes with Carboxylate Ligands in 4 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	1.83±0.08		Am 17-20	JC#5
Lactate	1.77±0.03	3.40±0.08	Am 59-64	JC#7
Oxalate	4.63±0.04	8.46±0.02	Am 85-88	JC#6
Citrate	5.38±0.06		Am 115-118	JC#6
EDTA	13.89±0.03		Am 139-141	JC#8

Table 31. Stability Constants for Americium Complexes with Carboxylate Ligands in 5 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	Table	Notebook
Acetate	2.2±0.1		Am 21-26	JC#5
Lactate	2.55±0.06	3.80±0.03	Am 65-68	JC#7
Oxalate	4.57±0.06	8.6±0.1	Am 89-92	JC#6
Citrate	5.1±0.2		Am 119-122	JC#7
EDTA	14.38±0.05		Am 142-147	JC#8

Table 32. Stability Constants for Magnesium Complexes with Carboxylate Ligands in 0.3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log $\beta_{1\text{-}10}$	Table	Notebook
Acetate	0.53±0.03			-11.78±0.03	Mg 1-3	JM#2,3[h]
Oxalate	2.33±0.04	4.00±0.01		-11.20±0.05	Mg 25-27	JM#2
Citrate	2.97±0.01		7.1±0.2	-11.6±0.4	Mg 43-46	AHB#3[i]
EDTA	7.45		11.59	-10.83	Mg 68-69	JM#3

[h]JM represents J. Mizera's notebook and the number corresponds to the notebook volume.

[i]AHB represents A.H. Bond's notebook and the number corresponds to the notebook volume.

Table 33. Stability Constants for Magnesium Complexes with Carboxylate Ligands in 1 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log $\beta_{1\text{-}10}$	Table	Notebook
Acetate	0.55±0.02			-11.5±0.3	Mg 4-7	JM#1,2
Oxalate	2.00±0.01	3.71±0.01		-11.42±0.05	Mg 28-31	JM#1
Citrate	2.40±0.03		6.3±0.1	-11.10±0.07	Mg 47-50	AHB#2,3
EDTA	6.7±0.1		11.0±0.3	-12±2	Mg 70-73	JM#3

Table 34. Stability Constants for Magnesium Complexes with Carboxylate Ligands in 2 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log $\beta_{1\text{-}10}$	Table	Notebook
Acetate	0.63±0.06			-11.82±0.05	Mg 8-11	JM#2
Oxalate	1.94±0.02	3.73±0.06		-11.2±0.2	Mg 32-34	JM#2
Citrate	1.97±0.05		5.89±0.01	-11.3±0.2	Mg 51-54	AHB#3,4
EDTA	6.44±0.03		10.0±0.5	-9.52	Mg 74-77	JM#3

Table 35. Stability Constants for Magnesium Complexes with Carboxylate Ligands in 3 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log $\beta_{1\text{-}10}$	Table	Notebook
Acetate	0.74±0.01			-11.86±0.01	Mg 12-15	JM#1,2
Oxalate	1.77±0.08	3.79±0.09		-11.48±0.01	Mg 35-37	JM#1,2,3
Citrate	2.02±0.04		6.15±0.02	-11.32±0.07	Mg 55-58	AHB#2,3
EDTA	6.338		10.3	-10.33	Mg 78-79	AHB#2,4

Table 36. Stability Constants for Magnesium Complexes with Carboxylate Ligands in 4 m NaCl at 25°C.

Ligand	log β_{101}	log β_{102}	log β_{111}	log $\beta_{1\text{-}10}$	Table	Notebook
Acetate	0.73±0.03			-11.88±0.07	Mg 16-18	JM#2,3
Oxalate	1.99±0.01	4.07±0.08		-11.50±0.09	Mg 38-40	JM#2,3
Citrate	2.08±0.02		6.5±0.1	-11.37±0.03	Mg 59-62	AHB#2,3
EDTA	6.41±0.03		10.7±0.2	-10.1±0.9	Mg 80-83	JM#3

Table 37. Stability Constants for Magnesium Complexes with Carboxylate Ligands in 5 m NaCl at 25°C

Ligand	log β_{101}	log β_{102}	log β_{111}	log $\beta_{1\text{-}10}$	Table	Notebook
Acetate	0.71±0.01			-12.1±0.1	Mg 19-24	JM#1,2
Oxalate	2.00±0.06	3.99±0.06		-11.82±0.07	Mg 41-42	JM#3,1
Citrate	2.07±0.02		6.5±0.1	-11.27±0.05	Mg 63-67	AHB#2, 3
EDTA	6.52		10.0	-9.56	Mg 84-85	JM#4; AHB#2

Table 38. Dissociation Constants of Humic Substances in NaCl media at 25°C.

Substance	I(m NaCl)	pK_{a1}	Table	Notebook
LBHA	0.1	5.0 ± 0.1	HA 1	NL#3[j]
LBHA	3.0	8.95 ± 0.1	HA 2,3	NL#3
LBHA	6.0	9.14 ± 0.1	HA 4,5	NL#3
SRFA	3.0	9.1 ± 0.2	HA 6,7	NL#3
SRFA	6.0	9.0 ± 0.1	HA 8	NL#3

[j]NL represents N. Labonne-Wall's notebook and the number corresponds to the notebook volume.

Table 39. Apparent Stability Constants for Uranyl Complexes with Humic Substances in 3 m NaCl at 25°C.

	pcH 5.5		pcH 6.6			
Ligand	log β_{101}	log β_{102}	log β_{101}	log β_{102}	Table	Notebook
LBHA	6.6±0.1	11.0±0.1	7.3±0.2	11.1±0.5	HA 22-25	NL#4
GHA	6.6±0.1	6.9±0.3	7.6±0.6		HA 30-34	NL#4
SRFA	5.4±0.4		6.5±0.3		HA 38-41	NL#4

Table 40. Apparent Stability Constants for Uranyl Complexes with Humic Substances in 6 m NaCl at 25°C.

	pcH 6.1		pcH 7.6			
Ligand	log β_{101}	log β_{102}	log β_{101}	log β_{102}	Table	Notebook
LBHA	7.4±0.3	12.1±0.5	8.2±0.5		HA 26-29	NL#4,5
GHA	7.6±0.2	12.0	8.5±0.1	12.5	HA 35-37	NL#4,5
SRFA	5.7±0.1		7.8±0.1		HA 42-45	NL#4,5

Table 41. Apparent Stability Constants for Americium Complexes with Humic Substances in 3 m NaCl at 25°C.

	pcH 5.5		pcH 6.6			
Ligand	log β_{101}	log β_{102}	log β_{101}	log β_{102}	Table	Notebook
LBHA	5.91±0.1	10.7±0.1	6.3±0.3	10.7±0.1	HA 9-11	NL#1,4
GHA	5.9±0.1	10.8±0.1	6.10±0.05	10.62±0.08	HA 14-15	NL#2,4
SRFA	4.6±0.1	8.1±0.3	4.9±0.1	8.9±0.8	HA 17-19	NL#2,4

Table 42. Apparent Stability Constants for Americium Complexes with Humic Substances in 6 m NaCl at 25°C.

	pcH 6.1		pcH 7.6			
Ligand	log β_{101}	log β_{102}	log β_{101}	log β_{102}	Table	Notebook
LBHA	7.0±0.4	11.7±0.3			HA 12-13	NL#1,4
GHA	6.7±0.1	11.4±0.2			HA 16	NL#2,4
SRFA	6.01±0.03	9.5±0.3			HA 20-21	NL#2,4

Table 43. Standard chemical potentials for actinide-organic complexation.

Species (dimensionless)	Standard chemical potential, μ^0/RT	Reference
H_2O	-95.66	[14]
Na^+	-105.65	[14]
Cl^-	-52.955	[14]
H^+	0	[14]
OH^-	-63.435	[14]
Am^{3+}	-241.694	[20]
NpO_2^+	-369.1	[19]
UO_2^{2+}	-384.259	[17]
Th^{4+}	-284.23	[21]
Acetic acid	-158.3	[10]
Ac^-	-147.347	[10]
Lactic acid	0	p.w.[h]
La^-	8.798	p.w.
Oxalic acid	0	p.w.
HOx^-	3.209	p.w.
Ox^{2-}	13.017	p.w.
Citric acid	0	p.w.
H_2Cit^-	7.476	p.w.
$HCit^{2-}$	18.62	p.w.
Cit^{3-}	33.41	p.w.
H_4EDTA	0	p.w.

Table 43. Continued.		
Species (dimensionless)	Standard chemical potential, μ^0/RT	Reference
H_3EDTA^-	5.761	p.w.
H_2EDTA^{2-}	12.87	p.w.
$HEDTA^{3-}$	28.71	p.w.
$EDTA^{4-}$	53.05	p.w.
Am - acetate^{2+}	-395.239	p.w.
Th - acetate $^{3+}$	-448.525	p.w.
NpO_2 - acetate	-526.061	p.w.
UO_2 - acetate$^+$	-538.585	p.w.
Am - lactate^{2+}	-241.436	p.w.
Th - lactate $^{3+}$	-291.152	p.w.
NpO_2 - lactate	-364.837	p.w.
UO_2 - lactate$^+$	-382.596	p.w.
Am-oxalate$^+$	-242.853	p.w.
Th-oxalate^{2+}	-297.428	p.w.
NpO_2-oxalate$^-$	-365.851	p.w.
UO_2-oxalate	-387.779	p.w.
Am-citrate	-228.543	p.w.
Th-citrate$^+$	-285.898	p.w.
NpO_2-citrate^{2-}	-343.747	p.w.
UO_2-citrate$^-$	-371.429	p.w.
Am-EDTA$^-$	-232.324	p.w.
Th-EDTA	*	
NpO_2-EDTA^{3-}	-335.708	p.w.
NpO_2-HEDTA^{2-}	-351.852	p.w.
NpO_2-H_2EDTA$^-$	-364.098	p.w.
UO_2 - EDTA^{2-}	-361.555	p.w.
UO_2 - HEDTA$^-$	-374.787	p.w.

* not modeled, [h] present work

Table 44. Binary Pitzer Parameters						
Species *i*	Species *j*	$\beta^0_{i,j}$	$\beta^1_{i,j}$	$\beta^2_{i,j}$	$c^\Phi_{i,j}$	Reference
Na^+	Cl^-	0.0765	0.2664	0	0.00127	[14]
H^+	Cl^-	0.1775	0.2945	0	0.0008	[14]
Na^+	OH^-	0.0864	0.253	0	0.0044	[14]
Am^{3+}	Cl^-	0.612	5.403	0	-0.028	[20]
NpO_2^+	Cl^-	0.1415	0.281	0	0	[22]
UO_2^{2+}	Cl^-	0.4274	1.644	0	-0.0184	[17]
Th^{4+}	Cl^-	1.092	13.7	-160	-0.122	[23]
Na^+	HAc	0	0	0	0	[10]
Na^+	Ac^-	0.1426	0.22	0	-0.00629	[16,17]
Na^+	HLac	0	0	0	0	p.w.

Table 44. Continued.

Species i	Species j	$\beta^0_{i,j}$	$\beta^1_{i,j}$	$\beta^2_{i,j}$	$c^\Phi_{i,j}$	Reference
Na^+	Lac^-	-0.0563	0.29	0	0.047	p.w.
Na^+	H_2Ox	0	0	0	0	p.w.
Na^+	HOx^-	-0.2448	0.29	0	0.068	p.w.
Na^+	Ox^{2-}	-0.2176	1.74	0	0.122	p.w.
Na^+	H_3Cit	0	0	0	0	p.w.
Na^+	H_2Cit^-	-0.1296	0.29	0	0.013	p.w.
Na^+	$HCit^{2-}$	-0.0989	1.74	0	0.027	p.w.
Na^+	Cit^{3-}	0.0887	5.22	0	0.047	p.w.
Na^+	H_4EDTA	0	0	0	0	p.w.
Na^+	H_3EDTA^-	-0.2345	0.29	0	0.059	p.w.
Na^+	H_2EDTA^{2-}	-0.1262	1.74	0	0.054	p.w.
Na^+	$HEDTA^{3-}$	0.5458	5.22	0	-0.048	p.w.
Na^+	$EDTA^{4-}$	1.016	11.6	0	0.001	p.w.
$Am\text{-}Ac^{2+}$	Cl^-	1.014	1.74	0	-0.265	p.w.
$Th\text{-}Ac^{3+}$	Cl^-	1.061	5.22	0	0.109	p.w.
$Th\text{-}Ac_2^{2+}$	Cl^-	0.4671	1.74	0	0.225	p.w.
$UO_2\text{-}Ac^+$	Cl^-	0.0124	0.29	0	0.007	p.w.
$Am\text{-}Lac^{2+}$	Cl^-	0.8397	1.74	0	-0.332	p.w.
$Th\text{-}Lac^{3+}$	Cl^-	0.6677	5.22	0	0.341	p.w.
$Th\text{-}Lac_2^{2+}$	Cl^-	0.5058	1.74	0	0.143	p.w.
$UO_2\text{-}Lac^+$	Cl^-	-0.042	0.29	0	0.091	p.w.
$Am\text{-}Ox^+$	Cl^-	-0.9374	0.29	0	0.248	p.w.
$Th\text{-}Ox^{2+}$	Cl^-	-0.343	1.74	0	0.5	p.w.
$NpO_2\text{-}Ox^-$	Cl^-	-0.5418	0.29	0	0.095	p.w.
$Th\text{-}Cit^+$	Cl^-	-0.7467	0.29	0	0.319	p.w.
$NpO_2\text{-}Cit^{2-}$	Cl^-	-0.4226	1.75	0	0.142	p.w.
$UO_2\text{-}Cit^-$	Cl^-	-1.013	0.29	0	0.302	p.w.
$Am\text{-}EDTA^-$	Cl^-	-0.2239	0.29	0	0.002	p.w.
$Np\text{-}EDTA^{3-}$	Cl^-	0.683	5.911	0	0	p.w.
$UO_2\text{-}EDTA^{2-}$	Cl^-	-0.1516	1.74	0	0.095	p.w.

Table 45. Neutral-ion pair Pitzer parameters

Species i	Species j	$l_{i,j}$	Reference
$Am^{3+}\text{-}Cit$	Cl-	-0.406	p.w.
$Th^{4+}\text{-}EDTA$	Cl-	*	p.w.
$NpO_2^+\text{-}Ac^-$	Cl-	0	p.w.
$NpO_2^+\text{-}Lac^-$	Cl-	0.015	p.w.
$UO_2^{2+}\text{-}Ox$	Cl-	-0.214	p.w.

* not modeled

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POTENTIOMETRIC AND SOLVENT EXTRACTION DATA

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Table AD1. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.001.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.066	4.234	3.653	4.798	5.128	5.014	9.822
0.228	2.096	4.258	3.708	4.808	5.169	5.022	9.870
0.500	2.135	4.280	3.759	4.818	5.211	5.028	9.903
0.732	2.169	4.304	3.819	4.828	5.258	5.036	9.942
0.998	2.210	4.328	3.881	4.838	5.304	5.046	9.986
1.234	2.249	4.334	3.893	4.848	5.356	5.054	10.015
1.420	2.282	4.342	3.913	4.856	5.403	5.064	10.052
1.634	2.321	4.358	3.954	4.866	5.465	5.090	10.128
1.846	2.364	4.368	3.982	4.874	5.519	5.118	10.205
2.040	2.406	4.376	4.001	4.882	5.581	5.150	10.278
2.274	2.458	4.392	4.046	4.892	5.673	5.178	10.325
2.490	2.512	4.404	4.071	4.900	5.769	5.210	10.377
2.686	2.566	4.412	4.090	4.904	5.823	5.238	10.422
2.840	2.614	4.432	4.142	4.910	5.899	5.266	10.467
3.044	2.684	4.450	4.188	4.914	5.969	5.294	10.503
3.250	2.764	4.458	4.209	4.918	6.052	5.324	10.540
3.340	2.803	4.478	4.258	4.922	6.145	5.354	10.576
3.460	2.862	4.488	4.283	4.926	6.250	5.388	10.610
3.562	2.919	4.512	4.344	4.930	6.343	5.420	10.641
3.660	2.979	4.524	4.374	4.934	6.774	5.452	10.669
3.742	3.036	4.546	4.430	4.936	7.587	5.484	10.696
3.776	3.061	4.562	4.468	4.942	8.539	5.514	10.720
3.822	3.099	4.584	4.513	4.946	8.787	5.542	10.740
3.870	3.141	4.602	4.558	4.950	8.950	5.620	10.793
3.906	3.175	4.622	4.610	4.954	9.085	5.680	10.830
3.940	3.209	4.642	4.662	4.958	9.187	5.762	10.873
3.978	3.251	4.660	4.709	4.962	9.276	5.844	10.913
4.022	3.303	4.676	4.751	4.966	9.350	5.922	10.949
4.062	3.355	4.690	4.790	4.970	9.412	6.002	10.982
4.090	3.394	4.708	4.838	4.974	9.468	6.066	11.006
4.120	3.444	4.730	4.897	4.980	9.540		
4.142	3.479	4.746	4.947	4.986	9.605		
4.164	3.521	4.756	4.978	4.990	9.644		
4.188	3.566	4.768	5.019	4.998	9.710		
4.210	3.603	4.778	5.053	5.006	9.769		

$pK_{a1} = 4.536$

Table AD2. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.150 mmol excess HCl, Titrant = 0.030 M NaOH in 0070 m NaCl, pcH = pHr + 0.002.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.064	4.474	4.203	4.814	5.130	4.996	9.544
0.232	2.095	4.484	4.229	4.824	5.170	5.000	9.594
0.464	2.127	4.496	4.262	4.836	5.220	5.004	9.636
0.696	2.162	4.504	4.280	4.846	5.266	5.008	9.673
0.926	2.196	4.514	4.304	4.856	5.314	5.014	9.724
1.154	2.234	4.524	4.330	4.866	5.366	5.020	9.772
1.386	2.273	4.540	4.371	4.878	5.435	5.026	9.814
1.630	2.317	4.550	4.395	4.884	5.471	5.032	9.853
1.870	2.364	4.562	4.424	4.894	5.540	5.040	9.902
2.132	2.421	4.574	4.454	4.904	5.619	5.048	9.942
2.386	2.482	4.586	4.483	4.914	5.709	5.054	9.973
2.618	2.544	4.598	4.513	4.924	5.821	5.060	10.002
2.834	2.607	4.610	4.543	4.926	5.849	5.068	10.035
3.060	2.683	4.622	4.572	4.926	5.876	5.078	10.074
3.272	2.767	4.632	4.598	4.932	5.936	5.130	10.234
3.540	2.898	4.642	4.622	4.936	6.013	5.178	10.341
3.638	2.956	4.652	4.648	4.940	6.115	5.226	10.429
3.742	3.026	4.662	4.674	4.944	6.210	5.264	10.486
3.838	3.093	4.672	4.700	4.948	6.340	5.310	10.546
3.962	3.216	4.684	4.731	4.952	6.523	5.356	10.600
4.066	3.340	4.696	4.762	4.958	7.185	5.406	10.651
4.116	3.411	4.706	4.790	4.962	8.229	5.454	10.695
4.174	3.505	4.718	4.822	4.966	8.706	5.504	10.737
4.232	3.614	4.734	4.868	4.970	8.943	5.558	10.776
4.280	3.716	4.746	4.904	4.974	9.104	5.610	10.811
4.342	3.864	4.756	4.934	4.978	9.221	5.654	10.838
4.400	4.010	4.766	4.966	4.980	9.271	5.698	10.864
4.424	4.073	4.784	5.025	4.984	9.359	5.746	10.891
4.450	4.140	4.792	5.052	4.988	9.430	5.870	10.951
4.460	4.165	4.804	5.093	4.992	9.492	5.970	10.993

$pK_{a1} = 4.563$

Table AD3. Potentiometric Titration Data for the pKa Values of Acetic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.003.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.066	4.404	4.071	4.888	5.635	5.180	10.373
0.252	2.099	4.426	4.128	4.900	5.747	5.214	10.433
0.470	2.130	4.452	4.194	4.912	5.893	5.248	10.487
0.688	2.162	4.478	4.260	4.924	6.099	5.286	10.538
0.922	2.199	4.506	4.332	4.928	6.207	5.316	10.575
1.158	2.237	4.514	4.351	4.932	6.341	5.348	10.612
1.412	2.281	4.522	4.372	4.934	6.426	5.376	10.642
1.704	2.335	4.534	4.403	4.938	6.639	5.410	10.674
1.888	2.373	4.542	4.421	4.942	6.982	5.460	10.718
2.112	2.421	4.552	4.446	4.946	7.856	5.506	10.754
2.326	2.471	4.568	4.485	4.950	8.542	5.558	10.792
2.562	2.533	4.582	4.521	4.954	8.830	5.612	10.827
2.778	2.596	4.600	4.565	4.958	9.008	5.666	10.860
2.986	2.664	4.612	4.596	4.962	9.142	5.720	10.891
3.196	2.744	4.622	4.621	4.968	9.294	5.778	10.920
3.438	2.855	4.636	4.656	4.972	9.367	5.830	10.945
3.566	2.924	4.648	4.687	4.976	9.437	5.880	10.969
3.682	2.998	4.660	4.719	4.980	9.494	5.924	10.991
3.814	3.096	4.674	4.754	4.984	9.546	5.968	11.008
3.928	3.202	4.688	4.793	4.988	9.593		
3.986	3.265	4.700	4.827	4.992	9.635		
4.046	3.339	4.716	4.871	4.996	9.672		
4.088	3.398	4.728	4.908	5.000	9.710		
4.152	3.499	4.738	4.939	5.004	9.742		
4.160	3.514	4.752	4.982	5.010	9.788		
4.172	3.535	4.768	5.034	5.014	9.817		
4.182	3.554	4.778	5.069	5.020	9.854		
4.194	3.576	4.796	5.133	5.026	9.892		
4.216	3.620	4.808	5.181	5.032	9.924		
4.238	3.666	4.818	5.224	5.038	9.954		
4.262	3.720	4.832	5.285	5.046	9.994		
4.290	3.784	4.848	5.366	5.054	10.029		
4.322	3.862	4.858	5.423	5.062	10.061		
4.356	3.948	4.868	5.484	5.100	10.188		
4.380	4.010	4.878	5.553	5.146	10.303		

$pK_{a1} = 4.561$

Table AD4. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.094.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.012	4.512	4.031	4.956	5.376	5.100	9.648
0.244	2.044	4.532	4.073	4.962	5.419	5.110	9.710
0.506	2.080	4.556	4.137	4.968	5.465	5.120	9.762
0.738	2.112	4.562	4.151	4.976	5.537	5.132	9.819
0.976	2.148	4.574	4.180	4.984	5.615	5.142	9.861
1.196	2.183	4.586	4.208	4.990	5.687	5.152	9.900
1.396	2.217	4.594	4.227	4.994	5.740	5.162	9.932
1.648	2.261	4.608	4.260	4.998	5.800	5.176	9.978
1.908	2.311	4.624	4.298	5.004	5.904	5.188	10.011
2.138	2.360	4.636	4.328	5.008	5.990	5.200	10.043
2.396	2.418	4.652	4.365	5.010	6.038	5.224	10.100
2.602	2.471	4.664	4.393	5.012	6.099	5.256	10.167
2.816	2.529	4.680	4.432	5.014	6.164	5.298	10.239
3.050	2.605	4.706	4.494	5.016	6.236	5.332	10.292
3.250	2.678	4.720	4.530	5.018	6.323	5.386	10.362
3.518	2.798	4.734	4.565	5.020	6.438	5.444	10.426
3.696	2.897	4.744	4.591	5.022	6.584	5.494	10.476
3.816	2.976	4.756	4.622	5.024	6.779	5.552	10.525
3.900	3.042	4.772	4.664	5.026	7.093	5.598	10.560
3.988	3.120	4.784	4.696	5.030	7.981	5.724	10.642
4.052	3.186	4.792	4.719	5.032	8.283	5.786	10.677
4.114	3.259	4.810	4.770	5.036	8.611	5.864	10.718
4.184	3.353	4.826	4.817	5.038	8.717	5.974	10.769
4.234	3.431	4.838	4.855	5.042	8.883	6.074	10.809
4.260	3.476	4.858	4.922	5.044	8.938	6.232	10.866
4.290	3.530	4.868	4.957	5.046	8.994	6.362	10.907
4.312	3.573	4.878	4.994	5.048	9.042	6.514	10.947
4.336	3.621	4.886	5.024	5.050	9.088	6.620	10.977
4.360	3.673	4.894	5.055	5.052	9.133	6.732	11.002
4.382	3.722	4.902	5.091	5.054	9.170		
4.406	3.776	4.910	5.125	5.056	9.202		
4.428	3.828	4.920	5.171	5.068	9.373		
4.446	3.871	4.930	5.220	5.076	9.460		
4.470	3.929	4.938	5.264	5.082	9.515		
4.490	3.977	4.948	5.323	5.090	9.578		

$pK_{a1} = 4.509$

Table AD5. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.086.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.010	4.494	3.969	4.974	5.464	5.378	10.336
0.264	2.045	4.516	4.022	4.978	5.501	5.412	10.377
0.522	2.080	4.542	4.086	4.988	5.593	5.444	10.412
0.734	2.110	4.564	4.138	4.996	5.685	5.478	10.445
0.970	2.145	4.588	4.196	4.998	5.712	5.506	10.473
1.234	2.187	4.608	4.243	5.002	5.766	5.536	10.501
1.472	2.227	4.620	4.272	5.008	5.863	5.564	10.523
1.710	2.270	4.642	4.323	5.014	5.998	5.622	10.567
1.968	2.321	4.664	4.376	5.020	6.210	5.682	10.607
2.178	2.365	4.690	4.439	5.028	6.911	5.744	10.646
2.398	2.416	4.712	4.494	5.038	8.519	5.796	10.674
2.630	2.475	4.734	4.547	5.048	8.910	5.886	10.721
2.834	2.533	4.756	4.605	5.058	9.135	5.948	10.750
3.032	2.596	4.778	4.662	5.066	9.254	6.006	10.776
3.238	2.671	4.794	4.708	5.074	9.360	6.084	10.806
3.470	2.770	4.804	4.736	5.082	9.445	6.204	10.851
3.706	2.897	4.814	4.764	5.096	9.561	6.282	10.877
3.896	3.030	4.828	4.806	5.108	9.646	6.370	10.906
3.988	3.111	4.840	4.843	5.118	9.704	6.466	10.933
4.098	3.227	4.856	4.894	5.130	9.785	6.580	10.963
4.198	3.361	4.870	4.943	5.140	9.814	6.686	10.988
4.254	3.450	4.884	4.993	5.150	9.854	6.796	11.016
4.294	3.522	4.896	5.040	5.174	9.940		
4.318	3.568	4.904	5.072	5.204	10.025		
4.348	3.630	4.918	5.134	5.228	10.084		
4.370	3.677	4.932	5.201	5.254	10.140		
4.398	3.740	4.940	5.243	5.276	10.182		
4.424	3.802	4.950	5.302	5.300	10.225		
4.448	3.858	4.958	5.351	5.324	10.261		
4.470	3.911	4.968	5.420	5.352	10.302		

$pK_{a1} = 4.512$

Table AD6. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.104.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.967	4.442	3.825	4.964	5.393	5.176	9.991
0.256	1.999	4.468	3.888	4.970	5.438	5.192	10.039
0.490	2.030	4.494	3.951	4.978	5.506	5.210	10.086
0.728	2.067	4.522	4.021	4.984	5.562	5.238	10.154
0.910	2.093	4.546	4.080	4.990	5.626	5.266	10.210
1.120	2.126	4.570	4.137	4.996	5.670	5.300	10.269
1.306	2.158	4.592	4.190	5.002	5.784	5.326	10.310
1.542	2.199	4.614	4.243	5.008	5.887	5.352	10.348
1.814	2.249	4.638	4.301	5.010	5.929	5.378	10.382
2.022	2.292	4.658	4.349	5.014	6.044	5.408	10.419
2.242	2.340	4.684	4.412	5.016	6.095	5.442	10.456
2.462	2.392	4.704	4.460	5.020	6.231	5.472	10.486
2.664	2.446	4.724	4.510	5.024	6.418	5.500	10.513
2.882	2.509	4.744	4.561	5.028	6.959	5.528	10.538
3.110	2.586	4.764	4.613	5.034	8.329	5.574	10.577
3.358	2.683	4.786	4.672	5.042	8.791	5.622	10.612
3.478	2.738	4.804	4.723	5.052	9.079	5.668	10.644
3.600	2.802	4.824	4.782	5.058	9.193	5.710	10.672
3.726	2.877	4.844	4.844	5.064	9.287	5.804	10.724
3.862	2.973	4.866	4.918	5.068	9.344	5.936	10.790
3.984	3.077	4.886	4.992	5.072	9.393	6.042	10.837
4.096	3.198	4.892	5.016	5.076	9.439	6.128	10.869
4.162	3.284	4.898	5.042	5.080	9.480	6.244	10.911
4.234	3.393	4.906	5.076	5.092	9.584	6.354	10.946
4.256	3.430	4.916	5.119	5.102	9.658	6.466	10.977
4.292	3.496	4.924	5.157	5.112	9.721	6.578	11.009
4.320	3.551	4.932	5.197	5.124	9.786		
4.350	3.614	4.938	5.230	5.142	9.868		
4.380	3.680	4.950	5.300	5.154	9.916		
4.410	3.749	4.956	5.340	5.162	9.945		

pK_{a1} = 4.506

Table AD7. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.081.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.969	4.458	3.789	4.854	5.053	5.140	10.070
0.290	2.007	4.476	3.839	4.866	5.117	5.188	10.178
0.524	2.039	4.498	3.898	4.878	5.190	5.230	10.255
0.742	2.069	4.514	3.944	4.888	5.253	5.272	10.322
0.954	2.101	4.524	3.973	4.898	5.329	5.312	10.378
1.176	2.136	4.536	4.007	4.906	5.395	5.356	10.430
1.414	2.174	4.550	4.046	4.914	5.470	5.414	10.489
1.638	2.213	4.560	4.076	4.924	5.581	5.466	10.538
1.792	2.242	4.570	4.102	4.934	5.726	5.564	10.614
1.978	2.279	4.582	4.139	4.938	5.795	5.688	10.693
2.190	2.322	4.592	4.172	4.942	5.878	5.806	10.758
2.396	2.370	4.602	4.196	4.946	5.978	5.916	10.809
2.532	2.404	4.616	4.236	4.950	6.099	6.022	10.853
2.708	2.450	4.630	4.276	4.954	6.273	6.142	10.897
2.886	2.500	4.644	4.317	4.958	6.529	6.264	10.938
3.070	2.559	4.654	4.345	4.962	6.980	6.374	10.971
3.230	2.616	4.668	4.386	4.966	7.832	6.490	11.005
3.414	2.691	4.678	4.417	4.970	8.406		
3.584	2.771	4.686	4.440	4.974	8.672		
3.796	2.894	4.696	4.470	4.980	8.910		
4.002	3.052	4.704	4.493	4.984	9.019		
4.086	3.135	4.712	4.519	4.988	9.113		
4.172	3.237	4.722	4.550	4.990	9.153		
4.218	3.299	4.730	4.575	4.998	9.282		
4.242	3.336	4.744	4.620	5.004	9.361		
4.266	3.374	4.754	4.654	5.012	9.448		
4.292	3.419	4.764	4.687	5.020	9.524		
4.312	3.456	4.776	4.729	5.030	9.603		
4.332	3.495	4.786	4.764	5.042	9.684		
4.348	3.527	4.796	4.802	5.058	9.772		
4.368	3.570	4.806	4.839	5.072	9.840		
4.388	3.614	4.814	4.871	5.086	9.897		
4.410	3.666	4.824	4.913	5.100	9.949		
4.428	3.711	4.834	4.957	5.114	9.996		
4.440	3.741	4.844	5.003	5.128	10.036		

pK_{a1} = 4.515

Table AD8. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.104.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.952	4.368	3.654	4.750	4.786	5.154	10.194
0.214	1.979	4.386	3.699	4.760	4.825	5.194	10.267
0.482	2.015	4.406	3.751	4.770	4.866	5.230	10.324
0.692	2.045	4.426	3.805	4.780	4.907	5.258	10.365
0.930	2.081	4.442	3.848	4.790	4.952	5.340	10.462
1.142	2.115	4.462	3.904	4.800	4.999	5.418	10.537
1.386	2.155	4.480	3.955	4.812	5.056	5.496	10.601
1.592	2.192	4.498	4.007	4.820	5.102	5.598	10.671
1.810	2.233	4.516	4.059	4.828	5.144	5.682	10.721
2.038	2.278	4.534	4.110	4.838	5.205	5.768	10.767
2.238	2.321	4.556	4.174	4.848	5.273	5.870	10.815
2.426	2.367	4.578	4.239	4.860	5.367	5.972	10.858
2.626	2.419	4.588	4.268	4.876	5.528	6.102	10.907
2.800	2.467	4.598	4.297	4.888	5.691	6.194	10.937
2.968	2.521	4.606	4.321	4.902	5.979	6.292	10.968
3.158	2.587	4.614	4.345	4.912	6.356	6.376	10.993
3.366	2.669	4.622	4.369	4.924	7.900	6.442	11.012
3.562	2.762	4.630	4.395	4.934	8.733		
3.770	2.887	4.638	4.416	4.944	9.048		
3.976	3.050	4.646	4.443	4.954	9.230		
4.080	3.159	4.656	4.473	4.966	9.388		
4.116	3.202	4.666	4.504	4.976	9.492		
4.152	3.249	4.676	4.534	4.986	9.576		
4.186	3.299	4.686	4.566	4.996	9.646		
4.230	3.369	4.700	4.611	5.006	9.712		
4.270	3.441	4.708	4.638	5.014	9.756		
4.316	3.534	4.716	4.664	5.036	9.859		
4.324	3.551	4.722	4.685	5.060	9.950		
4.338	3.583	4.732	4.720	5.084	10.026		
4.352	3.615	4.742	4.757	5.114	10.106		

pK_{a1} = 4.514

Table AD9. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.03 M NaOH in 0.27 m NaCl, pcH = pHr + 0.075.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.972	4.398	3.724	4.744	4.745	5.072	9.947
0.240	2.003	4.426	3.797	4.754	4.781	5.096	10.022
0.510	2.040	4.454	3.874	4.764	4.818	5.126	10.098
0.740	2.073	4.474	3.930	4.772	4.848	5.158	10.168
0.990	2.110	4.496	3.992	4.782	4.889	5.188	10.226
1.230	2.149	4.514	4.043	4.792	4.932	5.218	10.276
1.430	2.183	4.530	4.090	4.800	4.967	5.256	10.331
1.664	2.225	4.552	4.154	4.808	5.005	5.288	10.374
1.904	2.272	4.558	4.171	4.818	5.055	5.320	10.413
2.126	2.316	4.566	4.195	4.828	5.108	5.430	10.521
2.368	2.372	4.578	4.230	4.838	5.165	5.538	10.605
2.604	2.431	4.586	4.254	4.846	5.215	5.628	10.664
2.826	2.492	4.594	4.277	4.854	5.270	5.732	10.723
3.058	2.567	4.604	4.306	4.862	5.330	5.834	10.774
3.288	2.652	4.612	4.329	4.872	5.416	5.948	10.824
3.382	2.692	4.620	4.353	4.888	5.597	6.056	10.866
3.508	2.749	4.630	4.382	4.896	5.710	6.160	10.903
3.660	2.832	4.638	4.405	4.906	5.894	6.258	10.934
3.854	2.959	4.648	4.435	4.914	6.125	6.390	10.973
3.958	3.044	4.656	4.461	4.922	6.558		
4.006	3.090	4.664	4.485	4.932	8.073		
4.052	3.136	4.674	4.515	4.942	8.775		
4.088	3.176	4.682	4.542	4.952	9.049		
4.138	3.238	4.690	4.565	4.962	9.226		
4.188	3.307	4.698	4.591	4.972	9.356		
4.246	3.400	4.704	4.610	4.982	9.460		
4.308	3.516	4.712	4.637	4.992	9.547		
4.324	3.551	4.720	4.661	5.006	9.645		
4.352	3.612	4.728	4.690	5.016	9.707		
4.376	3.670	4.736	4.717	5.046	9.850		

$pK_{a1} = 4.523$

Table AD10. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.141.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.920	4.468	3.882	5.004	6.063	5.638	10.458
0.248	1.953	4.486	3.925	5.006	6.127	5.688	10.499
0.514	1.988	4.512	3.989	5.010	6.280	5.736	10.533
0.750	2.024	4.538	4.049	5.016	6.673	5.790	10.570
0.994	2.060	4.564	4.112	5.022	7.341	5.852	10.608
1.294	2.109	4.592	4.179	5.026	7.711	5.950	10.645
1.566	2.157	4.618	4.240	5.032	8.055	5.976	10.673
1.774	2.196	4.640	4.293	5.036	8.209	6.032	10.700
2.012	2.245	4.664	4.350	5.042	8.373	6.100	10.731
2.256	2.298	4.688	4.409	5.046	8.464	6.206	10.773
2.512	2.360	4.710	4.463	5.052	8.575	6.402	10.808
2.744	2.424	4.730	4.514	5.062	8.703	6.504	10.840
2.970	2.493	4.748	4.563	5.070	8.837	6.606	10.872
3.234	2.590	4.774	4.632	5.082	8.973	6.706	10.900
3.338	2.633	4.798	4.701	5.100	9.138	6.808	10.951
3.482	2.700	4.820	4.767	5.118	9.277	6.900	10.973
3.592	2.759	4.848	4.862	5.132	9.368	6.998	10.991
3.686	2.814	4.854	4.883	5.146	9.452	7.086	11.013
3.798	2.890	4.862	4.915	5.164	9.545		
3.890	2.961	4.876	4.968	5.180	9.621		
3.986	3.049	4.884	5.001	5.196	9.689		
4.066	3.135	4.894	5.044	5.216	9.765		
4.142	3.233	4.904	5.090	5.230	9.821		
4.180	3.289	4.916	5.150	5.242	9.853		
4.204	3.326	4.926	5.204	5.258	9.901		
4.226	3.363	4.938	5.288	5.284	9.967		
4.248	3.401	4.950	5.361	5.310	10.027		
4.274	3.449	4.958	5.423	5.332	10.077		
4.292	3.484	4.966	5.491	5.368	10.141		
4.310	3.520	4.972	5.548	5.402	10.195		
4.338	3.579	4.980	5.635	5.436	10.244		
4.362	3.632	4.990	5.769	5.468	10.287		
4.396	3.709	4.996	5.866	5.496	10.321		
4.420	3.766	4.998	5.909	5.526	10.354		
4.448	3.832	5.000	5.954	5.580	10.408		

$pK_{a1} = 4.498$

Table AD11. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.138.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.926	4.530	4.067	4.986	6.163	5.426	10.346
0.260	1.958	4.546	4.107	4.990	6.365	5.458	10.381
0.500	1.992	4.568	4.158	4.992	6.515	5.566	10.476
0.754	2.028	4.588	4.206	4.996	6.937	5.656	10.542
0.986	2.065	4.608	4.254	5.000	7.618	5.732	10.591
1.220	2.102	4.630	4.308	5.004	8.085	5.812	10.636
1.482	2.147	4.654	4.366	5.008	8.334	5.890	10.676
1.672	2.182	4.680	4.429	5.012	8.504	6.016	10.732
1.932	2.233	4.704	4.489	5.016	8.634	6.122	10.774
2.196	2.289	4.724	4.542	5.022	8.788	6.248	10.819
2.408	2.340	4.742	4.590	5.026	8.870	6.362	10.856
2.688	2.414	4.766	4.658	5.030	8.944	6.490	10.892
2.930	2.487	4.784	4.711	5.036	9.035	6.608	10.923
3.136	2.559	4.808	4.784	5.040	9.096	6.726	10.952
3.384	2.661	4.826	4.845	5.062	9.330	6.846	10.980
3.502	2.718	4.840	4.894	5.076	9.447	6.956	11.005
3.626	2.787	4.860	4.973	5.090	9.543		
3.734	2.854	4.870	5.014	5.100	9.604		
3.844	2.936	4.888	5.098	5.108	9.647		
3.936	3.015	4.896	5.137	5.118	9.695		
4.034	3.116	4.900	5.159	5.128	9.740		
4.150	3.265	4.908	5.202	5.138	9.782		
4.192	3.329	4.914	5.238	5.148	9.818		
4.228	3.390	4.920	5.276	5.158	9.853		
4.266	3.462	4.928	5.331	5.166	9.880		
4.288	3.505	4.934	5.374	5.178	9.917		
4.316	3.563	4.940	5.425	5.188	9.944		
4.344	3.625	4.946	5.478	5.204	9.986		
4.370	3.685	4.952	5.540	5.218	10.022		
4.398	3.750	4.960	5.628	5.234	10.057		
4.422	3.807	4.968	5.738	5.268	10.123		
4.446	3.866	4.972	5.804	5.298	10.175		
4.470	3.923	4.978	5.936	5.330	10.225		
4.488	3.967	4.982	6.035	5.362	10.270		
4.512	4.025	4.984	6.092	5.392	10.307		

$pK_{a1} = 4.500$

Table AD12. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.131.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.930	4.504	4.022	4.956	5.696	5.302	10.226
0.244	1.963	4.510	4.037	4.962	5.794	5.320	10.251
0.482	1.996	4.522	4.066	4.968	5.914	5.340	10.278
0.710	2.029	4.536	4.101	4.974	6.072	5.362	10.307
0.996	2.072	4.546	4.124	4.980	6.329	5.382	10.330
1.212	2.107	4.560	4.158	4.988	7.219	5.402	10.352
1.428	2.144	4.574	4.192	4.996	8.356	5.420	10.368
1.694	2.193	4.590	4.230	5.004	8.716	5.440	10.389
1.896	2.232	4.604	4.263	5.012	8.930	5.462	10.410
2.136	2.283	4.618	4.297	5.018	9.048	5.482	10.430
2.346	2.332	4.630	4.326	5.026	9.177	5.544	10.480
2.574	2.389	4.644	4.360	5.034	9.273	5.598	10.521
2.788	2.451	4.658	4.396	5.042	9.356	5.648	10.555
3.008	2.520	4.674	4.435	5.052	9.443	5.692	10.581
3.194	2.589	4.690	4.474	5.064	9.532	5.746	10.614
3.448	2.699	4.714	4.536	5.070	9.571	5.786	10.636
3.566	2.761	4.736	4.595	5.078	9.618	5.834	10.664
3.632	2.799	4.756	4.650	5.084	9.653	5.892	10.692
3.744	2.871	4.780	4.721	5.094	9.703	5.958	10.720
3.842	2.944	4.794	4.763	5.102	9.741	6.094	10.775
3.938	3.027	4.816	4.836	5.108	9.767	6.206	10.814
4.038	3.131	4.834	4.900	5.114	9.790	6.308	10.846
4.116	3.229	4.846	4.946	5.122	9.821	6.452	10.887
4.162	3.296	4.864	5.023	5.128	9.843	6.572	10.919
4.206	3.367	4.872	5.058	5.134	9.865	6.700	10.949
4.244	3.435	4.882	5.105	5.142	9.891	6.806	10.974
4.282	3.507	4.898	5.191	5.148	9.909	6.914	10.996
4.314	3.575	4.902	5.216	5.152	9.922	7.022	11.020
4.344	3.641	4.908	5.253	5.158	9.939		
4.364	3.685	4.916	5.305	5.180	9.996		
4.392	3.751	4.922	5.348	5.202	10.047		
4.414	3.804	4.930	5.413	5.218	10.080		
4.440	3.866	4.936	5.467	5.238	10.120		
4.456	3.905	4.942	5.525	5.258	10.155		
4.478	3.959	4.948	5.592	5.280	10.192		

$pK_{a1} = 4.498$

Table AD13. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.209.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.814	4.564	4.011	5.004	6.285	5.230	9.977
0.260	1.848	4.588	4.069	5.006	6.427	5.238	9.993
0.540	1.885	4.612	4.128	5.010	6.870	5.248	10.013
0.772	1.918	4.636	4.186	5.012	7.337	5.260	10.035
0.996	1.953	4.656	4.234	5.014	7.817	5.268	10.050
1.248	1.993	4.676	4.283	5.016	8.106	5.276	10.062
1.486	2.034	4.690	4.318	5.018	8.296	5.286	10.080
1.726	2.079	4.706	4.357	5.020	8.423	5.296	10.094
1.936	2.120	4.724	4.404	5.024	8.607	5.308	10.113
2.162	2.168	4.742	4.451	5.026	8.674	5.318	10.129
2.344	2.209	4.768	4.520	5.028	8.748	5.340	10.159
2.542	2.259	4.786	4.570	5.030	8.804	5.370	10.196
2.748	2.315	4.806	4.629	5.032	8.909	5.406	10.238
2.954	2.379	4.826	4.693	5.040	9.014	5.430	10.264
3.184	2.460	4.846	4.760	5.050	9.157	5.490	10.320
3.404	2.552	4.872	4.858	5.060	9.271	5.544	10.365
3.506	2.602	4.890	4.933	5.068	9.345	5.590	10.402
3.624	2.666	4.908	5.019	5.084	9.461	5.636	10.433
3.722	2.725	4.930	5.139	5.094	9.524	5.732	10.492
3.820	2.794	4.938	5.192	5.104	9.579	5.810	10.535
3.920	2.875	4.946	5.249	5.112	9.619	5.890	10.575
4.020	2.972	4.952	5.298	5.120	9.654	5.952	10.604
4.090	3.052	4.964	5.404	5.126	9.679	6.074	10.653
4.162	3.148	4.968	5.447	5.134	9.712	6.196	10.696
4.230	3.257	4.974	5.518	5.140	9.732	6.312	10.734
4.268	3.326	4.978	5.573	5.148	9.762	6.416	10.765
4.308	3.405	4.982	5.634	5.158	9.794	6.524	10.795
4.350	3.496	4.984	5.670	5.166	9.817	6.628	10.822
4.390	3.589	4.988	5.746	5.174	9.842	6.734	10.846
4.424	3.669	4.990	5.785	5.182	9.864	6.850	10.872
4.448	3.727	4.992	5.838	5.190	9.885	6.978	10.898
4.470	3.781	4.994	5.887	5.200	9.904	7.102	10.920
4.494	3.839	4.998	6.009	5.208	9.925	7.214	10.943
4.514	3.890	5.000	6.086	5.216	9.947	7.344	10.966
4.538	3.948	5.002	6.174	5.222	9.958	7.610	11.005

$pK_{a1} = 4.514$

Table AD14. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.248.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.850	4.610	4.126	5.014	6.504	5.446	10.271
0.240	1.880	4.620	4.148	5.016	6.729	5.512	10.332
0.450	1.908	4.636	4.189	5.020	7.579	5.546	10.361
0.664	1.938	4.652	4.227	5.022	7.974	5.618	10.414
0.896	1.970	4.666	4.262	5.024	8.209	5.690	10.462
1.152	2.010	4.674	4.282	5.026	8.386	5.758	10.502
1.388	2.049	4.698	4.340	5.030	8.586	5.830	10.540
1.640	2.093	4.712	4.374	5.034	8.733	5.934	10.589
1.850	2.133	4.732	4.425	5.036	8.794	6.042	10.634
2.100	2.184	4.744	4.456	5.038	8.846	6.140	10.672
2.346	2.240	4.762	4.504	5.040	8.895	6.256	10.712
2.574	2.295	4.784	4.564	5.044	8.979	6.382	10.751
2.828	2.367	4.810	4.640	5.046	9.015	6.528	10.790
3.060	2.443	4.834	4.714	5.050	9.081	6.710	10.835
3.318	2.540	4.860	4.802	5.064	9.254	6.844	10.866
3.592	2.673	4.878	4.871	5.076	9.363	7.050	10.900
3.808	2.808	4.894	4.937	5.086	9.439	7.190	10.923
3.914	2.892	4.918	5.054	5.094	9.493	7.326	10.955
4.052	3.027	4.926	5.095	5.104	9.550	7.478	10.980
4.128	3.119	4.934	5.141	5.116	9.612	7.624	11.005
4.166	3.172	4.942	5.192	5.126	9.658		
4.216	3.249	4.950	5.245	5.142	9.723		
4.256	3.317	4.958	5.306	5.156	9.771		
4.296	3.392	4.968	5.392	5.172	9.821		
4.328	3.457	4.976	5.476	5.188	9.865		
4.364	3.535	4.982	5.547	5.202	9.900		
4.390	3.595	4.986	5.604	5.216	9.933		
4.410	3.643	4.992	5.697	5.232	9.968		
4.434	3.699	4.996	5.776	5.246	9.996		
4.462	3.767	4.998	5.820	5.258	10.020		
4.486	3.825	5.000	5.872	5.272	10.046		
4.502	3.865	5.002	5.920	5.306	10.100		
4.526	3.923	5.004	5.979	5.336	10.144		
4.548	3.978	5.008	6.123	5.366	10.182		
4.572	4.034	5.010	6.225	5.400	10.223		

$pK_{a1} = 4.513$

Table AD15. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.250.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.814	4.604	4.163	4.978	6.299	5.406	10.288
0.254	1.846	4.622	4.207	4.982	6.677	5.428	10.310
0.492	1.877	4.642	4.256	4.984	6.978	5.442	10.323
0.708	1.910	4.658	4.295	4.986	7.546	5.480	10.356
0.944	1.946	4.678	4.346	4.988	7.980	5.516	10.385
1.168	1.980	4.696	4.391	4.990	8.250	5.544	10.408
1.402	2.021	4.712	4.432	4.992	8.410	5.584	10.434
1.674	2.070	4.730	4.482	4.996	8.607	5.610	10.453
1.914	2.117	4.752	4.542	4.998	8.694	5.682	10.499
2.156	2.168	4.774	4.605	5.000	8.758	5.736	10.530
2.328	2.207	4.792	4.661	5.002	8.818	5.782	10.557
2.552	2.265	4.814	4.732	5.004	8.872	5.846	10.585
2.752	2.321	4.834	4.804	5.016	9.096	5.910	10.614
2.966	2.387	4.844	4.843	5.028	9.248	5.980	10.645
3.136	2.448	4.858	4.901	5.040	9.365	6.030	10.664
3.346	2.534	4.868	4.946	5.052	9.455	6.088	10.687
3.570	2.645	4.876	4.984	5.062	9.521	6.144	10.703
3.800	2.793	4.884	5.023	5.074	9.587	6.200	10.726
4.002	2.973	4.890	5.054	5.084	9.638	6.258	10.742
4.092	3.080	4.900	5.112	5.094	9.684	6.362	10.775
4.172	3.195	4.906	5.150	5.106	9.730	6.460	10.805
4.268	3.366	4.914	5.201	5.114	9.761	6.544	10.823
4.304	3.439	4.922	5.261	5.122	9.788	6.626	10.842
4.340	3.519	4.928	5.307	5.132	9.816	6.718	10.867
4.370	3.589	4.936	5.380	5.144	9.855	6.826	10.889
4.388	3.633	4.944	5.462	5.166	9.911	6.914	10.907
4.408	3.681	4.952	5.566	5.196	9.981	7.004	10.925
4.426	3.727	4.956	5.629	5.218	10.024	7.086	10.939
4.452	3.791	4.958	5.664	5.240	10.065	7.170	10.955
4.468	3.832	4.962	5.741	5.260	10.098	7.244	10.967
4.490	3.886	4.966	5.826	5.282	10.131	7.334	10.982
4.520	3.961	4.968	5.879	5.306	10.164	7.434	10.998
4.542	4.014	4.970	5.940	5.328	10.200	7.512	11.013
4.560	4.058	4.974	6.081	5.356	10.237		
4.582	4.111	4.976	6.176	5.382	10.263		

pK_{a1} = 4.518

Table AD16. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.446.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.620	4.492	3.844	4.964	7.269	5.706	10.400
0.280	1.655	4.498	3.860	4.972	8.262	5.794	10.445
0.526	1.689	4.514	3.901	4.980	8.627	5.876	10.485
0.746	1.719	4.530	3.941	4.988	8.822	5.956	10.518
0.970	1.755	4.546	3.982	4.996	8.960	6.028	10.548
1.204	1.792	4.564	4.026	5.006	9.092	6.114	10.578
1.452	1.835	4.582	4.070	5.014	9.197	6.226	10.616
1.730	1.886	4.598	4.111	5.024	9.270	6.320	10.644
1.936	1.928	4.622	4.170	5.034	9.346	6.426	10.674
2.152	1.973	4.630	4.191	5.044	9.411	6.534	10.702
2.370	2.026	4.646	4.231	5.054	9.467	6.636	10.727
2.604	2.086	4.664	4.277	5.062	9.508	6.852	10.772
2.840	2.155	4.676	4.307	5.074	9.564	7.008	10.804
3.078	2.237	4.692	4.352	5.084	9.607	7.142	10.827
3.302	2.327	4.708	4.395	5.092	9.635	7.270	10.850
3.536	2.443	4.726	4.446	5.106	9.683	7.396	10.870
3.758	2.586	4.744	4.498	5.124	9.736	7.540	10.892
3.846	2.656	4.756	4.536	5.140	9.780	7.672	10.910
3.946	2.751	4.768	4.573	5.160	9.828	7.780	10.926
4.004	2.815	4.780	4.613	5.172	9.855	7.936	10.945
4.076	2.909	4.798	4.674	5.198	9.907	8.132	10.967
4.144	3.014	4.816	4.742	5.210	9.930	8.324	10.987
4.172	3.064	4.832	4.808	5.224	9.955	8.508	11.009
4.208	3.132	4.852	4.901	5.238	9.979		
4.234	3.186	4.866	4.974	5.252	10.001		
4.260	3.243	4.874	5.020	5.276	10.035		
4.284	3.300	4.884	5.083	5.290	10.053		
4.308	3.360	4.892	5.141	5.318	10.089		
4.332	3.420	4.902	5.219	5.360	10.137		
4.356	3.484	4.912	5.313	5.402	10.180		
4.378	3.542	4.920	5.403	5.440	10.215		
4.398	3.597	4.930	5.540	5.484	10.252		
4.416	3.646	4.938	5.681	5.520	10.281		
4.436	3.700	4.946	5.884	5.564	10.314		
4.458	3.756	4.954	6.223	5.610	10.343		

$pK_{a1} = 4.624$

Table AD17. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.430.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.635	4.426	3.706	4.932	5.766	5.246	9.991
0.250	1.667	4.444	3.753	4.942	6.098	5.270	10.026
0.460	1.695	4.460	3.796	4.944	6.221	5.294	10.058
0.686	1.727	4.476	3.836	4.948	6.559	5.324	10.095
0.918	1.762	4.512	3.928	4.950	6.851	5.362	10.137
1.168	1.801	4.526	3.963	4.954	7.457	5.402	10.177
1.410	1.842	4.540	3.998	4.962	8.242	5.458	10.227
1.626	1.881	4.558	4.044	4.966	8.455	5.494	10.257
1.878	1.931	4.576	4.088	4.970	8.593	5.532	10.285
2.094	1.977	4.594	4.132	4.974	8.697	5.578	10.319
2.314	2.027	4.604	4.157	4.976	8.744	5.610	10.339
2.514	2.078	4.616	4.187	4.980	8.826	5.718	10.401
2.756	2.145	4.628	4.218	4.982	8.862	5.812	10.448
2.984	2.218	4.640	4.249	4.990	8.991	5.914	10.495
3.178	2.290	4.650	4.275	4.998	9.096	6.018	10.536
3.432	2.404	4.664	4.311	5.006	9.180	6.122	10.574
3.544	2.464	4.678	4.348	5.014	9.251	6.230	10.610
3.644	2.524	4.694	4.391	5.020	9.300	6.344	10.643
3.748	2.595	4.706	4.424	5.028	9.355	6.504	10.686
3.822	2.654	4.726	4.475	5.036	9.407	6.638	10.718
3.930	2.755	4.748	4.547	5.046	9.460	6.754	10.743
3.986	2.815	4.758	4.579	5.052	9.491	6.872	10.768
4.042	2.885	4.770	4.618	5.058	9.519	7.004	10.794
4.076	2.933	4.782	4.658	5.064	9.547	7.150	10.820
4.110	2.983	4.792	4.695	5.072	9.581	7.290	10.842
4.140	3.033	4.806	4.747	5.078	9.605	7.544	10.881
4.180	3.105	4.828	4.837	5.084	9.626	7.752	10.909
4.222	3.190	4.840	4.893	5.092	9.657	7.936	10.934
4.262	3.280	4.864	5.021	5.100	9.683	8.074	10.949
4.304	3.384	4.874	5.084	5.108	9.708	8.230	10.968
4.342	3.482	4.886	5.171	5.130	9.767	8.358	10.983
4.368	3.552	4.896	5.255	5.154	9.823	8.532	11.003
4.380	3.585	4.906	5.355	5.174	9.865		
4.396	3.627	4.916	5.487	5.196	9.908		
4.414	3.675	4.924	5.603	5.222	9.954		

pK_{a1} = 4.622

Table AD18. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.439.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.626	4.464	3.796	4.934	5.723	5.762	10.428
0.262	1.659	4.484	3.847	4.940	5.943	5.862	10.477
0.558	1.699	4.504	3.898	4.948	6.334	5.966	10.521
0.764	1.728	4.524	3.948	4.956	7.260	6.074	10.561
0.986	1.762	4.546	4.003	4.966	8.254	6.178	10.598
1.206	1.797	4.572	4.069	4.974	8.581	6.284	10.631
1.410	1.832	4.592	4.116	4.982	8.778	6.412	10.667
1.606	1.866	4.606	4.152	4.988	8.890	6.546	10.701
1.808	1.905	4.628	4.209	4.996	9.010	6.690	10.736
2.066	1.960	4.644	4.247	5.004	9.110	6.834	10.766
2.294	2.021	4.662	4.295	5.012	9.191	6.972	10.795
2.536	2.073	4.684	4.351	5.020	9.261	7.142	10.825
2.748	2.133	4.704	4.410	5.028	9.322	7.280	10.849
2.988	2.210	4.720	4.452	5.038	9.387	7.412	10.869
3.222	2.299	4.740	4.512	5.050	9.456	7.556	10.890
3.482	2.420	4.760	4.573	5.066	9.533	7.706	10.912
3.592	2.482	4.786	4.661	5.076	9.575	7.840	10.928
3.688	2.544	4.792	4.683	5.088	9.623	7.964	10.944
3.796	2.624	4.798	4.705	5.100	9.665	8.080	10.958
3.886	2.702	4.804	4.727	5.120	9.724	8.202	10.972
3.974	2.794	4.814	4.767	5.136	9.768	8.320	10.986
4.054	2.893	4.826	4.819	5.160	9.826	8.438	10.998
4.112	2.978	4.838	4.873	5.188	9.885	8.526	11.009
4.164	3.067	4.844	4.902	5.216	9.937		
4.196	3.128	4.850	4.934	5.244	9.984		
4.230	3.199	4.856	4.964	5.272	10.027		
4.268	3.285	4.862	4.999	5.298	10.062		
4.290	3.338	4.870	5.049	5.326	10.096		
4.310	3.389	4.878	5.100	5.376	10.151		
4.328	3.436	4.886	5.160	5.420	10.196		
4.352	3.499	4.894	5.223	5.474	10.242		
4.376	3.563	4.902	5.297	5.526	10.282		
4.396	3.616	4.910	5.384	5.578	10.320		
4.420	3.680	4.918	5.482	5.624	10.350		
4.442	3.736	4.924	5.572	5.666	10.376		

pK_{a1} = 4.622

Table AD19. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.656.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.410	4.420	3.453	4.964	5.316	5.904	10.428
0.238	1.436	4.436	3.501	4.970	5.388	6.028	10.479
0.492	1.472	4.456	3.560	4.980	5.547	6.148	10.525
0.734	1.505	4.472	3.608	4.988	5.712	6.282	10.568
0.964	1.541	4.488	3.652	4.998	6.067	6.404	10.605
1.224	1.582	4.506	3.702	5.006	6.768	6.536	10.640
1.484	1.627	4.520	3.742	5.016	8.034	6.690	10.678
1.750	1.675	4.538	3.788	5.026	8.509	6.806	10.704
2.006	1.726	4.556	3.835	5.036	8.758	6.918	10.727
2.252	1.781	4.576	3.888	5.046	8.925	7.102	10.762
2.464	1.832	4.594	3.933	5.054	9.034	7.238	10.786
2.716	1.901	4.610	3.974	5.064	9.141	7.400	10.812
2.942	1.970	4.628	4.021	5.076	9.244	7.636	10.847
3.072	2.016	4.644	4.060	5.088	9.329	7.796	10.870
3.198	2.063	4.668	4.120	5.098	9.391	7.962	10.891
3.354	2.128	4.690	4.174	5.108	9.446	8.140	10.912
3.506	2.203	4.702	4.206	5.118	9.494	8.350	10.935
3.666	2.295	4.722	4.257	5.146	9.599	8.510	10.951
3.754	2.355	4.740	4.305	5.184	9.713	8.688	10.969
3.856	2.434	4.756	4.348	5.228	9.817	8.844	10.985
3.944	2.516	4.776	4.405	5.274	9.901	8.972	10.996
4.026	2.610	4.794	4.458	5.318	9.970	9.172	11.014
4.094	2.697	4.812	4.513	5.360	10.026		
4.154	2.791	4.822	4.546	5.388	10.065		
4.182	2.841	4.840	4.607	5.416	10.093		
4.214	2.902	4.864	4.699	5.450	10.130		
4.240	2.958	4.880	4.762	5.488	10.167		
4.262	3.008	4.888	4.799	5.514	10.182		
4.292	3.082	4.896	4.837	5.542	10.212		
4.312	3.136	4.906	4.888	5.570	10.233		
4.338	3.208	4.918	4.952	5.600	10.257		
4.356	3.262	4.930	5.024	5.630	10.278		
4.374	3.315	4.940	5.096	5.710	10.327		
4.394	3.375	4.950	5.179	5.780	10.366		
4.408	3.416	4.958	5.254	5.836	10.395		

pK_{a1} = 4.774

Table AD20. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.634.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.428	4.396	3.459	4.884	4.903	5.268	9.917
0.252	1.461	4.410	3.501	4.898	4.982	5.296	9.958
0.508	1.496	4.424	3.543	4.904	5.018	5.326	9.998
0.758	1.532	4.436	3.578	4.910	5.058	5.356	10.034
0.946	1.560	4.446	3.607	4.918	5.116	5.390	10.073
1.208	1.602	4.458	3.641	4.926	5.181	5.424	10.107
1.444	1.643	4.474	3.686	4.934	5.253	5.486	10.163
1.686	1.687	4.488	3.724	4.942	5.341	5.532	10.199
1.942	1.737	4.500	3.757	4.954	5.507	5.582	10.236
2.194	1.792	4.512	3.791	4.962	5.657	5.640	10.275
2.434	1.850	4.524	3.823	4.968	5.804	5.728	10.327
2.698	1.921	4.538	3.860	4.976	6.140	5.824	10.375
2.946	1.997	4.552	3.895	4.984	6.886	5.908	10.416
3.182	2.083	4.568	3.935	4.990	7.887	6.004	10.458
3.398	2.177	4.582	3.971	4.998	8.422	6.116	10.498
3.518	2.237	4.596	4.007	5.006	8.671	6.328	10.566
3.632	2.304	4.606	4.029	5.012	8.806	6.428	10.596
3.754	2.384	4.614	4.052	5.018	8.906	6.570	10.632
3.856	2.467	4.630	4.091	5.026	9.014	6.714	10.665
3.944	2.551	4.656	4.157	5.034	9.099	6.896	10.704
4.026	2.645	4.666	4.183	5.040	9.159	7.018	10.728
4.082	2.721	4.684	4.229	5.048	9.226	7.204	10.761
4.108	2.760	4.706	4.286	5.056	9.282	7.408	10.793
4.138	2.811	4.724	4.334	5.064	9.332	7.602	10.821
4.166	2.861	4.748	4.401	5.070	9.368	7.870	10.857
4.204	2.937	4.762	4.443	5.078	9.411	8.026	10.877
4.224	2.981	4.780	4.496	5.094	9.484	8.244	10.902
4.250	3.041	4.788	4.522	5.100	9.511	8.432	10.923
4.280	3.118	4.800	4.560	5.106	9.536	8.578	10.937
4.320	3.229	4.808	4.586	5.114	9.567	8.732	10.951
4.348	3.312	4.824	4.642	5.140	9.648	8.910	10.968
4.354	3.328	4.838	4.696	5.166	9.718	9.116	10.986
4.364	3.361	4.852	4.752	5.186	9.765	9.378	11.010
4.374	3.391	4.860	4.787	5.214	9.822		
4.384	3.422	4.870	4.833	5.240	9.870		

$pK_{a1} = 4.767$

Table AD21. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.638.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.416	4.410	3.441	4.952	5.276	5.242	9.879
0.240	1.446	4.430	3.501	4.958	5.345	5.266	9.920
0.462	1.475	4.450	3.560	4.964	5.424	5.290	9.957
0.690	1.508	4.472	3.625	4.970	5.515	5.324	10.005
0.924	1.544	4.496	3.693	4.974	5.600	5.352	10.041
1.142	1.578	4.516	3.748	4.978	5.685	5.396	10.089
1.352	1.612	4.538	3.806	4.982	5.787	5.452	10.144
1.562	1.650	4.556	3.854	4.986	5.930	5.498	10.185
1.786	1.692	4.574	3.900	4.990	6.133	5.550	10.227
1.992	1.735	4.590	3.941	4.994	6.459	5.616	10.272
2.198	1.777	4.610	3.992	4.998	7.186	5.676	10.312
2.390	1.824	4.638	4.063	5.002	7.873	5.728	10.344
2.592	1.876	4.658	4.112	5.006	8.292	5.816	10.388
2.812	1.939	4.680	4.168	5.010	8.475	5.914	10.432
3.034	2.011	4.698	4.219	5.014	8.612	6.014	10.474
3.260	2.098	4.720	4.274	5.018	8.725	6.146	10.522
3.392	2.156	4.740	4.328	5.022	8.805	6.290	10.569
3.518	2.219	4.766	4.402	5.026	8.885	6.418	10.605
3.630	2.283	4.788	4.465	5.030	8.951	6.568	10.645
3.716	2.339	4.814	4.546	5.034	9.009	6.718	10.678
3.822	2.417	4.820	4.566	5.038	9.060	6.914	10.721
3.916	2.499	4.826	4.588	5.042	9.107	7.098	10.755
3.974	2.557	4.832	4.609	5.046	9.147	7.300	10.789
4.036	2.630	4.838	4.630	5.050	9.187	7.452	10.812
4.074	2.679	4.850	4.675	5.054	9.219	7.618	10.839
4.118	2.745	4.862	4.722	5.070	9.333	7.768	10.859
4.160	2.813	4.874	4.774	5.084	9.416	7.910	10.877
4.202	2.892	4.886	4.827	5.096	9.473	8.050	10.893
4.244	2.980	4.896	4.878	5.110	9.536	8.258	10.918
4.266	3.034	4.902	4.909	5.122	9.581	8.398	10.934
4.294	3.104	4.912	4.965	5.136	9.628	8.548	10.947
4.324	3.186	4.918	5.002	5.150	9.672	8.828	10.976
4.352	3.267	4.928	5.069	5.174	9.736	9.234	11.012
4.368	3.314	4.936	5.129	5.196	9.788		
4.386	3.368	4.942	5.178	5.220	9.838		

pK_{a1} = 4.770

Table AD22. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.057.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.008	4.506	3.773	4.924	5.996	5.514	10.206
0.274	1.044	4.518	3.808	4.928	6.219	5.566	10.242
0.534	1.080	4.530	3.842	4.930	6.407	5.702	10.319
0.768	1.115	4.546	3.886	4.932	6.675	5.892	10.408
0.990	1.148	4.558	3.919	4.934	7.083	6.044	10.466
1.244	1.191	4.568	3.946	4.938	7.666	6.174	10.509
1.494	1.234	4.582	3.985	4.940	7.991	6.352	10.562
1.742	1.280	4.592	4.012	4.942	8.181	6.526	10.606
1.970	1.327	4.602	4.039	4.944	8.301	6.676	10.641
2.238	1.387	4.616	4.078	4.946	8.393	6.886	10.683
2.472	1.445	4.632	4.122	4.948	8.474	7.078	10.719
2.674	1.501	4.646	4.159	4.950	8.538	7.292	10.754
2.928	1.580	4.660	4.197	4.952	8.612	7.492	10.784
3.166	1.668	4.670	4.236	4.954	8.665	7.718	10.817
3.278	1.716	4.686	4.271	4.956	8.720	7.898	10.837
3.396	1.771	4.700	4.310	4.958	8.761	8.122	10.863
3.524	1.839	4.714	4.353	4.962	8.835	8.300	10.883
3.640	1.910	4.724	4.381	4.964	8.871	8.534	10.907
3.760	1.999	4.742	4.442	4.966	8.905	8.736	10.927
3.884	2.111	4.754	4.482	4.976	9.036	9.006	10.950
3.996	2.242	4.766	4.523	4.984	9.122	9.180	10.965
4.094	2.397	4.776	4.561	4.992	9.194	9.400	10.985
4.206	2.662	4.784	4.591	5.000	9.256		
4.246	2.779	4.798	4.647	5.008	9.309		
4.278	2.913	4.808	4.688	5.018	9.366		
4.304	3.021	4.822	4.754	5.030	9.427		
4.328	3.126	4.836	4.823	5.042	9.480		
4.336	3.161	4.852	4.917	5.056	9.535		
4.342	3.188	4.860	4.972	5.070	9.583		
4.354	3.239	4.866	5.015	5.084	9.630		
4.368	3.297	4.874	5.080	5.096	9.663		
4.376	3.330	4.882	5.153	5.106	9.691		
4.392	3.394	4.890	5.235	5.134	9.757		
4.404	3.438	4.896	5.306	5.166	9.820		
4.420	3.497	4.902	5.391	5.214	9.901		
4.430	3.532	4.908	5.495	5.250	9.952		
4.440	3.566	4.912	5.576	5.288	10.001		
4.456	3.619	4.916	5.671	5.334	10.052		
4.472	3.670	4.918	5.735	5.390	10.105		
4.486	3.713	4.922	5.868	5.448	10.155		

pK_{a1} = 5.131

Table AD23. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.065.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.001	4.486	3.669	4.952	6.953	7.422	10.766
0.270	1.035	4.500	3.712	4.954	7.406	7.554	10.784
0.574	1.078	4.514	3.754	4.956	7.732	7.694	10.806
0.836	1.117	4.528	3.794	4.958	7.985	7.816	10.823
1.090	1.157	4.540	3.828	4.962	8.241	7.952	10.840
1.366	1.204	4.550	3.855	4.966	8.425	8.100	10.857
1.640	1.252	4.562	3.889	4.968	8.500	8.268	10.875
1.902	1.302	4.572	3.916	4.972	8.618	8.446	10.894
2.152	1.358	4.584	3.949	4.976	8.712	8.586	10.909
2.394	1.415	4.598	3.987	4.980	8.800	8.720	10.922
2.604	1.471	4.618	4.040	4.984	8.872	8.874	10.936
2.816	1.534	4.636	4.089	4.988	8.936	9.024	10.950
3.050	1.612	4.652	4.132	4.994	9.011	9.268	10.971
3.290	1.709	4.668	4.175	5.000	9.086	9.468	10.989
3.546	1.840	4.682	4.215	5.020	9.246		
3.664	1.914	4.696	4.253	5.034	9.339		
3.780	2.004	4.712	4.300	5.052	9.426		
4.036	2.276	4.728	4.346	5.068	9.500		
4.136	2.450	4.744	4.395	5.082	9.552		
4.240	2.722	4.760	4.446	5.102	9.617		
4.288	2.898	4.778	4.506	5.128	9.690		
4.316	3.015	4.794	4.565	5.148	9.736		
4.342	3.130	4.812	4.633	5.238	9.900		
4.348	3.155	4.832	4.721	5.334	10.023		
4.358	3.198	4.848	4.800	5.426	10.112		
4.370	3.248	4.864	4.890	5.616	10.253		
4.382	3.297	4.880	5.005	5.756	10.331		
4.392	3.340	4.890	5.075	5.986	10.423		
4.402	3.377	4.902	5.197	6.208	10.505		
4.412	3.416	4.912	5.297	6.372	10.553		
4.424	3.460	4.922	5.437	6.514	10.591		
4.434	3.497	4.932	5.639	6.700	10.636		
4.444	3.532	4.940	5.875	6.854	10.669		
4.458	3.578	4.944	6.078	7.060	10.708		
4.470	3.619	4.948	6.356	7.230	10.736		

pK_{a1} = 5.131

Table AD24. Potentiometric Titration Data for the pK_a Values of Acetic Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Acetic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.066.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.000	4.378	3.316	4.894	5.190	6.562	10.602
0.256	1.032	4.396	3.388	4.900	5.254	6.736	10.642
0.500	1.066	4.428	3.505	4.906	5.331	6.918	10.680
0.748	1.102	4.444	3.560	4.912	5.420	7.094	10.712
1.006	1.141	4.462	3.617	4.916	5.487	7.278	10.741
1.232	1.177	4.474	3.657	4.920	5.568	7.436	10.766
1.458	1.217	4.484	3.688	4.924	5.662	7.580	10.788
1.714	1.264	4.496	3.724	4.928	5.782	7.710	10.806
1.946	1.311	4.506	3.754	4.934	6.036	7.836	10.822
2.218	1.371	4.522	3.800	4.938	6.290	7.968	10.840
2.460	1.431	4.538	3.845	4.944	6.936	8.136	10.858
2.724	1.504	4.556	3.895	4.966	8.563	8.400	10.887
2.950	1.577	4.572	3.937	4.994	9.042	8.626	10.910
3.216	1.678	4.590	3.987	5.012	9.208	8.940	10.937
3.486	1.806	4.608	4.035	5.030	9.328	9.186	10.959
3.596	1.872	4.626	4.083	5.046	9.414	9.460	10.984
3.730	1.964	4.640	4.120	5.064	9.494		
3.820	2.038	4.656	4.165	5.084	9.566		
3.920	2.137	4.676	4.220	5.102	9.623		
3.990	2.220	4.694	4.270	5.120	9.673		
4.060	2.323	4.716	4.334	5.170	9.781		
4.132	2.457	4.740	4.408	5.216	9.864		
4.162	2.526	4.764	4.488	5.258	9.930		
4.186	2.587	4.788	4.573	5.298	9.982		
4.208	2.649	4.806	4.642	5.352	10.045		
4.232	2.724	4.830	4.750	5.400	10.091		
4.252	2.794	4.834	4.771	5.456	10.139		
4.260	2.825	4.840	4.801	5.560	10.216		
4.272	2.872	4.846	4.835	5.648	10.270		
4.290	2.944	4.856	4.892	5.738	10.320		
4.314	3.046	4.864	4.941	5.826	10.363		
4.322	3.080	4.872	4.998	5.920	10.404		
4.332	3.123	4.880	5.064	6.054	10.457		
4.344	3.176	4.886	5.112	6.194	10.503		
4.360	3.243	4.890	5.149	6.356	10.550		

$pK_{a1} = 5.129$

Table AD25. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.010.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.019	3.784	2.757	5.064	3.961	5.478	9.981
0.108	2.031	3.876	2.794	5.090	4.026	5.506	10.083
0.222	2.045	3.984	2.841	5.112	4.090	5.532	10.163
0.330	2.058	4.082	2.889	5.134	4.161	5.556	10.223
0.454	2.074	4.190	2.946	5.158	4.258	5.586	10.290
0.560	2.087	4.272	2.992	5.184	4.341	5.618	10.353
0.668	2.101	4.346	3.039	5.210	4.457	5.646	10.401
0.786	2.118	4.398	3.075	5.224	4.521	5.676	10.446
0.902	2.133	4.438	3.104	5.238	4.595	5.708	10.494
1.006	2.148	4.464	3.123	5.252	4.670	5.742	10.536
1.108	2.162	4.500	3.151	5.264	4.744	5.776	10.575
1.234	2.181	4.532	3.178	5.276	4.836	5.840	10.637
1.380	2.203	4.568	3.210	5.288	4.919	5.900	10.689
1.464	2.216	4.604	3.243	5.298	5.004	5.968	10.742
1.598	2.237	4.634	3.271	5.310	5.135	6.042	10.795
1.718	2.256	4.668	3.307	5.322	5.277	6.122	10.841
1.850	2.279	4.704	3.345	5.336	5.527	6.198	10.884
1.968	2.300	4.742	3.389	5.348	5.869	6.292	10.926
2.100	2.322	4.766	3.420	5.352	6.085	6.378	10.964
2.204	2.343	4.790	3.452	5.356	6.393	6.464	10.999
2.308	2.362	4.810	3.479	5.362	7.194	6.520	11.024
2.406	2.380	4.828	3.503	5.368	8.285		
2.526	2.406	4.846	3.530	5.372	8.702		
2.630	2.429	4.856	3.545	5.378	8.956		
2.718	2.448	4.868	3.563	5.382	9.097		
2.812	2.469	4.884	3.590	5.388	9.228		
2.906	2.491	4.904	3.623	5.392	9.309		
2.992	2.513	4.926	3.661	5.396	9.376		
3.092	2.538	4.942	3.691	5.402	9.455		
3.182	2.561	4.960	3.724	5.408	9.525		
3.290	2.592	4.978	3.760	5.414	9.586		
3.388	2.621	4.994	3.794	5.424	9.673		
3.480	2.650	5.010	3.829	5.434	9.750		
3.586	2.685	5.028	3.871	5.442	9.804		
3.688	2.720	5.044	3.906	5.448	9.840		

pK_{a1} = 3.671

Table AD26. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.010.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.017	3.938	2.816	5.092	4.021	5.700	10.474
0.110	2.030	4.038	2.862	5.110	4.074	5.740	10.526
0.256	2.047	4.136	2.911	5.126	4.122	5.774	10.566
0.386	2.064	4.242	2.967	5.142	4.174	5.816	10.610
0.492	2.077	4.336	3.027	5.156	4.221	5.900	10.684
0.576	2.087	4.388	3.062	5.170	4.270	5.972	10.739
0.672	2.101	4.438	3.098	5.182	4.317	6.048	10.790
0.786	2.116	4.476	3.127	5.198	4.382	6.138	10.843
0.908	2.132	4.516	3.159	5.216	4.463	6.230	10.891
1.042	2.151	4.560	3.196	5.226	4.511	6.326	10.936
1.186	2.171	4.596	3.229	5.238	4.572	6.426	10.979
1.330	2.193	4.628	3.260	5.254	4.658	6.504	11.011
1.494	2.218	4.658	3.289	5.272	4.770		
1.640	2.241	4.680	3.313	5.282	4.839		
1.836	2.273	4.700	3.334	5.290	4.902		
1.968	2.296	4.716	3.353	5.300	4.985		
2.082	2.316	4.744	3.386	5.318	5.173		
2.220	2.342	4.768	3.416	5.336	5.444		
2.344	2.366	4.786	3.440	5.348	5.762		
2.452	2.387	4.808	3.468	5.360	7.248		
2.586	2.416	4.826	3.494	5.372	8.713		
2.700	2.440	4.846	3.525	5.382	9.064		
2.806	2.464	4.866	3.554	5.392	9.287		
2.896	2.485	4.880	3.575	5.402	9.435		
2.972	2.504	4.902	3.612	5.412	9.546		
3.048	2.523	4.920	3.643	5.424	9.661		
3.136	2.546	4.938	3.675	5.436	9.753		
3.218	2.568	4.956	3.708	5.452	9.852		
3.308	2.593	4.970	3.736	5.464	9.909		
3.426	2.629	4.988	3.772	5.498	10.047		
3.516	2.658	5.006	3.811	5.540	10.173		
3.604	2.686	5.028	3.860	5.574	10.260		
3.708	2.724	5.048	3.906	5.604	10.321		
3.782	2.752	5.060	3.935	5.636	10.379		
3.856	2.781	5.076	3.977	5.668	10.428		

$pK_{a1} = 3.681$

Table AD27. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.113.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.921	3.982	2.744	4.978	3.711	5.390	9.395
0.132	1.935	4.048	2.775	4.988	3.734	5.400	9.479
0.272	1.953	4.108	2.805	5.008	3.756	5.410	9.551
0.444	1.975	4.160	2.834	5.016	3.776	5.420	9.617
0.580	1.992	4.206	2.859	5.028	3.806	5.432	9.737
0.710	2.009	4.252	2.885	5.040	3.836	5.452	9.782
0.844	2.027	4.296	2.913	5.056	3.879	5.462	9.825
0.976	2.045	4.324	2.931	5.070	3.919	5.472	9.864
1.124	2.066	4.364	2.957	5.084	3.960	5.482	9.901
1.234	2.082	4.400	2.983	5.098	4.005	5.494	9.940
1.368	2.102	4.424	3.001	5.112	4.051	5.504	9.972
1.510	2.125	4.452	3.020	5.126	4.100	5.534	10.052
1.646	2.146	4.480	3.044	5.140	4.151	5.566	10.125
1.794	2.170	4.510	3.068	5.150	4.191	5.588	10.170
1.920	2.192	4.536	3.090	5.162	4.240	5.614	10.217
2.058	2.217	4.564	3.115	5.172	4.282	5.640	10.262
2.172	2.239	4.592	3.141	5.186	4.346	5.670	10.307
2.278	2.258	4.620	3.168	5.198	4.407	5.698	10.345
2.386	2.280	4.646	3.195	5.210	4.470	5.760	10.416
2.488	2.299	4.674	3.224	5.222	4.541	5.822	10.478
2.586	2.320	4.700	3.253	5.232	4.605	5.882	10.533
2.686	2.342	4.722	3.279	5.242	4.673	5.940	10.578
2.792	2.365	4.744	3.306	5.254	4.756	5.994	10.617
2.896	2.390	4.768	3.337	5.264	4.850	6.048	10.652
2.990	2.413	4.792	3.369	5.274	4.950	6.106	10.688
3.096	2.440	4.814	3.448	5.286	5.089	6.164	10.718
3.198	2.468	4.846	3.487	5.296	5.248	6.260	10.766
3.288	2.493	4.870	3.517	5.308	5.506	6.364	10.811
3.372	2.518	4.888	3.545	5.318	5.911	6.466	10.851
3.466	2.547	4.904	3.566	5.328	7.080	6.560	10.886
3.566	2.579	4.916	3.592	5.340	8.446	6.656	10.917
3.698	2.626	4.930	3.615	5.350	8.807	6.780	10.953
3.782	2.658	4.942	3.643	5.360	9.026	6.900	10.986
3.878	2.698	4.956	3.668	5.370	9.179	7.010	11.017
3.928	2.719	4.968	3.689	5.380	9.296		

pK_{a1} = 3.577

Table AD28. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.117.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.919	4.368	2.956	5.066	3.908	5.328	7.510
0.150	1.934	4.414	2.988	5.076	3.937	5.332	8.115
0.294	1.953	4.442	3.010	5.088	3.973	5.336	8.418
0.412	1.968	4.470	3.032	5.096	3.997	5.340	8.591
0.540	1.983	4.502	3.056	5.104	4.022	5.344	8.731
0.650	1.998	4.528	3.080	5.114	4.060	5.348	8.832
0.778	2.015	4.554	3.101	5.124	4.094	5.352	8.925
0.888	2.030	4.578	3.124	5.134	4.130	5.358	9.037
1.026	2.050	4.600	3.145	5.142	4.160	5.370	9.216
1.156	2.067	4.626	3.171	5.152	4.200	5.380	9.321
1.276	2.086	4.648	3.193	5.162	4.242	5.390	9.418
1.376	2.100	4.672	3.219	5.172	4.285	5.400	9.496
1.510	2.122	4.694	3.244	5.180	4.321	5.412	9.580
1.700	2.152	4.720	3.274	5.186	4.350	5.422	9.644
1.860	2.178	4.732	3.289	5.196	4.402	5.434	9.714
2.006	2.204	4.748	3.309	5.204	4.444	5.446	9.768
2.144	2.229	4.762	3.327	5.214	4.500	5.462	9.835
2.380	2.255	4.776	3.345	5.220	4.537	5.476	9.889
2.422	2.281	4.790	3.364	5.226	4.575	5.488	9.928
2.546	2.308	4.804	3.384	5.232	4.615	5.500	9.968
2.660	2.332	4.820	3.406	5.238	4.655	5.510	9.993
2.770	2.357	4.834	3.428	5.242	4.685	5.522	10.029
2.860	2.378	4.850	3.453	5.246	4.714	5.534	10.060
2.960	2.402	4.866	3.479	5.250	4.754	5.566	10.131
3.048	2.423	4.884	3.508	5.254	4.776	5.596	10.192
3.138	2.448	4.900	3.537	5.258	4.813	5.626	10.242
3.228	2.472	4.912	3.558	5.264	4.865	5.656	10.289
3.330	2.501	4.922	3.576	5.268	4.903	5.710	10.359
3.422	2.529	4.936	3.603	5.272	4.944	5.770	10.427
3.530	2.565	4.948	3.626	5.276	4.991	5.822	10.478
3.620	2.596	4.958	3.646	5.282	5.061	5.882	10.531
3.722	2.631	4.970	3.671	5.286	5.113	5.938	10.575
3.806	2.665	4.980	3.693	5.290	5.174	5.990	10.613
3.886	2.698	4.990	3.716	5.294	5.237	6.096	10.679
3.978	2.738	5.002	3.743	5.298	5.315	6.212	10.740
4.058	2.776	5.012	3.766	5.302	5.403	6.332	10.794
4.124	2.810	5.020	3.785	5.308	5.576	6.448	10.840
4.180	2.840	5.028	3.805	5.312	5.719	6.568	10.886
4.222	2.864	5.036	3.826	5.316	5.916	6.692	10.926
4.270	2.893	5.044	3.846	5.320	6.196	6.834	10.967
4.318	2.923	5.054	3.874	5.324	6.712	6.966	11.005

$pK_{a1} = 3.528$

Table AD29. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.145.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.885	4.302	2.857	5.126	3.957	5.422	9.257
0.142	1.901	4.350	2.886	5.132	3.975	5.434	9.357
0.334	1.924	4.388	2.912	5.142	4.010	5.444	9.427
0.544	1.951	4.414	2.929	5.152	4.045	5.456	9.505
0.678	1.966	4.444	2.951	5.162	4.081	5.466	9.558
0.846	1.990	4.486	2.983	5.170	4.111	5.496	9.692
1.002	2.011	4.516	3.007	5.182	4.159	5.520	9.778
1.190	2.038	4.544	3.030	5.192	4.202	5.548	9.862
1.358	2.063	4.568	3.050	5.200	4.237	5.578	9.938
1.522	2.087	4.592	3.071	5.208	4.272	5.604	9.999
1.704	2.116	4.616	3.094	5.216	4.312	5.628	10.048
1.890	2.146	4.640	3.117	5.224	4.353	5.658	10.100
2.064	2.177	4.660	3.137	5.232	4.397	5.694	10.155
2.220	2.205	4.686	3.163	5.240	4.440	5.742	10.218
2.338	2.226	4.712	3.192	5.248	4.487	5.786	10.268
2.456	2.249	4.734	3.217	5.256	4.538	5.850	10.333
2.554	2.271	4.756	3.241	5.264	4.591	5.918	10.393
2.652	2.291	4.778	3.268	5.272	4.649	5.992	10.449
2.750	2.312	4.802	3.300	5.280	4.710	6.106	10.522
2.840	2.333	4.824	3.329	5.288	4.781	6.230	10.587
2.932	2.354	4.846	3.360	5.296	4.858	6.338	10.638
3.046	2.382	4.866	3.391	5.306	4.974	6.446	10.684
3.150	2.409	4.886	3.420	5.314	5.071	6.568	10.729
3.230	2.430	4.906	3.454	5.322	5.209	6.688	10.769
3.298	2.449	4.926	3.486	5.332	5.430	6.818	10.808
3.398	2.478	4.944	3.519	5.340	5.672	6.936	10.840
3.446	2.492	4.970	3.568	5.344	5.832	7.066	10.873
3.526	2.518	4.982	3.593	5.350	6.178	7.266	10.917
3.616	2.548	5.000	3.630	5.354	6.666	7.438	10.952
3.686	2.572	5.012	3.654	5.358	7.243	7.638	10.988
3.746	2.594	5.024	3.682	5.362	7.863	7.754	11.011
3.802	2.616	5.036	3.710	5.366	8.165		
3.860	2.638	5.048	3.738	5.370	8.387		
3.918	2.663	5.062	3.773	5.374	8.513		
3.972	2.685	5.072	3.799	5.378	8.625		
4.030	2.713	5.082	3.827	5.382	8.726		
4.086	2.739	5.092	3.854	5.386	8.804		
4.146	2.769	5.102	3.882	5.390	8.881		
4.202	2.799	5.110	3.907	5.400	9.024		
4.256	2.830	5.118	3.932	5.410	9.137		

$pK_{a1} = 3.484$

Table AD30. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.143.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.885	4.356	2.885	5.108	3.862	5.574	9.879
0.160	1.903	4.382	2.901	5.120	3.896	5.594	9.931
0.342	1.926	4.416	2.924	5.132	3.934	5.608	9.963
0.516	1.946	4.446	2.945	5.148	3.984	5.622	9.993
0.700	1.971	4.474	2.966	5.164	4.039	5.662	10.066
0.870	1.993	4.506	2.991	5.170	4.060	5.704	10.134
1.014	2.013	4.536	3.015	5.176	4.082	5.748	10.195
1.158	2.033	4.562	3.036	5.186	4.120	5.792	10.247
1.330	2.058	4.588	3.059	5.196	4.161	5.854	10.312
1.468	2.079	4.614	3.082	5.206	4.202	5.906	10.360
1.612	2.102	4.644	3.109	5.216	4.246	5.966	10.410
1.770	2.127	4.670	3.135	5.228	4.303	6.020	10.449
1.916	2.151	4.696	3.162	5.244	4.383	6.102	10.504
2.068	2.177	4.720	3.186	5.256	4.449	6.182	10.549
2.210	2.203	4.740	3.210	5.268	4.522	6.304	10.609
2.326	2.225	4.748	3.218	5.278	4.589	6.448	10.671
2.440	2.246	4.760	3.233	5.290	4.674	6.626	10.735
2.552	2.269	4.770	3.245	5.302	4.772	6.784	10.784
2.670	2.294	4.780	3.257	5.312	4.866	6.962	10.836
2.760	2.313	4.794	3.275	5.324	5.006	7.134	10.877
2.854	2.335	4.810	3.295	5.338	5.226	7.292	10.912
2.968	2.362	4.822	3.311	5.352	5.546	7.568	10.968
3.082	2.390	4.838	3.333	5.364	6.028	7.716	10.992
3.200	2.421	4.860	3.364	5.374	7.116	7.838	11.018
3.288	2.445	4.878	3.391	5.384	8.169		
3.398	2.476	4.898	3.421	5.392	8.513		
3.500	2.508	4.914	3.447	5.400	8.722		
3.606	2.542	4.928	3.470	5.408	8.868		
3.686	2.570	4.942	3.494	5.416	8.992		
3.784	2.606	4.956	3.520	5.424	9.091		
3.852	2.632	4.974	3.552	5.432	9.181		
3.924	2.661	4.990	3.584	5.440	9.257		
3.992	2.691	5.006	3.616	5.448	9.324		
4.054	2.720	5.024	3.653	5.456	9.384		
4.098	2.741	5.038	3.685	5.474	9.500		
4.142	2.762	5.054	3.721	5.488	9.574		
4.186	2.785	5.064	3.746	5.506	9.655		
4.230	2.810	5.072	3.765	5.522	9.718		
4.278	2.837	5.084	3.796	5.536	9.767		
4.320	2.862	5.098	3.833	5.554	9.823		

$pK_{a1} = 3.476$

Table AD31. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.294.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.744	4.490	2.902	5.146	4.147	5.444	9.835
0.170	1.764	4.520	2.929	5.156	4.194	5.456	9.870
0.348	1.786	4.550	2.956	5.166	4.245	5.468	9.902
0.510	1.807	4.580	2.985	5.174	4.288	5.480	9.932
0.670	1.828	4.606	3.012	5.182	4.333	5.492	9.959
0.840	1.851	4.632	3.042	5.190	4.382	5.506	9.991
1.058	1.881	4.658	3.068	5.198	4.435	5.530	10.036
1.270	1.912	4.682	3.096	5.206	4.489	5.548	10.068
1.434	1.936	4.706	3.127	5.212	4.533	5.576	10.114
1.598	1.963	4.732	3.159	5.220	4.597	5.616	10.171
1.778	1.994	4.752	3.185	5.228	4.673	5.658	10.225
1.994	2.031	4.772	3.212	5.236	4.755	5.694	10.266
2.146	2.059	4.784	3.229	5.242	4.820	5.728	10.301
2.282	2.084	4.794	3.244	5.248	4.895	5.768	10.340
2.430	2.114	4.806	3.262	5.256	5.010	5.808	10.373
2.590	2.147	4.824	3.291	5.262	5.115	5.848	10.405
2.746	2.182	4.840	3.317	5.270	5.300	5.880	10.430
2.914	2.222	4.858	3.348	5.278	5.588	5.922	10.459
3.116	2.274	4.872	3.372	5.284	5.978	5.954	10.480
3.272	2.318	4.886	3.398	5.294	7.856	5.988	10.502
3.460	2.376	4.900	3.425	5.302	8.613	6.038	10.532
3.572	2.414	4.920	3.463	5.306	8.787	6.082	10.553
3.660	2.446	4.942	3.509	5.310	8.897	6.132	10.582
3.732	2.473	4.954	3.536	5.312	8.950	6.210	10.618
3.808	2.504	4.966	3.563	5.316	9.019	6.300	10.655
3.880	2.534	4.980	3.597	5.320	9.091	6.420	10.702
3.952	2.567	4.990	3.622	5.324	9.148	6.534	10.741
4.016	2.597	5.000	3.646	5.328	9.199	6.660	10.781
4.058	2.615	5.012	3.678	5.332	9.255	6.780	10.813
4.102	2.641	5.026	3.716	5.338	9.306	6.912	10.848
4.150	2.665	5.036	3.743	5.344	9.358	7.076	10.886
4.200	2.696	5.048	3.779	5.348	9.393	7.240	10.921
4.246	2.725	5.060	3.816	5.352	9.428	7.388	10.950
4.276	2.743	5.072	3.855	5.368	9.525	7.514	10.973
4.306	2.762	5.084	3.896	5.376	9.572	7.642	10.993
4.336	2.784	5.096	3.938	5.386	9.622	7.750	11.016
4.368	2.806	5.106	3.977	5.400	9.685		
4.398	2.828	5.116	4.016	5.408	9.715		
4.428	2.851	5.126	4.057	5.418	9.755		
4.460	2.877	5.136	4.100	5.430	9.792		

$pK_{a1} = 3.497$

Table AD32. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.294.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.745	4.686	3.094	5.216	4.529	5.662	10.219
0.170	1.764	4.706	3.118	5.222	4.578	5.704	10.267
0.388	1.792	4.730	3.148	5.228	4.631	5.744	10.307
0.546	1.811	4.748	3.172	5.236	4.703	5.788	10.348
0.720	1.836	4.766	3.197	5.242	4.771	5.836	10.388
0.868	1.856	4.788	3.227	5.248	4.840	5.890	10.430
1.020	1.877	4.808	3.257	5.258	4.962	5.950	10.471
1.198	1.902	4.830	3.292	5.266	5.096	6.018	10.512
1.366	1.928	4.852	3.328	5.274	5.266	6.096	10.555
1.530	1.953	4.872	3.364	5.280	5.481	6.178	10.596
1.692	1.980	4.896	3.406	5.282	5.596	6.280	10.641
1.848	2.005	4.920	3.453	5.286	5.833	6.372	10.679
2.004	2.033	4.932	3.477	5.290	6.220	6.466	10.713
2.152	2.060	4.940	3.493	5.294	7.109	6.562	10.745
2.300	2.087	4.952	3.520	5.296	7.842	6.660	10.776
2.446	2.118	4.964	3.546	5.300	8.325	6.774	10.806
2.612	2.152	4.974	3.569	5.306	8.672	6.856	10.832
2.778	2.190	4.986	3.597	5.310	8.771	6.952	10.854
2.932	2.227	4.996	3.622	5.314	8.872	7.050	10.878
3.062	2.260	5.006	3.647	5.318	8.952	7.140	10.897
3.358	2.344	5.018	3.678	5.322	9.029	7.236	10.918
3.484	2.384	5.030	3.711	5.324	9.093	7.324	10.936
3.602	2.425	5.040	3.739	5.328	9.131	7.424	10.954
3.706	2.462	5.050	3.768	5.340	9.263	7.528	10.974
3.830	2.512	5.062	3.805	5.352	9.374	7.674	10.997
3.920	2.551	5.072	3.837	5.360	9.434	7.802	11.024
4.002	2.588	5.082	3.870	5.368	9.493		
4.082	2.628	5.092	3.903	5.380	9.640		
4.180	2.682	5.102	3.940	5.408	9.687		
4.270	2.737	5.112	3.979	5.422	9.737		
4.324	2.772	5.124	4.026	5.436	9.791		
4.366	2.801	5.136	4.076	5.448	9.825		
4.412	2.836	5.146	4.122	5.460	9.859		
4.454	2.868	5.158	4.177	5.476	9.903		
4.500	2.908	5.168	4.227	5.490	9.936		
4.544	2.946	5.178	4.281	5.500	9.959		
4.574	2.974	5.186	4.325	5.512	9.986		
4.606	3.007	5.196	4.386	5.544	10.046		
4.634	3.036	5.204	4.436	5.574	10.098		
4.662	3.066	5.210	4.479	5.606	10.148		

$pK_{a1} = 3.447$

Table AD33. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.499.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.532	4.614	2.750	5.222	3.983	5.430	9.223
0.194	1.554	4.636	2.770	5.226	4.003	5.434	9.257
0.426	1.584	4.658	2.793	5.232	4.033	5.438	9.289
0.568	1.601	4.680	2.816	5.240	4.075	5.442	9.319
0.732	1.622	4.706	2.843	5.246	4.105	5.446	9.348
0.894	1.645	4.724	2.864	5.252	4.139	5.450	9.373
1.038	1.663	4.748	2.892	5.258	4.173	5.456	9.412
1.184	1.684	4.768	2.916	5.262	4.197	5.462	9.447
1.338	1.708	4.788	2.942	5.266	4.221	5.468	9.481
1.484	1.730	4.808	2.969	5.274	4.272	5.472	9.502
1.624	1.752	4.830	2.999	5.278	4.297	5.490	9.581
1.762	1.774	4.854	3.034	5.282	4.324	5.506	9.641
1.876	1.794	4.866	3.053	5.288	4.367	5.518	9.682
2.012	1.817	4.880	3.075	5.294	4.412	5.540	9.748
2.138	1.839	4.890	3.090	5.300	4.459	5.562	9.806
2.260	1.862	4.898	3.104	5.306	4.511	5.586	9.863
2.392	1.887	4.908	3.120	5.310	4.548	5.612	9.914
2.504	1.910	4.926	3.151	5.314	4.584	5.636	9.958
2.620	1.934	4.944	3.183	5.318	4.624	5.666	10.007
2.724	1.957	4.960	3.213	5.324	4.695	5.696	10.051
2.862	1.987	4.974	3.241	5.330	4.769	5.726	10.090
2.950	2.009	4.988	3.270	5.336	4.853	5.778	10.151
3.052	2.034	5.000	3.294	5.340	4.917	5.832	10.205
3.148	2.059	5.012	3.320	5.344	4.992	5.894	10.261
3.250	2.086	5.026	3.350	5.348	5.081	5.954	10.307
3.364	2.120	5.040	3.383	5.352	5.184	6.030	10.360
3.444	2.144	5.060	3.431	5.356	5.310	6.102	10.404
3.538	2.174	5.072	3.461	5.358	5.387	6.178	10.446
3.632	2.205	5.082	3.488	5.362	5.551	6.260	10.488
3.742	2.246	5.092	3.515	5.366	5.791	6.346	10.525
3.818	2.274	5.102	3.544	5.368	6.006	6.434	10.563
3.910	2.312	5.112	3.575	5.372	6.921	6.570	10.612
3.994	2.349	5.122	3.603	5.376	7.738	6.714	10.657
4.060	2.380	5.136	3.648	5.380	8.158	6.846	10.696
4.102	2.400	5.158	3.722	5.384	8.400	6.968	10.728
4.152	2.427	5.166	3.750	5.388	8.547	7.112	10.761
4.208	2.456	5.174	3.779	5.392	8.672	7.234	10.791
4.266	2.490	5.182	3.810	5.396	8.765	7.360	10.813
4.322	2.524	5.188	3.834	5.400	8.848	7.514	10.844
4.374	2.558	5.194	3.859	5.404	8.913	7.698	10.876
4.420	2.590	5.198	3.876	5.408	8.975	7.890	10.906
4.482	2.636	5.204	3.902	5.414	9.056	8.110	10.938
4.552	2.694	5.210	3.928	5.420	9.120	8.306	10.963
4.594	2.731	5.216	3.956	5.426	9.187	8.524	10.990

$pK_{a1} = 3.563$

Table AD34. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.497.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.534	4.744	2.896	5.284	4.390	5.490	9.589
0.178	1.555	4.772	2.931	5.290	4.439	5.504	9.644
0.362	1.577	4.800	2.967	5.296	4.486	5.514	9.680
0.520	1.596	4.830	3.010	5.300	4.520	5.526	9.717
0.702	1.620	4.856	3.048	5.304	4.559	5.534	9.740
0.914	1.648	4.884	3.092	5.308	4.597	5.544	9.768
1.144	1.682	4.912	3.139	5.316	4.683	5.574	9.839
1.314	1.706	4.926	3.164	5.320	4.732	5.614	9.922
1.504	1.735	4.942	3.193	5.324	4.785	5.650	9.984
1.662	1.759	4.956	3.219	5.328	4.839	5.678	10.027
1.784	1.781	4.970	3.247	5.332	4.896	5.708	10.067
1.918	1.803	4.986	3.280	5.336	4.968	5.744	10.114
2.048	1.826	5.000	3.309	5.340	5.050	5.812	10.185
2.218	1.856	5.012	3.335	5.344	5.138	5.872	10.240
2.406	1.892	5.024	3.363	5.348	5.252	5.940	10.296
2.524	1.917	5.038	3.395	5.352	5.384	6.010	10.343
2.634	1.939	5.052	3.429	5.356	5.563	6.084	10.391
2.758	1.966	5.064	3.460	5.360	5.814	6.186	10.447
2.872	1.993	5.076	3.492	5.364	6.275	6.284	10.495
2.970	2.016	5.094	3.542	5.368	7.193	6.392	10.540
3.068	2.039	5.106	3.577	5.372	7.883	6.528	10.592
3.162	2.066	5.116	3.607	5.376	8.222	6.686	10.644
3.252	2.089	5.126	3.639	5.382	8.496	6.854	10.691
3.346	2.118	5.136	3.671	5.386	8.619	7.010	10.730
3.440	2.146	5.148	3.713	5.392	8.767	7.154	10.766
3.524	2.172	5.160	3.755	5.398	8.874	7.292	10.797
3.612	2.203	5.170	3.793	5.404	8.968	7.466	10.829
3.684	2.228	5.182	3.838	5.408	9.019	7.616	10.856
3.784	2.265	5.194	3.890	5.410	9.049	7.766	10.880
3.882	2.304	5.202	3.923	5.414	9.095	7.938	10.911
4.006	2.359	5.206	3.942	5.418	9.138	8.106	10.931
4.084	2.396	5.212	3.971	5.422	9.178	8.270	10.956
4.154	2.432	5.216	3.989	5.426	9.204	8.460	10.989
4.214	2.465	5.222	4.018	5.430	9.249	8.692	11.010
4.280	2.503	5.228	4.050	5.434	9.282		
4.342	2.542	5.234	4.080	5.438	9.312		
4.406	2.586	5.240	4.112	5.442	9.340		
4.466	2.630	5.246	4.145	5.450	9.391		
4.530	2.681	5.250	4.168	5.454	9.417		
4.586	2.730	5.256	4.203	5.460	9.450		
4.618	2.760	5.260	4.229	5.466	9.480		
4.652	2.794	5.264	4.254	5.472	9.501		
4.686	2.829	5.270	4.293	5.478	9.542		
4.716	2.863	5.278	4.347	5.484	9.567		

$pK_{a1} = 3.587$

Table AD35. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.690.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.343	4.596	2.577	5.180	3.812	5.598	9.856
0.276	1.374	4.644	2.628	5.192	3.869	5.610	9.881
0.562	1.412	4.692	2.681	5.200	3.914	5.650	9.949
0.836	1.448	4.716	2.712	5.210	3.965	5.700	10.009
1.116	1.487	4.738	2.740	5.220	4.018	5.742	10.059
1.296	1.510	4.756	2.764	5.230	4.065	5.880	10.188
1.466	1.538	4.776	2.791	5.240	4.126	6.068	10.315
1.600	1.559	4.800	2.827	5.250	4.186	6.162	10.367
1.778	1.587	4.818	2.855	5.256	4.248	6.264	10.416
1.966	1.620	4.842	2.893	5.266	4.313	6.372	10.463
2.150	1.653	4.854	2.913	5.274	4.375	6.498	10.512
2.318	1.684	4.866	2.935	5.282	4.443	6.640	10.558
2.478	1.717	4.878	2.957	5.288	4.512	6.808	10.607
2.630	1.748	4.892	2.982	5.298	4.600	6.984	10.651
2.792	1.784	4.904	3.004	5.306	4.715	7.164	10.693
2.936	1.819	4.922	3.040	5.316	4.858	7.394	10.737
3.054	1.848	4.942	3.082	5.326	5.105	7.618	10.779
3.194	1.886	4.958	3.115	5.336	5.399	7.730	10.797
3.334	1.925	4.974	3.150	5.346	6.296	7.876	10.820
3.482	1.970	4.980	3.165	5.356	8.243	8.036	10.841
3.618	2.017	4.990	3.193	5.364	8.552	8.244	10.869
3.794	2.084	5.008	3.232	5.374	8.800	8.532	10.906
3.902	2.128	5.022	3.269	5.384	8.951	8.774	10.930
3.980	2.161	5.034	3.298	5.398	9.111	9.060	10.960
4.056	2.202	5.042	3.320	5.410	9.195	9.314	10.988
4.130	2.239	5.056	3.360	5.426	9.307		
4.178	2.264	5.072	3.412	5.440	9.392		
4.224	2.291	5.082	3.451	5.456	9.473		
4.264	2.314	5.094	3.478	5.470	9.521		
4.312	2.347	5.110	3.531	5.488	9.588		
4.356	2.377	5.122	3.570	5.504	9.636		
4.410	2.416	5.134	3.613	5.520	9.692		
4.458	2.453	5.146	3.663	5.538	9.731		
4.506	2.494	5.158	3.713	5.558	9.776		
4.558	2.540	5.170	3.762	5.580	9.820		

$pK_{a1} = 3.773$

Table AD36. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.687.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.344	4.778	2.798	5.210	3.949	5.602	9.877
0.260	1.375	4.794	2.822	5.216	3.986	5.626	9.917
0.640	1.423	4.810	2.844	5.222	4.018	5.644	9.945
0.804	1.444	4.826	2.871	5.230	4.065	5.664	9.973
1.000	1.471	4.842	2.897	5.240	4.127	5.680	9.996
1.252	1.507	4.858	2.924	5.246	4.163	5.704	10.027
1.502	1.547	4.878	2.959	5.252	4.201	5.728	10.054
1.742	1.585	4.894	2.988	5.260	4.258	5.792	10.120
1.864	1.605	4.900	3.000	5.266	4.301	5.842	10.168
2.000	1.628	4.908	3.015	5.272	4.348	5.890	10.205
2.182	1.662	4.914	3.026	5.280	4.420	5.942	10.243
2.346	1.693	4.922	3.043	5.290	4.526	6.000	10.283
2.488	1.721	4.930	3.058	5.296	4.591	6.086	10.336
2.622	1.750	4.940	3.079	5.306	4.715	6.194	10.392
2.770	1.782	4.950	3.101	5.316	4.857	6.320	10.447
2.912	1.816	4.960	3.122	5.324	5.023	6.456	10.501
3.064	1.853	4.972	3.149	5.330	5.172	6.598	10.548
3.238	1.900	4.982	3.172	5.336	5.398	6.942	10.647
3.380	1.943	4.992	3.195	5.346	6.285	7.088	10.681
3.506	1.982	5.004	3.224	5.352	7.771	7.316	10.729
3.608	2.018	5.014	3.249	5.356	8.245	7.622	10.781
3.728	2.061	5.026	3.279	5.360	8.469	7.852	10.821
3.836	2.104	5.040	3.317	5.366	8.655	8.058	10.851
3.926	2.141	5.052	3.349	5.372	8.784	8.264	10.879
4.024	2.188	5.062	3.379	5.378	8.875	8.542	10.912
4.106	2.229	5.072	3.406	5.384	8.959	8.902	10.948
4.198	2.280	5.086	3.451	5.390	9.038	9.178	10.981
4.260	2.317	5.098	3.492	5.398	9.122		
4.330	2.362	5.106	3.515	5.404	9.173		
4.396	2.409	5.114	3.545	5.414	9.251		
4.454	2.452	5.126	3.587	5.424	9.319		
4.512	2.502	5.138	3.631	5.434	9.382		
4.576	2.563	5.150	3.678	5.442	9.425		
4.624	2.609	5.162	3.727	5.450	9.461		
4.654	2.643	5.170	3.760	5.474	9.557		
4.674	2.663	5.176	3.785	5.494	9.625		
4.696	2.692	5.184	3.823	5.516	9.690		
4.722	2.722	5.190	3.851	5.540	9.750		
4.740	2.747	5.196	3.880	5.562	9.799		
4.758	2.771	5.202	3.908	5.582	9.839		

$pK_{a1} = 3.755$

Table AD37. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.084.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.946	4.742	2.539	5.142	3.898	5.412	9.558
0.222	0.971	4.756	2.567	5.144	3.913	5.428	9.607
0.430	0.998	4.780	2.616	5.148	3.940	5.448	9.661
0.614	1.021	4.800	2.659	5.152	3.971	5.464	9.703
0.758	1.040	4.828	2.724	5.158	4.010	5.480	9.738
0.902	1.058	4.836	2.742	5.162	4.040	5.502	9.780
1.096	1.087	4.846	2.769	5.168	4.085	5.534	9.837
1.292	1.116	4.856	2.794	5.176	4.142	5.566	9.888
1.524	1.152	4.870	2.830	5.182	4.185	5.598	9.934
1.740	1.187	4.878	2.852	5.186	4.217	5.634	9.979
1.956	1.224	4.888	2.879	5.194	4.283	5.666	10.017
2.176	1.265	4.898	2.906	5.200	4.339	5.696	10.047
2.374	1.304	4.908	2.938	5.208	4.418	5.734	10.084
2.580	1.347	4.914	2.953	5.216	4.500	5.792	10.132
2.754	1.387	4.920	2.970	5.222	4.581	5.864	10.186
2.884	1.419	4.928	2.995	5.226	4.637	5.924	10.227
3.016	1.453	4.940	3.031	5.232	4.731	6.000	10.271
3.158	1.492	4.952	3.068	5.238	4.839	6.106	10.327
3.288	1.529	4.960	3.095	5.244	4.967	6.216	10.378
3.402	1.567	4.970	3.126	5.248	5.076	6.318	10.419
3.516	1.603	4.980	3.160	5.254	5.267	6.418	10.455
3.620	1.643	4.988	3.189	5.260	5.563	6.530	10.495
3.710	1.679	4.998	3.224	5.266	6.081	6.672	10.534
3.800	1.717	5.008	3.260	5.272	7.155	6.796	10.569
3.900	1.763	5.016	3.289	5.278	8.008	6.932	10.602
4.028	1.828	5.024	3.319	5.284	8.370	7.060	10.632
4.106	1.873	5.038	3.377	5.290	8.570	7.238	10.667
4.194	1.929	5.046	3.409	5.296	8.720	7.430	10.704
4.284	1.993	5.052	3.433	5.302	8.846	7.614	10.732
4.388	2.077	5.060	3.467	5.310	8.964	7.818	10.765
4.472	2.159	5.068	3.505	5.318	9.050	8.034	10.796
4.524	2.217	5.076	3.541	5.328	9.138	8.222	10.820
4.552	2.249	5.086	3.587	5.334	9.184	8.438	10.844
4.578	2.282	5.094	3.627	5.344	9.260	8.664	10.867
4.602	2.315	5.106	3.687	5.358	9.349	8.912	10.892
4.626	2.347	5.116	3.748	5.364	9.381	9.120	10.917
4.652	2.386	5.122	3.779	5.372	9.416		
4.676	2.424	5.128	3.818	5.378	9.440		
4.704	2.471	5.132	3.843	5.386	9.471		
4.726	2.509	5.136	3.866	5.392	9.493		

$pK_{a1} = 4.289$

Table AD38. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.087.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.945	4.286	1.963	5.070	3.303	5.382	9.103
0.238	0.973	4.362	2.020	5.090	3.377	5.400	9.221
0.414	0.994	4.450	2.094	5.102	3.421	5.452	9.465
0.646	1.024	4.500	2.141	5.112	3.473	5.520	9.654
0.934	1.063	4.544	2.187	5.126	3.554	5.594	9.794
1.172	1.097	4.576	2.223	5.138	3.594	5.654	9.880
1.378	1.128	4.618	2.273	5.150	3.654	5.738	9.981
1.580	1.159	4.636	2.296	5.164	3.718	5.856	10.100
1.800	1.195	4.654	2.320	5.176	3.792	6.000	10.200
2.016	1.233	4.676	2.351	5.190	3.867	6.150	10.281
2.230	1.273	4.706	2.400	5.194	3.902	6.372	10.376
2.436	1.312	4.736	2.447	5.200	3.938	6.650	10.466
2.652	1.359	4.766	2.500	5.206	3.962	6.886	10.532
2.842	1.403	4.788	2.539	5.212	4.028	7.168	10.594
2.974	1.435	4.814	2.586	5.218	4.064	7.382	10.637
3.090	1.465	4.842	2.644	5.226	4.114	7.614	10.677
3.240	1.507	4.870	2.707	5.234	4.188	7.886	10.718
3.372	1.547	4.902	2.781	5.246	4.274	8.146	10.757
3.486	1.584	4.928	2.848	5.258	4.392	8.330	10.780
3.608	1.626	4.948	2.900	5.270	4.524	8.520	10.800
3.738	1.676	4.968	2.954	5.280	4.645	8.656	10.819
3.870	1.732	4.988	3.016	5.300	4.940	8.900	10.844
3.994	1.790	5.004	3.071	5.318	6.644	9.084	10.862
4.108	1.852	5.022	3.123	5.336	8.370	9.278	10.880
4.224	1.922	5.050	3.218	5.358	8.826	9.438	10.901

$pK_{a1} = 4.186$

Table AD39. Potentiometric Titration Data for the pK_a Values of Lactic Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Lactic Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.088.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.942	4.402	2.045	5.068	3.234	5.326	5.294
0.170	0.962	4.444	2.081	5.074	3.255	5.330	5.446
0.328	0.981	4.484	2.117	5.080	3.278	5.332	5.595
0.466	0.998	4.518	2.151	5.086	3.302	5.334	5.755
0.590	1.015	4.552	2.186	5.094	3.334	5.338	6.062
0.716	1.031	4.582	2.219	5.100	3.367	5.340	6.419
0.836	1.047	4.602	2.242	5.108	3.400	5.342	6.764
0.958	1.062	4.626	2.271	5.114	3.424	5.346	7.228
1.072	1.082	4.646	2.297	5.122	3.456	5.348	7.472
1.254	1.106	4.666	2.323	5.130	3.491	5.350	7.576
1.374	1.124	4.686	2.351	5.138	3.525	5.352	7.816
1.484	1.143	4.708	2.383	5.148	3.568	5.354	7.933
1.620	1.163	4.724	2.407	5.158	3.615	5.356	8.026
1.704	1.178	4.750	2.449	5.164	3.648	5.358	8.119
1.832	1.198	4.768	2.479	5.168	3.668	5.360	8.189
1.944	1.217	4.790	2.518	5.172	3.688	5.362	8.245
2.056	1.236	4.810	2.557	5.178	3.720	5.364	8.305
2.172	1.258	4.816	2.568	5.182	3.739	5.366	8.353
2.292	1.281	4.824	2.586	5.186	3.777	5.370	8.434
2.416	1.306	4.832	2.601	5.190	3.794	5.372	8.484
2.532	1.331	4.842	2.621	5.196	3.823	5.376	8.554
2.644	1.354	4.854	2.642	5.202	3.855	5.380	8.625
2.750	1.378	4.864	2.668	5.206	3.878	5.384	8.682
2.878	1.408	4.874	2.689	5.212	3.914	5.388	8.738
2.998	1.438	4.882	2.708	5.216	3.941	5.392	8.797
3.108	1.467	4.894	2.736	5.222	3.974	5.396	8.850
3.212	1.495	4.904	2.757	5.228	4.016	5.400	8.890
7.000	1.529	4.914	2.783	5.234	4.059	5.404	8.940
3.394	1.550	4.924	2.808	5.240	4.093	5.410	8.996
3.474	1.576	4.932	2.829	5.244	4.132	5.418	9.064
3.546	1.600	4.942	2.855	5.250	4.175	5.426	9.124
3.622	1.627	4.952	2.882	5.256	4.225	5.434	9.177
3.682	1.650	4.960	2.903	5.264	4.283	5.442	9.226
3.772	1.685	4.968	2.924	5.270	4.337	5.450	9.273
3.852	1.719	4.978	2.957	5.276	4.401	5.464	9.336
3.922	1.750	4.986	2.975	5.284	4.472	5.472	9.370
3.982	1.779	4.998	3.011	5.290	4.547	5.484	9.421
4.082	1.831	5.010	3.046	5.294	4.600	5.496	9.464
4.146	1.867	5.020	3.077	5.298	4.658	5.510	9.509
4.200	1.898	5.028	3.098	5.304	4.746	5.524	9.552
4.244	1.928	5.038	3.134	5.310	4.836	5.576	9.673
4.288	1.958	5.046	3.162	5.314	4.941	5.612	9.742
4.324	1.985	5.054	3.185	5.318	5.030	5.646	9.799
4.366	2.016	5.062	3.213	5.322	5.144	5.678	9.844

Table AD39. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.712	9.890	8.420	10.758
5.754	9.939	8.616	10.782
5.802	9.987	8.860	10.806
5.848	10.031	9.074	10.832
5.888	10.065	9.360	10.860
5.950	10.107	9.602	10.879
6.028	10.163	9.916	10.910
6.126	10.219		
6.208	10.261		
6.348	10.321		
6.458	10.364		
6.566	10.403		
6.700	10.444		
6.864	10.488		
7.076	10.541		
7.310	10.587		
7.536	10.630		
7.766	10.669		
7.990	10.703		
8.200	10.730		

$pK_{a1} = 4.199$

Table AD40. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.082.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.953	4.820	3.182	5.524	4.368	5.754	9.587
0.242	1.981	4.842	3.202	5.534	4.396	5.766	9.692
0.468	2.009	4.866	3.226	5.542	4.432	5.778	9.779
0.684	2.037	4.888	3.246	5.552	4.462	5.788	9.840
0.894	2.064	4.916	3.276	5.562	4.541	5.798	9.892
1.078	2.088	4.942	3.303	5.572	4.585	5.812	9.959
1.294	2.119	4.964	3.328	5.582	4.631	5.824	10.012
1.500	2.148	4.986	3.353	5.592	4.682	5.836	10.057
1.706	2.180	5.006	3.376	5.604	4.745	5.848	10.097
1.892	2.209	5.026	3.401	5.614	4.803	5.874	10.174
2.080	2.240	5.050	3.430	5.622	4.854	5.898	10.235
2.250	2.269	5.076	3.465	5.630	4.909	5.924	10.292
2.446	2.305	5.096	3.492	5.642	5.002	5.950	10.343
2.630	2.341	5.116	3.521	5.652	5.102	5.976	10.389
2.834	2.382	5.136	3.549	5.656	5.143	6.032	10.473
3.010	2.421	5.158	3.583	5.660	5.188	6.092	10.548
3.198	2.465	5.182	3.621	5.666	5.267	6.162	10.619
3.344	2.503	5.202	3.654	5.670	5.324	6.232	10.681
3.476	2.539	5.224	3.691	5.674	5.392	6.286	10.727
3.631	2.573	5.246	3.730	5.678	5.464	6.340	10.761
3.704	2.608	5.272	3.789	5.682	5.554	6.396	10.797
3.828	2.648	5.288	3.810	5.688	5.726	6.454	10.831
3.928	2.682	5.308	3.848	5.692	5.885	6.518	10.865
4.022	2.717	5.326	3.884	5.696	6.126	6.570	10.892
4.102	2.750	5.358	3.914	5.700	6.573	6.620	10.916
4.202	2.793	5.376	3.955	5.704	7.294	6.670	10.938
4.330	2.853	5.390	3.992	5.708	8.190	6.724	10.961
4.416	2.899	5.406	4.023	5.712	8.628	6.780	10.983
4.472	2.930	5.422	4.059	5.716	8.854	6.842	11.009
4.518	2.958	5.438	4.099	5.722	9.057		
4.576	2.995	5.458	4.142	5.726	9.167		
4.624	3.027	5.474	4.194	5.730	9.254		
4.672	3.061	5.494	4.239	5.734	9.328		
4.722	3.099	5.506	4.299	5.738	9.392		
4.770	3.138	5.516	4.336	5.742	9.447		

pK_{a2} = 3.872

Table AD41. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 m NaCl t 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.003.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.014	4.830	3.114	5.736	4.534	6.322	10.531
0.326	2.051	4.900	3.165	5.756	4.602	6.388	10.593
0.566	2.079	4.962	3.215	5.774	4.679	6.444	10.641
0.762	2.102	5.036	3.281	5.792	4.770	6.502	10.686
0.962	2.127	5.104	3.349	5.810	4.873	6.580	10.726
1.168	2.153	5.160	3.411	5.826	4.983	6.616	10.761
1.350	2.178	5.188	3.442	5.840	5.111	6.672	10.793
1.516	2.202	5.218	3.478	5.860	5.341	6.730	10.824
1.710	2.228	5.242	3.508	5.870	5.515	6.778	10.849
1.912	2.257	5.252	3.522	5.880	5.787	6.826	10.870
2.076	2.283	5.274	3.550	5.890	6.308	6.882	10.895
2.304	2.320	5.296	3.580	5.900	7.943	6.948	10.921
2.508	2.355	5.322	3.618	5.912	8.878	7.000	10.939
2.732	2.398	5.350	3.660	5.922	9.150	7.058	10.962
2.898	2.430	5.376	3.699	5.932	9.315	7.114	10.982
3.106	2.474	5.402	3.742	5.942	9.446	7.160	10.992
3.282	2.513	5.424	3.778	5.950	9.531	7.214	11.018
3.504	2.567	5.450	3.823	5.960	9.612		
3.686	2.615	5.476	3.871	5.968	9.673		
3.872	2.670	5.504	3.923	5.990	9.812		
4.082	2.741	5.528	3.970	6.010	9.914		
4.200	2.785	5.546	4.007	6.032	9.999		
4.304	2.827	5.574	4.064	6.050	10.059		
4.376	2.858	5.598	4.124	6.068	10.112		
4.446	2.889	5.626	4.190	6.088	10.165		
4.512	2.923	5.646	4.242	6.108	10.213		
4.578	2.956	5.664	4.292	6.126	10.250		
4.644	2.994	5.680	4.336	6.150	10.297		
4.700	3.027	5.700	4.397	6.206	10.388		
4.758	3.064	5.720	4.464	6.264	10.465		

pK_{a2} = 3.934

Table AD42. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.3mL, 0.300 mmol Oxalic Acid, Titrant = 0.10 M HCl in 0.10 m NaCl, pcH = pHr + 0.104.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	10.024	0.766	4.249	2.968	2.860	8.652	1.591
0.102	5.380	0.816	4.211	3.022	2.821	9.204	1.558
0.114	5.330	0.864	4.175	3.092	2.768	10.028	1.514
0.126	5.261	0.910	4.142	3.154	2.723	10.722	1.481
0.134	5.225	0.950	4.115	3.220	2.676	11.604	1.445
0.140	5.200	1.000	4.081	3.280	2.636	12.405	1.416
0.148	5.169	1.048	4.050	3.340	2.595	13.238	1.390
0.156	5.139	1.096	4.019	3.406	2.554	14.262	1.360
0.164	5.112	1.142	3.990	3.470	2.516	15.294	1.335
0.174	5.078	1.206	3.952	3.545	2.474	16.220	1.315
0.184	5.047	1.264	3.916	3.624	2.432	17.238	1.294
0.194	5.018	1.328	3.880	3.702	2.393	18.214	1.276
0.204	4.990	1.388	3.844	3.798	2.349	19.220	1.258
0.218	4.953	1.464	3.801	3.892	2.311	20.160	1.243
0.230	4.924	1.530	3.764	3.990	2.272	21.494	1.225
0.242	4.897	1.590	3.730	4.108	2.230	22.360	1.214
0.260	4.857	1.662	3.693	4.206	2.198	23.392	1.204
0.282	4.814	1.730	3.656	4.308	2.166	25.364	1.179
0.300	4.779	1.796	3.620	4.420	2.135		
0.320	4.745	1.858	3.586	4.546	2.100		
0.338	4.715	1.934	3.545	4.684	2.066		
0.350	4.696	1.998	3.509	4.820	2.035		
0.370	4.666	2.066	3.471	4.960	2.006		
0.396	4.628	2.134	3.431	5.110	1.976		
0.416	4.601	2.200	3.393	5.266	1.948		
0.438	4.572	2.276	3.346	5.510	1.907		
0.464	4.540	2.354	3.298	5.708	1.877		
0.488	4.512	2.418	3.257	5.910	1.848		
0.516	4.480	2.500	3.203	6.144	1.817		
0.546	4.448	2.588	3.142	6.406	1.785		
0.578	4.416	2.650	3.099	6.700	1.752		
0.610	4.384	2.710	3.055	7.010	1.721		
0.644	4.353	2.772	3.010	7.332	1.692		
0.680	4.321	2.838	2.960	7.724	1.658		
0.722	4.285	2.908	2.907	8.146	1.626		

$pK_{a1} = 1.24$, $pK_{a2} = 3.833$

Table AD43. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 m NaCl at 25°C. Initial Volume = 13.25 mL, 0.250 mmol of Oxalic Acid, Titrant = 0.20 M HCl in 0.10 m NaCl, pcH = pHr + 0.0975.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	5.516	0.662	4.197	2.280	3.010	4.748	1.890
0.026	5.340	0.704	4.163	2.324	2.971	4.942	1.857
0.042	5.245	0.750	4.125	2.376	2.924	5.144	1.827
0.050	5.206	0.794	4.091	2.424	2.881	5.364	1.795
0.060	5.160	0.840	4.057	2.474	2.836	5.600	1.764
0.070	5.120	0.890	4.021	2.522	2.794	5.854	1.735
0.080	5.084	0.942	3.983	2.572	2.750	6.126	1.704
0.090	5.043	1.000	3.944	2.652	2.685	6.400	1.677
0.102	5.003	1.058	3.904	2.700	2.645	6.698	1.650
0.116	4.960	1.116	3.864	2.754	2.604	7.064	1.620
0.130	4.920	1.168	3.830	2.804	2.568	7.440	1.591
0.146	4.877	1.224	3.793	2.860	2.528	7.836	1.563
0.164	4.836	1.284	3.753	2.910	2.496	8.198	1.539
0.182	4.794	1.344	3.714	2.970	2.458	8.616	1.515
0.200	4.758	1.402	3.676	3.028	2.424	9.104	1.488
0.220	4.720	1.460	3.636	3.088	2.390	9.608	1.464
0.240	4.685	1.518	3.597	3.148	2.359	10.146	1.441
0.262	4.647	1.574	3.559	3.216	2.325	10.760	1.415
0.274	4.629	1.620	3.527	3.288	2.292	11.564	1.392
0.298	4.593	1.676	3.489	3.358	2.260	12.538	1.362
0.326	4.553	1.736	3.447	3.450	2.223	13.614	1.334
0.352	4.517	1.790	3.408	3.554	2.185	14.642	1.308
0.378	4.485	1.894	3.368	3.662	2.147	15.716	1.285
0.406	4.451	1.902	3.325	3.770	2.113	17.040	1.260
0.436	4.416	1.960	3.280	3.880	2.080	18.416	1.235
0.468	4.381	2.014	3.237	4.002	2.048	20.000	1.213
0.504	4.343	2.076	3.186	4.120	2.017	21.862	1.192
0.540	4.308	2.130	3.141	4.248	1.988	23.552	1.172
0.578	4.272	2.180	3.100	4.402	1.956	25.404	1.152
0.620	4.234	2.230	3.054	4.570	1.922	26.754	1.140

pK_{a1} = 1.30, pK_{a2} = 3.867

Table AD44. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 0.30 m NaCl, pcH = pHr + 0.125.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.895	4.804	2.954	5.762	4.283	6.004	9.499
0.132	1.909	4.850	2.984	5.774	4.327	6.014	9.579
0.264	1.925	4.894	3.014	5.790	4.391	6.024	9.650
0.390	1.939	4.944	3.050	5.802	4.440	6.034	9.710
0.508	1.953	4.986	3.082	5.808	4.466	6.044	9.765
0.634	1.968	5.030	3.117	5.816	4.503	6.054	9.813
0.764	1.984	5.072	3.152	5.822	4.533	6.076	9.906
0.904	2.002	5.116	3.192	5.828	4.569	6.098	9.981
1.044	2.020	5.166	3.240	5.834	4.598	6.120	10.045
1.176	2.036	5.194	3.268	5.840	4.628	6.158	10.136
1.324	2.057	5.220	3.296	5.846	4.663	6.190	10.203
1.466	2.077	5.250	3.329	5.852	4.697	6.218	10.253
1.604	2.096	5.276	3.359	5.858	4.730	6.246	10.298
1.730	2.115	5.302	3.389	5.864	4.772	6.276	10.341
1.854	2.133	5.324	3.417	5.870	4.811	6.328	10.409
2.004	2.156	5.346	3.445	5.876	4.858	6.388	10.472
2.146	2.179	5.368	3.474	5.882	4.910	6.448	10.529
2.278	2.201	5.394	3.511	5.890	4.982	6.510	10.580
2.410	2.223	5.422	3.549	5.896	5.045	6.616	10.655
2.538	2.246	5.448	3.589	5.902	5.117	6.702	10.707
2.666	2.269	5.466	3.617	5.908	5.201	6.790	10.753
2.790	2.293	5.482	3.642	5.916	5.334	6.888	10.801
2.926	2.319	5.498	3.668	5.922	5.466	6.990	10.844
3.044	2.344	5.516	3.699	5.930	5.715	7.094	10.884
3.174	2.372	5.534	3.731	5.936	6.081	7.176	10.912
3.286	2.398	5.548	3.756	5.940	6.615	7.262	10.939
3.410	2.427	5.564	3.787	5.942	7.002	7.354	10.969
3.534	2.458	5.584	3.827	5.944	7.423	7.436	10.993
3.662	2.492	5.600	3.859	5.946	7.884	7.514	11.014
3.796	2.531	5.616	3.893	5.948	8.188	7.600	11.040
3.930	2.571	5.632	3.927	5.952	8.479		
4.066	2.616	5.648	3.965	5.954	8.604		
4.204	2.666	5.664	4.001	5.958	8.752		
4.290	2.700	5.678	4.035	5.962	8.881		
4.384	2.737	5.694	4.078	5.966	8.977		
4.476	2.778	5.704	4.107	5.968	9.025		
4.560	2.818	5.718	4.145	5.972	9.100		
4.618	2.848	5.728	4.173	5.976	9.168		
4.684	2.884	5.745	4.212	5.986	9.312		
4.742	2.916	5.750	4.247	5.994	9.404		

pK_{a2} = 3.733

Table AD45. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 0.30 m NaCl, pcH = pHr + 0.136.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.880	4.818	2.949	5.722	4.145	6.038	9.664
0.220	1.905	4.876	2.988	5.736	4.188	6.048	9.721
0.486	1.936	4.928	3.025	5.744	4.213	6.056	9.762
0.738	1.966	4.978	3.063	5.752	4.239	6.064	9.799
0.934	1.991	5.028	3.104	5.760	4.266	6.074	9.844
1.170	2.021	5.068	3.138	5.766	4.286	6.082	9.890
1.366	2.048	5.114	3.181	5.774	4.315	6.090	9.913
1.596	2.079	5.142	3.207	5.782	4.344	6.100	9.945
1.802	2.110	5.174	3.238	5.788	4.366	6.108	9.972
2.022	2.144	5.204	3.270	5.796	4.399	6.146	10.079
2.244	2.180	5.230	3.297	5.806	4.442	6.184	10.164
2.372	2.201	5.256	3.327	5.814	4.478	6.222	10.235
2.504	2.224	5.284	3.360	5.822	4.516	6.262	10.302
2.640	2.248	5.308	3.389	5.832	4.565	6.306	10.360
2.780	2.274	5.332	3.419	5.840	4.609	6.350	10.417
2.916	2.302	5.356	3.450	5.848	4.652	6.418	10.489
3.044	2.328	5.378	3.480	5.858	4.714	6.488	10.552
3.162	2.355	5.400	3.511	5.868	4.783	6.556	10.604
3.274	2.380	5.428	3.552	5.878	4.860	6.620	10.649
3.384	2.405	5.446	3.579	5.888	4.950	6.694	10.697
3.512	2.438	5.464	3.607	5.898	5.052	6.760	10.733
3.634	2.470	5.484	3.638	5.908	5.189	6.840	10.772
3.736	2.497	5.502	3.668	5.916	5.311	6.934	10.817
3.822	2.522	5.520	3.699	5.926	5.542	7.032	10.860
3.936	2.558	5.536	3.727	5.936	5.996	7.138	10.900
4.048	2.593	5.552	3.756	5.946	7.035	7.256	10.938
4.132	2.623	5.570	3.790	5.954	8.115	7.356	10.969
4.218	2.654	5.588	3.825	5.964	8.749	7.464	10.999
4.278	2.678	5.604	3.859	5.974	8.990	7.566	11.030
4.348	2.706	5.622	3.895	5.982	9.132		
4.446	2.749	5.640	3.935	5.990	9.247		
4.536	2.791	5.656	3.973	6.000	9.368		
4.610	2.828	5.672	4.012	6.010	9.465		
4.686	2.869	5.686	4.047	6.018	9.531		
4.750	2.907	5.704	4.095	6.028	9.601		

$pK_{a2} = 3.775$

Table AD46. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 m NaCl at 25°C. Initial Volume = 13.45 mL, 0.250 mmol Oxalic Acid, Titrant = 0.2 M HCl in 0.30 m NaCl, pcH = pHr + 0.174.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	4.503	0.690	3.282	1.512	2.133	4.244	1.331
0.020	4.441	0.720	3.241	1.548	2.104	4.452	1.307
0.036	4.389	0.748	3.201	1.584	2.075	4.672	1.283
0.052	4.340	0.766	3.174	1.618	2.049	4.900	1.260
0.068	4.291	0.792	3.136	1.654	2.023	5.160	1.235
0.086	4.243	0.818	3.098	1.702	1.992	5.426	1.212
0.104	4.200	0.846	3.057	1.750	1.961	5.690	1.190
0.116	4.170	0.874	3.014	1.800	1.933	5.988	1.168
0.134	4.129	0.902	2.971	1.856	1.902	6.302	1.146
0.154	4.086	0.928	2.931	1.912	1.873	6.642	1.124
0.174	4.045	0.964	2.873	1.970	1.845	7.020	1.102
0.194	4.007	0.990	2.830	2.034	1.817	7.420	1.080
0.216	3.967	1.014	2.790	2.096	1.789	7.870	1.057
0.236	3.933	1.040	2.747	2.160	1.765	8.392	1.033
0.258	3.895	1.066	2.704	2.238	1.736	8.952	1.010
0.280	3.860	1.092	2.662	2.314	1.711	9.528	0.988
0.304	3.821	1.118	2.619	2.402	1.682	10.270	0.963
0.328	3.783	1.142	2.581	2.492	1.655	11.056	0.940
0.354	3.745	1.166	2.543	2.570	1.633	11.858	0.919
0.378	3.709	1.190	2.507	2.650	1.612	12.868	0.895
0.402	3.675	1.214	2.473	2.746	1.587	13.856	0.874
0.428	3.639	1.238	2.438	2.864	1.560	14.892	0.855
0.454	3.603	1.266	2.400	2.966	1.536	16.008	0.837
0.490	3.554	1.292	2.367	3.082	1.513	17.250	0.821
0.516	3.518	1.318	2.334	3.232	1.484	18.596	0.803
0.544	3.480	1.350	2.296	3.372	1.458	19.900	0.787
0.572	3.443	1.382	2.261	3.520	1.433	21.942	0.767
0.600	3.405	1.414	2.226	3.682	1.407	24.578	0.743
0.630	3.365	1.448	2.192	3.850	1.383	27.212	0.726
0.662	3.321	1.480	2.161	4.034	1.358		

$pK_{a1} = 1.23$, $pK_{a2} = 3.701$

Table AD47. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 m NaCl at 25°C. Initial Volume = 13.45 mL, 0.250 mmol Oxalic Acid, Titrant = 0.20 M HCl in 0.30 m NaCl, pcH = pHr + 0.172.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	4.634	0.612	3.425	1.384	2.288	4.098	1.351
0.018	4.551	0.640	3.387	1.412	2.257	4.338	1.322
0.034	4.490	0.670	3.347	1.442	2.226	4.568	1.295
0.048	4.433	0.698	3.309	1.476	2.192	4.854	1.266
0.062	4.385	0.726	3.270	1.502	2.167	5.092	1.243
0.076	4.340	0.752	3.234	1.536	2.136	5.388	1.217
0.090	4.299	0.780	3.194	1.570	2.109	5.696	1.191
0.104	4.261	0.806	3.156	1.606	2.080	6.006	1.167
0.120	4.221	0.832	3.118	1.648	2.048	6.308	1.147
0.136	4.182	0.860	3.076	1.694	2.017	6.798	1.117
0.152	4.144	0.886	3.037	1.738	1.987	7.268	1.089
0.168	4.108	0.912	3.000	1.782	1.960	8.302	1.039
0.186	4.072	0.938	2.960	1.842	1.925	9.144	1.004
0.204	4.035	0.964	2.918	1.902	1.893	10.014	0.973
0.222	4.001	0.990	2.875	1.966	1.861	11.068	0.942
0.242	3.965	1.016	2.832	2.096	1.803	12.018	0.917
0.264	3.927	1.038	2.797	2.180	1.769	13.056	0.892
0.288	3.888	1.064	2.753	2.262	1.738	14.140	0.871
0.308	3.855	1.088	2.713	2.354	1.706	15.360	0.849
0.330	3.820	1.102	2.689	2.452	1.673	16.906	0.826
0.352	3.787	1.128	2.648	2.552	1.644	18.912	0.800
0.376	3.750	1.156	2.603	2.664	1.614	21.208	0.774
0.404	3.709	1.184	2.560	2.778	1.584	24.338	0.745
0.430	3.673	1.208	2.524	2.904	1.554	27.270	0.725
0.456	3.635	1.234	2.484	3.056	1.522		
0.482	3.599	1.260	2.446	3.162	1.499		
0.508	3.565	1.288	2.408	3.318	1.471		
0.534	3.530	1.304	2.387	3.472	1.444		
0.560	3.495	1.330	2.354	3.668	1.412		
0.586	3.459	1.356	2.322	3.864	1.383		

$pK_{a1} = 1.15$, $pK_{a2} = 3.687$

Table AD48. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.03 M NaOH in 0.50 m NaCl, pcH = pHr + 0.215.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.811	4.802	2.880	5.680	4.003	6.018	9.697
0.258	1.838	4.838	2.904	5.696	4.048	6.038	9.793
0.486	1.865	4.882	2.934	5.712	4.096	6.058	9.875
0.716	1.893	4.938	2.965	5.728	4.146	6.080	9.948
0.926	1.919	4.966	2.996	5.738	4.179	6.100	10.013
1.104	1.942	5.024	3.020	5.746	4.206	6.120	10.057
1.306	1.969	5.052	3.065	5.756	4.241	6.156	10.134
1.492	1.993	5.080	3.090	5.766	4.279	6.192	10.200
1.680	2.022	5.108	3.116	5.776	4.338	6.270	10.315
1.898	2.055	5.136	3.142	5.786	4.370	6.332	10.389
2.114	2.089	5.166	3.172	5.796	4.414	6.396	10.453
2.318	2.123	5.192	3.198	5.804	4.445	6.462	10.517
2.528	2.160	5.214	3.222	5.814	4.492	6.526	10.560
2.728	2.197	5.240	3.251	5.822	4.534	6.590	10.604
2.922	2.235	5.262	3.276	5.832	4.593	6.700	10.668
3.052	2.263	5.284	3.301	5.844	4.668	6.802	10.722
3.190	2.293	5.310	3.333	5.856	4.763	6.898	10.765
3.136	2.322	5.326	3.355	5.868	4.857	7.006	10.809
3.440	2.353	5.350	3.388	5.880	4.970	7.154	10.862
3.355	2.381	5.376	3.421	5.890	5.102	7.286	10.904
3.656	2.410	5.400	3.455	5.900	5.239	7.396	10.936
3.768	2.442	5.424	3.496	5.908	5.401	7.492	10.962
3.874	2.475	5.450	3.532	5.918	5.747	7.594	10.987
3.986	2.510	5.476	3.582	5.926	6.184	7.692	11.013
4.116	2.556	5.496	3.609	5.930	7.280		
4.194	2.584	5.514	3.640	5.936	8.236		
4.264	2.611	5.530	3.670	5.940	8.595		
4.340	2.642	5.548	3.702	5.946	8.843		
4.406	2.670	5.564	3.734	5.952	9.009		
4.486	2.707	5.578	3.764	5.960	9.166		
4.554	2.740	5.596	3.801	5.968	9.282		
4.604	2.765	5.614	3.841	5.976	9.379		
4.652	2.792	5.628	3.873	5.984	9.460		
4.704	2.821	5.644	3.909	5.992	9.529		
4.752	2.849	5.660	3.950	5.998	9.575		

$pK_{a2} = 3.620$

Table AD49. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.03 M NaOH in 0.50 m NaCl, pcH = pHr + 0.224.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.800	4.674	2.804	5.602	3.798	5.948	8.160
0.272	1.831	4.728	2.834	5.616	3.827	5.954	8.596
0.534	1.861	4.774	2.862	5.630	3.857	5.970	9.074
0.732	1.887	4.820	2.891	5.646	3.894	5.988	9.338
0.954	1.914	4.872	2.927	5.658	3.924	6.020	9.602
1.154	1.941	4.924	2.963	5.672	3.960	6.046	9.748
1.374	1.971	4.956	2.992	5.682	3.985	6.074	9.863
1.594	2.004	4.982	3.006	5.696	4.021	6.132	10.035
1.824	2.038	5.008	3.028	5.710	4.061	6.190	10.159
2.036	2.071	5.032	3.047	5.724	4.103	6.248	10.256
2.234	2.104	5.060	3.071	5.734	4.133	6.304	10.332
2.430	2.137	5.090	3.096	5.744	4.165	6.380	10.416
2.634	2.175	5.122	3.127	5.754	4.199	6.456	10.486
2.800	2.210	5.152	3.155	5.764	4.233	6.530	10.546
3.012	2.250	5.184	3.188	5.774	4.269	6.608	10.600
3.138	2.277	5.216	3.222	5.784	4.309	6.690	10.649
3.256	2.304	5.248	3.256	5.794	4.349	6.770	10.693
3.366	2.331	5.276	3.289	5.802	4.383	6.850	10.731
3.482	2.360	5.306	3.324	5.812	4.429	6.944	10.774
3.586	2.387	5.334	3.359	5.822	4.479	7.028	10.809
3.696	2.418	5.362	3.395	5.834	4.543	7.122	10.844
3.800	2.448	5.390	3.433	5.846	4.613	7.208	10.874
3.888	2.480	5.418	3.473	5.858	4.689	7.286	10.900
4.018	2.522	5.446	3.515	5.872	4.786	7.366	10.919
4.134	2.563	5.474	3.560	5.886	4.909	7.442	10.945
4.196	2.581	5.498	3.600	5.900	5.056	7.524	10.965
4.294	2.624	5.528	3.652	5.914	5.286	7.618	10.990
4.388	2.663	5.552	3.697	5.926	5.583	7.698	11.011
4.482	2.705	5.568	3.727	5.938	6.422		
4.586	2.756	5.586	3.764	5.942	7.055		

$pK_{a2} = 3.634$

Table AD50. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.50 m NaCl at 25°C. Initial Volume = 13.55 mL, 0.250 mmol Oxalic Acid, Titrant = 0.20 M HCl in 0.50 m NaCl, pcH = pHr + 0.257.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	10.605	0.608	3.547	1.470	2.287	4.490	1.249
0.050	10.170	0.632	3.513	1.496	2.255	4.720	1.223
0.080	5.808	0.656	3.476	1.520	2.227	4.960	1.198
0.100	5.340	0.682	3.441	1.546	2.199	5.220	1.173
0.110	5.208	0.708	3.404	1.574	2.170	5.510	1.146
0.120	5.042	0.734	3.369	1.604	2.139	5.820	1.120
0.132	4.888	0.760	3.332	1.634	2.110	6.170	1.100
0.142	4.789	0.788	3.293	1.666	2.081	6.520	1.077
0.152	4.708	0.806	3.270	1.700	2.052	6.910	1.052
0.164	4.626	0.830	3.237	1.736	2.023	7.400	1.023
0.176	4.554	0.858	3.199	1.774	1.995	8.000	0.992
0.188	4.491	0.888	3.156	1.814	1.966	8.496	0.969
0.200	4.433	0.910	3.126	1.858	1.935	9.102	0.943
0.212	4.382	0.936	3.089	1.912	1.900	9.812	0.916
0.224	4.335	0.962	3.052	1.958	1.873	10.610	0.889
0.236	4.292	0.986	3.017	2.014	1.840	11.958	0.851
0.250	4.245	1.010	2.981	2.070	1.810	12.810	0.829
0.264	4.200	1.036	2.943	2.128	1.781	13.796	0.807
0.278	4.160	1.062	2.903	2.186	1.754	14.914	0.785
0.292	4.123	1.086	2.865	2.258	1.724	16.220	0.763
0.308	4.082	1.110	2.827	2.358	1.684	17.472	0.743
0.324	4.045	1.134	2.789	2.438	1.655	18.840	0.725
0.340	4.005	1.156	2.755	2.518	1.629	20.528	0.707
0.358	3.965	1.178	2.721	2.610	1.600	22.350	0.687
0.374	3.932	1.200	2.686	2.710	1.570	24.390	0.669
0.390	3.900	1.224	2.648	2.822	1.539	27.386	0.647
0.408	3.866	1.248	2.610	2.940	1.510		
0.426	3.831	1.272	2.571	3.070	1.480		
0.444	3.801	1.298	2.531	3.210	1.449		
0.466	3.763	1.322	2.493	3.360	1.419		
0.486	3.730	1.346	2.457	3.520	1.389		
0.510	3.692	1.372	2.419	3.690	1.361		
0.534	3.656	1.396	2.385	3.872	1.332		
0.558	3.620	1.422	2.350	4.062	1.304		
0.582	3.584	1.446	2.318	4.270	1.276		

pK_{a1} = 1.26, pK_{a2} = 3.666

Table AD51. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.03 M NaOH in 1.0 m NaCl, pcH = pHr + 0.271.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.748	4.786	2.767	5.792	4.112	6.056	9.583
0.118	1.758	4.866	2.816	5.802	4.146	6.068	9.645
0.264	1.774	4.918	2.851	5.810	4.177	6.078	9.691
0.400	1.789	4.982	2.895	5.820	4.219	6.092	9.747
0.542	1.806	5.008	2.914	5.830	4.263	6.104	9.788
0.680	1.823	5.034	2.933	5.840	4.308	6.114	9.822
0.814	1.838	5.058	2.952	5.844	4.330	6.126	9.858
0.932	1.853	5.078	2.969	5.848	4.350	6.136	9.885
1.074	1.871	5.102	2.988	5.852	4.370	6.148	9.915
1.202	1.887	5.126	3.008	5.856	4.390	6.176	9.979
1.322	1.904	5.150	3.029	5.860	4.412	6.204	10.036
1.446	1.920	5.174	3.051	5.864	4.434	6.232	10.085
1.574	1.937	5.204	3.082	5.872	4.480	6.290	10.170
1.698	1.955	5.238	3.115	5.878	4.517	6.342	10.235
1.814	1.972	5.268	3.145	5.882	4.542	6.396	10.293
1.934	1.991	5.292	3.170	5.886	4.569	6.456	10.350
2.052	2.009	5.316	3.198	5.892	4.611	6.520	10.402
2.166	2.027	5.340	3.225	5.898	4.656	6.582	10.448
2.278	2.045	5.364	3.254	5.902	4.687	6.674	10.505
2.398	2.064	5.390	3.287	5.908	4.739	6.774	10.560
2.506	2.084	5.418	3.322	5.914	4.794	6.890	10.616
2.614	2.102	5.448	3.364	5.920	4.856	6.994	10.660
2.722	2.122	5.466	3.390	5.926	4.920	7.094	10.698
2.824	2.142	5.488	3.423	5.932	4.999	7.196	10.734
2.938	2.164	5.510	3.457	5.938	5.089	7.300	10.766
3.012	2.178	5.530	3.488	5.944	5.199	7.422	10.801
3.124	2.202	5.546	3.516	5.950	5.340	7.554	10.835
3.236	2.227	5.562	3.543	5.956	5.526	7.712	10.873
3.340	2.251	5.574	3.565	5.962	5.851	7.850	10.903
3.432	2.273	5.590	3.595	5.968	6.532	8.024	10.938
3.526	2.296	5.608	3.630	5.974	7.916	8.184	10.966
3.668	2.334	5.626	3.666	5.978	8.392	8.314	10.988
3.772	2.362	5.644	3.703	5.982	8.611	8.474	11.015
3.872	2.391	5.664	3.748	5.988	8.818		
3.988	2.426	5.682	3.789	5.994	8.962		
4.100	2.464	5.700	3.834	5.998	9.039		
4.208	2.502	5.712	3.865	6.002	9.107		
4.312	2.540	5.722	3.890	6.006	9.163		
4.388	2.571	5.732	3.919	6.012	9.238		
4.460	2.602	5.744	3.954	6.018	9.304		
4.540	2.639	5.760	4.002	6.024	9.363		
4.618	2.676	5.772	4.040	6.030	9.413		
4.698	2.717	5.782	4.074	6.036	9.458		

$pK_{a2} = 3.627$

Table AD52. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.03 M NaOH in 1.0 m NaCl, pcH = pHr + 0.316.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.706	5.102	2.971	5.762	4.024	6.034	9.195
0.134	1.720	5.126	2.992	5.772	4.057	6.042	9.263
0.348	1.744	5.156	3.019	5.780	4.087	6.050	9.326
0.576	1.772	5.188	3.050	5.790	4.125	6.058	9.383
0.740	1.792	5.220	3.081	5.802	4.172	6.066	9.434
0.976	1.822	5.252	3.114	5.810	4.205	6.088	9.555
1.212	1.853	5.280	3.144	5.820	4.252	6.108	9.645
1.490	1.890	5.308	3.176	5.832	4.310	6.128	9.723
1.740	1.926	5.332	3.203	5.844	4.371	6.152	9.800
1.994	1.964	5.358	3.235	5.854	4.425	6.186	9.896
2.232	2.003	5.388	3.273	5.864	4.485	6.220	9.970
2.442	2.039	5.416	3.310	5.876	4.564	6.252	10.033
2.610	2.068	5.442	3.346	5.888	4.651	6.276	10.074
2.796	2.103	5.470	3.388	5.900	4.755	6.340	10.167
2.948	2.134	5.494	3.424	5.912	4.877	6.402	10.242
3.122	2.171	5.520	3.467	5.922	5.005	6.492	10.331
3.292	2.209	5.542	3.504	5.934	5.205	6.598	10.417
3.442	2.244	5.564	3.543	5.944	5.483	6.704	10.489
3.586	2.280	5.586	3.584	5.954	6.047	6.826	10.555
3.722	2.316	5.606	3.623	5.958	6.570	6.932	10.607
3.850	2.354	5.616	3.643	5.962	6.955	7.042	10.659
3.982	2.395	5.624	3.660	5.966	7.315	7.160	10.702
4.108	2.436	5.630	3.672	5.970	7.773	7.252	10.734
4.216	2.475	5.642	3.699	5.972	7.967	7.358	10.768
4.310	2.511	5.652	3.722	5.974	8.195	7.476	10.801
4.398	2.548	5.662	3.745	5.978	8.287	7.602	10.834
4.492	2.589	5.672	3.769	5.982	8.388	7.708	10.859
4.582	2.631	5.682	3.794	5.984	8.448	7.808	10.882
4.664	2.674	5.690	3.813	5.988	8.546	7.912	10.904
4.760	2.728	5.702	3.844	5.990	8.595	8.018	10.923
4.816	2.762	5.712	3.872	5.994	8.672	8.124	10.945
4.876	2.801	5.724	3.905	6.002	8.811	8.238	10.966
4.936	2.841	5.734	3.935	6.010	8.927	8.332	10.982
4.994	2.883	5.744	3.965	6.018	9.027	8.444	11.003
5.052	2.929	5.754	3.997	6.026	9.116		

$pK_{a2} = 3.627$

Table AD53. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.0 m NaCl at 25°C. Initial Volume = 13.00 mL, 0.250 mmol of Oxalic Acid, Titrant = 0.20 M HCl in 1.0 m NaCl, pcH = pHr + 0.356.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	4.083	0.584	3.057	1.364	1.983	4.326	1.090
0.012	4.053	0.610	3.021	1.396	1.952	4.570	1.065
0.026	4.004	0.636	2.985	1.428	1.922	4.852	1.038
0.038	3.967	0.662	2.949	1.462	1.891	5.158	1.012
0.050	3.933	0.690	2.909	1.496	1.862	5.476	0.985
0.062	3.901	0.718	2.871	1.532	1.831	5.836	0.958
0.074	3.871	0.744	2.834	1.570	1.804	6.222	0.931
0.088	3.838	0.770	2.797	1.612	1.775	6.736	0.904
0.102	3.806	0.796	2.759	1.660	1.746	7.340	0.871
0.126	3.753	0.822	2.719	1.712	1.715	7.942	0.842
0.144	3.715	0.848	2.681	1.768	1.684	8.558	0.816
0.158	3.686	0.872	2.644	1.826	1.653	9.304	0.787
0.176	3.652	0.896	2.606	1.886	1.621	9.932	0.764
0.194	3.618	0.920	2.570	1.948	1.592	10.736	0.738
0.212	3.586	0.944	2.534	2.014	1.563	11.704	0.711
0.232	3.553	0.968	2.496	2.084	1.534	12.760	0.686
0.252	3.521	0.994	2.456	2.160	1.507	13.966	0.662
0.272	3.488	1.018	2.420	2.254	1.474	15.526	0.633
0.292	3.456	1.042	2.383	2.350	1.445	17.130	0.608
0.314	3.422	1.066	2.347	2.456	1.415	18.924	0.584
0.336	3.391	1.094	2.307	2.564	1.388	20.388	0.564
0.358	3.360	1.118	2.273	2.680	1.358	23.226	0.535
0.382	3.327	1.144	2.238	2.802	1.331	25.972	0.510
0.406	3.295	1.168	2.208	2.940	1.300		
0.430	3.262	1.194	2.173	3.050	1.276		
0.454	3.229	1.220	2.141	3.252	1.242		
0.478	3.204	1.248	2.108	3.452	1.208		
0.504	3.168	1.276	2.075	3.644	1.180		
0.532	3.128	1.304	2.045	3.886	1.146		
0.558	3.094	1.334	2.014	4.100	1.117		

$pK_{a1} = 0.80$ $pK_{a2} = 3.537$

Table AD54. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.0 m NaCl at 25°C. Initial Volume = 13.00 mL, 0.250 mmol Oxalic Acid, Titrant = 0.20 M HCl in 1.0 m NaCl, pcH = pHr + 0.338.

HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr	HCl, mL	pHr
0.000	4.043	0.588	3.050	1.326	2.039	4.710	1.075
0.012	4.012	0.614	3.016	1.358	2.008	5.036	1.046
0.024	3.974	0.640	2.980	1.392	1.976	5.342	1.020
0.036	3.940	0.666	2.945	1.428	1.945	5.678	0.993
0.048	3.909	0.692	2.908	1.466	1.913	6.078	0.965
0.062	3.875	0.716	2.875	1.514	1.875	6.746	0.923
0.078	3.836	0.740	2.842	1.564	1.840	7.134	0.901
0.102	3.784	0.764	2.808	1.614	1.806	7.760	0.869
0.116	3.756	0.788	2.773	1.664	1.774	8.158	0.851
0.132	3.724	0.810	2.741	1.720	1.742	8.814	0.824
0.148	3.694	0.832	2.708	1.780	1.710	9.700	0.792
0.166	3.663	0.854	2.674	1.852	1.674	10.722	0.761
0.184	3.631	0.876	2.641	1.920	1.642	11.818	0.732
0.204	3.598	0.898	2.609	1.996	1.610	13.030	0.705
0.224	3.564	0.920	2.574	2.080	1.576	14.246	0.682
0.244	3.531	0.942	2.540	2.160	1.547	15.560	0.661
0.264	3.500	0.970	2.499	2.250	1.516	16.952	0.641
0.286	3.468	0.992	2.466	2.356	1.482	18.688	0.618
0.308	3.433	1.014	2.433	2.470	1.450	20.556	0.598
0.330	3.402	1.036	2.401	2.590	1.418	22.562	0.578
0.352	3.368	1.060	2.366	2.732	1.383	25.830	0.553
0.374	3.337	1.084	2.332	2.870	1.352		
0.400	3.301	1.108	2.298	3.018	1.321		
0.424	3.269	1.132	2.264	3.198	1.287		
0.448	3.236	1.156	2.233	3.378	1.254		
0.474	3.200	1.180	2.204	3.562	1.220		
0.498	3.168	1.206	2.171	3.768	1.187		
0.516	3.144	1.234	2.139	3.976	1.157		
0.540	3.112	1.264	2.104	4.200	1.129		
0.564	3.081	1.294	2.073	4.450	1.101		

$pK_{a1} = 1.11$, $pK_{a2} = 3.553$

Table AD55. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 2.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 2.0 m NaCl, pcH = pHr + 0.518.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.503	5.000	2.743	5.716	3.980	6.008	9.636
0.236	1.530	5.050	2.786	5.720	4.001	6.028	9.709
0.488	1.560	5.078	2.811	5.726	4.026	6.046	9.762
0.718	1.587	5.104	2.836	5.732	4.053	6.064	9.812
0.972	1.619	5.128	2.860	5.738	4.080	6.082	9.857
1.222	1.653	5.146	2.876	5.744	4.109	6.106	9.909
1.424	1.679	5.174	2.906	5.748	4.132	6.128	9.951
1.606	1.707	5.196	2.931	5.756	4.172	6.152	9.994
1.816	1.738	5.222	2.961	5.760	4.193	6.178	10.036
2.032	1.772	5.248	2.991	5.768	4.236	6.230	10.109
2.212	1.802	5.274	3.023	5.778	4.290	6.278	10.165
2.270	1.829	5.298	3.052	5.782	4.315	6.328	10.218
2.500	1.852	5.324	3.089	5.788	4.356	6.382	10.268
2.612	1.873	5.346	3.119	5.794	4.400	6.448	10.321
2.728	1.895	5.368	3.152	5.804	4.474	6.550	10.391
2.850	1.919	5.396	3.193	5.812	4.542	6.656	10.453
2.962	1.942	5.410	3.216	5.820	4.616	6.758	10.505
3.072	1.965	5.426	3.241	5.828	4.703	6.856	10.549
3.186	1.990	5.442	3.267	5.836	4.801	6.984	10.600
3.288	2.015	5.456	3.292	5.844	4.921	7.102	10.642
3.408	2.044	5.468	3.315	5.850	5.022	7.224	10.681
3.524	2.075	5.480	3.336	5.854	5.103	7.342	10.715
3.628	2.103	5.494	3.363	5.860	5.264	7.478	10.751
3.734	2.134	5.508	3.390	5.866	5.500	7.602	10.782
3.842	2.166	5.522	3.418	5.872	5.914	7.726	10.810
3.968	2.207	5.534	3.444	5.876	6.412	7.874	10.840
4.072	2.243	5.548	3.474	5.880	6.881	8.060	10.874
4.174	2.281	5.562	3.496	5.884	7.566	8.322	10.918
4.254	2.313	5.574	3.535	5.888	8.083	8.608	10.958
4.334	2.345	5.586	3.574	5.894	8.408	8.824	10.988
4.418	2.383	5.608	3.625	5.900	8.624	8.928	11.005
4.506	2.425	5.618	3.652	5.906	8.782		
4.596	2.472	5.630	3.682	5.912	8.894		
4.660	2.506	5.645	3.711	5.918	8.994		
4.714	2.541	5.650	3.742	5.924	9.075		
4.770	2.573	5.660	3.775	5.928	9.124		
4.820	2.607	5.672	3.813	5.934	9.191		
4.868	2.641	5.682	3.846	5.950	9.329		
4.918	2.677	5.694	3.889	5.968	9.450		
4.960	2.709	5.704	3.929	5.990	9.562		

$pK_{a2} = 3.623$

Table AD56. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 2.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol of Oxalic Acid, Titrant = 0.030 M NaOH in 2.0 m NaCl, pcH = pHr + 0.690.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.506	5.108	2.827	5.780	4.243	6.146	9.956
0.268	1.535	5.128	2.847	5.790	4.302	6.160	9.981
0.462	1.558	5.150	2.868	5.800	4.366	6.176	10.008
0.632	1.578	5.180	2.899	5.810	4.441	6.204	10.051
0.842	1.604	5.208	2.929	5.820	4.514	6.213	10.091
1.046	1.630	5.234	2.959	5.832	4.622	6.264	10.129
1.242	1.656	5.262	2.992	5.842	4.726	6.288	10.156
1.466	1.687	5.286	3.022	5.852	4.854	6.314	10.186
1.698	1.721	5.316	3.060	5.862	5.027	6.346	10.219
1.928	1.756	5.346	3.101	5.872	5.271	6.404	10.269
2.136	1.789	5.376	3.145	5.882	5.751	6.474	10.324
2.304	1.817	5.406	3.188	5.888	6.431	6.542	10.373
2.502	1.851	5.434	3.234	5.892	7.060	6.602	10.411
2.704	1.889	5.450	3.260	5.894	7.665	6.668	10.448
2.926	1.933	5.468	3.292	5.898	8.079	6.732	10.482
3.058	1.961	5.486	3.324	5.900	8.254	6.836	10.529
3.184	1.988	5.502	3.353	5.904	8.428	6.938	10.572
3.322	2.021	5.518	3.384	5.906	8.507	7.032	10.608
3.450	2.053	5.532	3.414	5.908	8.571	7.134	10.643
3.586	2.089	5.548	3.445	5.910	8.624	7.234	10.674
3.720	2.126	5.560	3.472	5.914	8.716	7.352	10.709
3.812	2.154	5.574	3.504	5.916	8.768	7.520	10.751
3.896	2.180	5.590	3.545	5.920	8.841	7.689	10.793
3.998	2.213	5.608	3.589	5.926	8.938	7.852	10.826
4.084	2.243	5.620	3.622	5.930	9.002	7.980	10.849
4.174	2.278	5.630	3.651	5.934	9.058	8.112	10.872
4.250	2.306	5.640	3.680	5.938	9.109	8.246	10.897
4.332	2.340	5.650	3.709	5.942	9.160	8.412	10.922
4.414	2.376	5.660	3.740	5.946	9.195	8.562	10.944
4.504	2.419	5.670	3.771	5.960	9.312	8.712	10.964
4.582	2.458	5.680	3.805	5.974	9.411	8.868	10.983
4.668	2.505	5.690	3.838	5.992	9.512	9.078	11.014
4.756	2.557	5.700	3.875	6.010	9.593		
4.810	2.592	5.710	3.912	6.028	9.661		
4.864	2.629	5.722	3.961	6.044	9.714		
4.922	2.671	5.732	4.005	6.060	9.763		
4.982	2.717	5.742	4.048	6.078	9.813		
5.032	2.759	5.752	4.096	6.098	9.860		
5.058	2.781	5.762	4.144	6.114	9.895		
5.084	2.804	5.770	4.189	6.130	9.927		

$pK_{a1} = 3.653$

Table AD57. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 3.0 m NaCl, pcH = pHr + 0.690.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.306	5.124	2.588	5.804	3.801	6.004	8.824
0.266	1.336	5.146	2.607	5.812	3.835	6.010	8.921
0.494	1.361	5.168	2.628	5.822	3.879	6.022	9.087
0.718	1.389	5.194	2.653	5.832	3.928	6.036	9.225
0.930	1.415	5.222	2.681	5.840	3.965	6.050	9.333
1.154	1.445	5.244	2.705	5.848	4.005	6.066	9.430
1.392	1.476	5.276	2.740	5.852	4.029	6.082	9.512
1.628	1.509	5.308	2.776	5.858	4.062	6.098	9.581
1.822	1.538	5.336	2.810	5.864	4.096	6.112	9.632
2.022	1.568	5.362	2.842	5.870	4.133	6.126	9.676
2.224	1.600	5.390	2.879	5.874	4.159	6.144	9.729
2.440	1.637	5.412	2.909	5.880	4.200	6.174	9.804
2.650	1.674	5.434	2.940	5.884	4.228	6.204	9.868
2.858	1.713	5.456	2.973	5.888	4.255	6.236	9.927
3.094	1.763	5.480	3.010	5.892	4.284	6.268	9.978
3.242	1.794	5.504	3.048	5.896	4.314	6.298	10.022
3.364	1.822	5.528	3.089	5.902	4.358	6.364	10.102
3.490	1.854	5.546	3.120	5.908	4.409	6.424	10.164
3.594	1.881	5.564	3.153	5.914	4.461	6.486	10.220
3.678	1.903	5.582	3.188	5.920	4.516	6.556	10.274
3.778	1.931	5.600	3.222	5.926	4.577	6.630	10.326
3.874	1.960	5.618	3.261	5.932	4.644	6.722	10.381
3.992	1.996	5.632	3.291	5.936	4.697	6.816	10.430
4.104	2.033	5.644	3.316	5.942	4.781	6.916	10.476
4.218	2.075	5.656	3.346	5.948	4.877	7.018	10.519
4.328	2.117	5.670	3.379	5.952	4.966	7.156	10.570
4.408	2.150	5.682	3.409	5.956	5.046	7.282	10.610
4.490	2.186	5.692	3.434	5.962	5.205	7.418	10.650
4.534	2.207	5.702	3.461	5.966	5.366	7.584	10.693
4.622	2.250	5.710	3.484	5.970	5.576	7.748	10.732
4.702	2.292	5.720	3.512	5.976	6.112	7.956	10.775
4.746	2.316	5.728	3.535	5.980	6.732	8.196	10.818
4.792	2.344	5.738	3.565	5.984	7.645	8.360	10.845
4.844	2.377	5.746	3.591	5.988	8.176	8.526	10.872
4.896	2.411	5.754	3.617	5.990	8.348	8.698	10.895
4.944	2.444	5.764	3.649	5.992	8.464	8.936	10.927
5.006	2.490	5.772	3.677	5.996	8.596	9.124	10.948
5.032	2.508	5.780	3.708	5.998	8.666	9.366	10.977
5.062	2.534	5.788	3.734	6.000	8.728	9.598	11.004
5.094	2.561	5.796	3.769	6.002	8.780		

$pK_{a2} = 3.723$

Table AD58. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 3.0 m NaCl, pcH = pHr + 0.690.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.326	5.264	2.756	5.870	4.250	6.288	10.001
0.262	1.356	5.286	2.784	5.880	4.315	6.312	10.034
0.498	1.382	5.308	2.810	5.888	4.375	6.366	10.097
0.702	1.407	5.332	2.840	5.894	4.424	6.430	10.161
0.914	1.432	5.352	2.865	5.900	4.481	6.490	10.214
1.136	1.461	5.376	2.897	5.910	4.574	6.552	10.262
1.328	1.487	5.402	2.932	5.916	4.641	6.620	10.309
1.532	1.514	5.426	2.966	5.924	4.740	6.724	10.369
1.758	1.547	5.444	2.993	5.930	4.826	6.828	10.423
1.968	1.578	5.464	3.025	5.936	4.933	6.930	10.469
2.214	1.618	5.486	3.061	5.942	5.060	7.032	10.510
2.466	1.660	5.508	3.096	5.948	5.231	7.152	10.555
2.698	1.703	5.532	3.138	5.952	5.382	7.278	10.594
2.906	1.742	5.556	3.183	5.958	5.734	7.398	10.629
3.096	1.781	5.576	3.221	5.964	6.446	7.536	10.667
3.256	1.816	5.600	3.271	5.970	7.377	7.646	10.694
3.412	1.853	5.620	3.315	5.974	7.940	7.772	10.722
3.552	1.888	5.634	3.346	5.978	8.216	7.886	10.745
3.670	1.920	5.646	3.374	5.982	8.399	8.010	10.767
3.796	1.956	5.660	3.408	5.986	8.525	8.138	10.793
3.912	1.990	5.676	3.448	5.992	8.687	8.286	10.818
4.028	2.029	5.692	3.492	5.996	8.773	8.454	10.845
4.146	2.068	5.700	3.514	6.002	8.880	8.682	10.877
4.268	2.113	5.706	3.532	6.006	8.940	9.054	10.923
4.344	2.143	5.714	3.555	6.012	9.021	9.298	10.950
4.408	2.171	5.722	3.579	6.018	9.089	9.456	10.966
4.500	2.212	5.732	3.611	6.026	9.171	9.678	10.989
4.588	2.253	5.742	3.643	6.034	9.239	9.822	11.007
4.640	2.282	5.752	3.677	6.040	9.286		
4.696	2.311	5.760	3.706	6.054	9.377		
4.754	2.345	5.766	3.727	6.068	9.454		
4.808	2.377	5.776	3.765	6.082	9.516		
4.864	2.414	5.784	3.796	6.096	9.575		
4.916	2.449	5.794	3.837	6.110	9.625		
4.986	2.501	5.802	3.871	6.124	9.669		
5.060	2.560	5.810	3.907	6.136	9.705		
5.082	2.578	5.820	3.954	6.150	9.743		
5.108	2.601	5.828	3.996	6.164	9.778		
5.138	2.629	5.834	4.026	6.178	9.810		
5.158	2.649	5.840	4.069	6.190	9.836		
5.184	2.674	5.846	4.110	6.216	9.887		
5.210	2.701	5.854	4.151	6.242	9.931		
5.242	2.734	5.862	4.196	6.264	9.967		

$pK_{a2} = 3.709$

Table AD59. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 5.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 5.0 m NaCl, pcH = pHr + 1.167.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.852	5.366	2.454	5.936	4.120	6.534	10.151
0.266	0.881	5.390	2.489	5.944	4.182	6.626	10.223
0.560	0.917	5.416	2.528	5.952	4.250	6.722	10.280
0.824	0.949	5.436	2.560	5.960	4.323	6.828	10.341
1.032	0.976	5.462	2.603	5.968	4.403	6.928	10.392
1.262	1.006	5.486	2.644	5.974	4.468	7.046	10.440
1.498	1.038	5.516	2.697	5.982	4.565	7.164	10.485
1.726	1.071	5.540	2.742	5.990	4.678	7.250	10.515
1.932	1.103	5.562	2.785	5.996	4.780	7.338	10.544
2.142	1.136	5.586	2.833	6.004	4.940	7.436	10.575
2.332	1.167	5.604	2.871	6.008	5.054	7.568	10.610
2.520	1.200	5.626	2.919	6.012	5.181	7.742	10.650
2.738	1.241	5.648	2.967	6.016	5.365	7.916	10.687
2.950	1.281	5.672	3.006	6.020	5.609	8.030	10.711
3.154	1.323	5.690	3.072	6.024	5.975	8.148	10.734
3.352	1.369	5.702	3.102	6.028	6.456	8.268	10.753
3.576	1.425	5.712	3.129	6.032	7.317	8.392	10.773
3.800	1.488	5.726	3.167	6.038	8.017	8.592	10.801
3.904	1.520	5.736	3.197	6.042	8.335	8.832	10.835
4.006	1.588	5.746	3.226	6.046	8.521	9.004	10.858
4.110	1.622	5.756	3.257	6.050	8.637	9.138	10.874
4.206	1.668	5.768	3.294	6.056	8.771	9.270	10.888
4.326	1.715	5.780	3.336	6.060	8.857	9.404	10.903
4.512	1.749	5.790	3.370	6.064	8.924	9.610	10.924
4.604	1.796	5.800	3.406	6.070	9.005	9.764	10.939
4.680	1.837	5.812	3.452	6.078	9.093	9.976	10.962
4.752	1.878	5.820	3.482	6.090	9.201	7.886	10.745
4.836	1.932	5.832	3.533	6.102	9.288	8.010	10.767
4.906	1.981	5.844	3.587	6.114	9.362	8.138	10.793
4.956	2.017	5.856	3.642	6.132	9.451	8.286	10.818
5.008	2.060	5.868	3.701	6.150	9.527	8.454	10.845
5.058	2.103	5.874	3.730	6.170	9.596	8.682	10.877
5.106	2.146	5.878	3.751	6.194	9.668	9.054	10.923
5.154	2.194	5.886	3.795	6.216	9.723	9.298	10.950
5.212	2.257	5.894	3.840	6.242	9.778	9.456	10.966
5.240	2.287	5.900	3.874	6.266	9.826	9.678	10.989
5.268	2.323	5.906	3.913	6.302	9.888	9.822	11.007
5.292	2.352	5.914	3.963	6.342	9.949		
5.316	2.385	5.920	4.001	6.398	10.019		
5.340	2.417	5.928	4.060	6.456	10.080		

$pK_{a2} = 3.930$

Table AD60. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 5.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, Titrant = 0.030 M NaOH in 5.0 m NaCl, pcH = pHr + 1.155.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.862	5.452	2.633	5.940	4.425	7.204	10.480
0.278	0.894	5.474	2.670	5.948	4.517	7.276	10.503
0.502	0.920	5.494	2.707	5.962	4.714	7.338	10.523
0.720	0.946	5.514	2.744	5.972	4.907	7.432	10.548
0.952	0.974	5.542	2.799	5.982	5.181	7.553	10.576
1.204	1.008	5.556	2.828	5.992	5.720	7.638	10.601
1.406	1.035	5.568	2.852	5.996	6.158	7.794	10.634
1.608	1.063	5.584	2.888	6.002	7.257	7.916	10.662
1.828	1.096	5.598	2.919	6.006	7.815	8.034	10.685
2.038	1.127	5.610	2.945	6.008	8.038	8.148	10.705
2.256	1.163	5.626	2.982	6.012	8.260	8.286	10.726
2.456	1.196	5.640	3.017	6.014	8.348	8.392	10.748
2.642	1.230	5.654	3.050	6.018	8.491	8.558	10.770
2.854	1.270	5.666	3.082	6.022	8.607	8.774	10.802
3.038	1.307	5.680	3.119	6.028	8.737	8.944	10.823
3.236	1.350	5.694	3.157	6.034	8.846	9.088	10.839
3.382	1.386	5.706	3.193	6.048	9.026	9.248	10.858
3.504	1.416	5.722	3.241	6.060	9.142	9.398	10.874
3.640	1.451	5.738	3.291	6.076	9.262	9.596	10.893
3.766	1.487	5.752	3.339	6.092	9.354	9.814	10.914
3.912	1.530	5.766	3.387	6.106	9.421	9.138	10.874
4.034	1.571	5.778	3.433	6.130	9.516	9.270	10.888
4.152	1.613	5.792	3.487	6.154	9.593	9.404	10.903
4.266	1.655	5.808	3.554	6.162	9.670	9.610	10.924
4.378	1.702	5.820	3.609	6.226	9.766	9.764	10.939
4.486	1.750	5.828	3.647	6.262	9.830	9.976	10.962
4.590	1.802	5.836	3.687	6.304	9.899		
4.674	1.848	5.842	3.717	6.348	9.957		
4.758	1.899	5.848	3.749	6.386	10.005		
4.844	1.956	5.854	3.780	6.454	10.073		
4.924	2.013	5.862	3.825	6.542	10.146		
5.000	2.076	5.868	3.862	6.608	10.196		
5.078	2.145	5.874	3.895	6.670	10.236		
5.148	2.215	5.880	3.935	6.728	10.272		
5.220	2.297	5.886	3.973	6.796	10.308		
5.270	2.360	5.892	4.014	6.862	10.342		
5.320	2.426	5.902	4.087	6.922	10.371		
5.364	2.490	5.912	4.162	6.998	10.403		
5.410	2.562	5.920	4.228	7.062	10.428		
5.432	2.597	5.930	4.319	7.132	10.456		

pK_{a2} = 3.963

Table AD61. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.050.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.172	3.848	3.773	4.626	5.352	5.134	9.523
0.274	2.212	3.872	3.813	4.640	5.388	5.140	9.575
0.406	2.237	3.896	3.853	4.654	5.426	5.148	9.625
0.558	2.263	3.920	3.895	4.668	5.465	5.164	9.717
0.680	2.285	3.942	3.934	4.680	5.492	5.176	9.781
0.828	2.312	3.960	3.966	4.694	5.527	5.190	9.850
0.990	2.344	3.986	4.014	4.706	5.560	5.202	9.903
1.128	2.362	4.010	4.058	4.720	5.598	5.216	9.963
1.272	2.402	4.030	4.095	4.732	5.629	5.228	10.004
1.384	2.427	4.050	4.133	4.746	5.668	5.244	10.053
1.526	2.460	4.072	4.174	4.766	5.725	5.258	10.095
1.666	2.493	4.088	4.204	4.782	5.770	5.274	10.141
1.822	2.533	4.112	4.251	4.796	5.813	5.298	10.200
1.972	2.575	4.132	4.289	4.806	5.842	5.320	10.250
2.116	2.617	4.154	4.331	4.822	5.889	5.350	10.314
2.266	2.664	4.176	4.373	4.834	5.927	5.398	10.396
2.408	2.712	4.198	4.414	4.846	5.968	5.454	10.476
2.518	2.753	4.222	4.461	4.860	6.020	5.508	10.544
2.616	2.791	4.246	4.509	4.874	6.072	5.562	10.602
2.712	2.831	4.268	4.551	4.888	6.124	5.620	10.656
2.794	2.867	4.292	4.599	4.902	6.179	5.680	10.705
2.870	2.903	4.316	4.648	4.916	6.241	5.740	10.748
2.954	2.945	4.328	4.673	4.932	6.315	5.802	10.793
3.046	2.996	4.342	4.701	4.946	6.389	5.898	10.846
3.146	3.056	4.356	4.731	4.958	6.462	5.994	10.896
3.208	3.095	4.370	4.761	4.972	6.559	6.092	10.939
3.262	3.132	4.384	4.791	4.986	6.677	6.180	10.978
3.320	3.177	4.398	4.821	5.000	6.822	6.276	11.015
3.360	3.207	4.414	4.855	5.014	7.018	5.958	10.883
3.406	3.245	4.428	4.887	5.028	7.371	6.052	10.928
3.452	3.285	4.442	4.917	5.042	8.039	6.156	10.971
3.496	3.327	4.456	4.950	5.050	8.370	6.250	11.010
3.542	3.373	4.468	4.976	5.056	8.550		
3.584	3.419	4.484	5.015	5.062	8.698		
3.608	3.446	4.498	5.046	5.070	8.849		
3.638	3.480	4.512	5.081	5.074	8.911		
3.666	3.513	4.526	5.112	5.080	8.988		
3.696	3.553	4.530	5.139	5.088	9.099		
3.718	3.583	4.552	5.173	5.094	9.164		
3.744	3.617	4.564	5.201	5.100	9.236		
3.776	3.663	4.578	5.235	5.106	9.293		
3.810	3.714	4.604	5.298	5.120	9.419		

$pK_{a1} = 2.917$, $pK_{a2} = 4.357$, $pK_{a3} = 5.621$

Table AD62. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.031.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.164	3.880	3.824	4.620	5.359	4.784	5.796
0.250	2.201	3.898	3.857	4.638	5.405	5.094	9.267
0.538	2.249	3.916	3.886	4.652	5.437	5.102	9.348
0.662	2.270	3.936	3.921	4.666	5.473	5.108	9.401
0.784	2.292	3.958	3.961	4.682	5.514	5.116	9.469
0.906	2.315	3.980	4.001	4.698	5.554	5.124	9.529
1.030	2.339	3.998	4.035	4.712	5.593	5.130	9.572
1.152	2.364	4.016	4.068	4.726	5.631	5.138	9.624
1.276	2.390	4.042	4.118	4.740	5.669	5.146	9.669
1.408	2.419	4.062	4.156	4.754	5.707	5.154	9.717
1.532	2.448	4.082	4.194	4.768	5.750	5.160	9.747
1.648	2.476	4.098	4.225	4.784	5.796	5.168	9.790
1.772	2.507	4.118	4.266	4.798	5.835	5.196	9.917
1.890	2.539	4.136	4.298	4.816	5.887	5.222	10.014
2.018	2.574	4.152	4.329	4.834	5.946	5.248	10.097
2.136	2.609	4.168	4.360	4.850	6.001	5.274	10.170
2.252	2.646	4.186	4.395	4.868	6.067	5.302	10.235
2.362	2.682	4.204	4.430	4.884	6.129	5.328	10.291
2.484	2.726	4.222	4.466	4.898	6.187	5.382	10.388
2.582	2.763	4.242	4.505	4.914	6.261	5.436	10.467
2.678	2.803	4.258	4.537	8.922	6.297	5.498	10.544
2.782	2.848	4.280	4.580	4.930	6.340	5.540	10.588
2.872	2.891	4.304	4.630	4.938	6.385	5.584	10.632
2.964	2.937	4.316	4.658	4.944	6.420	5.648	10.688
3.054	2.987	4.328	4.681	4.950	6.457	5.716	10.740
3.128	3.032	4.344	4.713	4.956	6.498	5.794	10.791
3.204	3.081	4.362	4.753	4.964	6.554	5.876	10.840
3.294	3.144	4.378	4.787	4.970	6.601	5.958	10.883
3.384	3.216	4.394	4.823	4.976	6.658	6.052	10.928
3.440	3.265	4.410	4.857	4.982	6.716	6.156	10.971
3.494	3.316	4.428	4.899	4.988	6.783	6.250	11.010
3.554	3.378	4.444	4.934	4.994	6.878		
3.588	3.414	4.458	4.966	5.000	6.959		
3.614	3.442	4.472	5.000	5.008	7.103		
3.642	3.476	4.486	5.032	5.014	7.262		
3.674	3.517	4.500	5.065	5.018	7.385		
3.706	3.558	4.514	5.099	5.024	7.624		
3.728	3.590	4.528	5.133	5.030	7.933		
3.756	3.629	4.544	5.173	4.726	5.631		
3.786	3.673	4.560	5.211	4.740	5.669		
3.814	3.716	4.574	5.242	4.754	5.707		
3.840	3.757	4.588	5.277	4.768	5.750		
3.866	3.800	4.606	5.320	4.784	5.796		

$pK_{a1} = 2.941$, $pK_{a2} = 4.368$, $pK_{a3} = 5.631$

Table AD63. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.130.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.073	3.844	3.590	4.626	5.048	5.018	7.094
0.170	2.098	3.870	3.628	4.640	5.081	5.022	7.274
0.340	2.125	3.896	3.668	4.656	5.117	5.026	7.444
0.492	2.149	3.922	3.709	4.672	5.157	5.030	7.660
0.656	2.176	3.944	3.744	4.696	5.189	5.034	7.928
0.846	2.212	3.970	3.785	4.702	5.230	5.038	8.145
1.036	2.247	3.996	3.829	4.716	5.263	5.042	8.231
1.206	2.281	4.010	3.853	4.730	5.301	5.046	8.339
1.360	2.313	4.026	3.879	4.744	5.336	5.052	8.473
1.506	2.346	4.040	3.902	4.760	5.377	5.056	8.534
1.662	2.383	4.056	3.929	4.774	5.417	5.060	8.593
1.808	2.419	4.072	3.957	4.786	5.452	5.070	8.737
1.958	2.460	4.088	3.985	4.798	5.493	5.078	8.833
2.106	2.502	4.104	4.012	4.810	5.523	5.086	8.918
2.262	2.549	4.122	4.044	4.818	5.553	5.092	8.977
2.396	2.593	4.140	4.076	4.826	5.577	5.100	9.054
2.512	2.634	4.156	4.105	4.836	5.609	5.108	9.122
2.592	2.664	4.172	4.132	4.844	5.636	5.114	9.172
2.702	2.708	4.190	4.166	4.852	5.663	5.120	9.216
2.806	2.753	4.210	4.202	4.860	5.693	5.126	9.262
2.878	2.785	4.228	4.236	4.868	5.722	5.132	9.303
2.940	2.815	4.248	4.270	4.878	5.759	5.140	9.345
3.020	2.857	4.268	4.307	4.888	5.800	5.148	9.403
3.088	2.894	4.286	4.341	4.898	5.840	5.156	9.448
3.158	2.935	4.302	4.372	4.908	5.887	5.164	9.492
3.204	2.963	4.322	4.409	4.916	5.924	5.172	9.534
3.248	2.992	4.338	4.440	4.924	5.965	5.180	9.574
3.288	3.019	4.358	4.483	4.932	6.008	5.188	9.612
3.332	3.051	4.374	4.509	4.938	6.046	5.198	9.655
3.372	3.082	4.388	4.539	4.944	6.076	5.208	9.700
3.416	3.116	4.406	4.579	4.952	6.123	5.226	9.769
3.454	3.149	4.422	4.606	4.960	6.176	5.250	9.849
3.488	3.179	4.440	4.644	4.968	6.237	5.272	9.914
3.532	3.219	4.456	4.678	4.972	6.269	5.290	9.963
3.570	3.257	4.472	4.711	4.976	6.307	5.312	10.017
3.610	3.298	4.488	4.744	4.980	6.349	5.334	10.066
3.654	3.346	4.504	4.781	4.984	6.387	5.356	10.110
3.674	3.369	4.520	4.814	4.988	6.437	5.380	10.154
3.698	3.398	4.536	4.846	4.994	6.519	5.406	10.197
3.724	3.428	4.552	4.880	4.998	6.581	5.430	10.235
3.746	3.457	4.566	4.913	5.002	6.650	5.456	10.272
3.772	3.491	4.580	4.945	5.006	6.731	5.528	10.361
3.798	3.525	4.596	4.981	5.010	6.827	5.600	10.433
3.822	3.559	4.612	5.017	5.014	6.943	5.678	10.503

Table AD63. Continued.

NaOH, mL	pHr
5.758	10.560
5.848	10.620
5.928	10.665
6.048	10.725
6.174	10.778
6.302	10.826
6.448	10.874
6.596	10.918
6.748	10.958
6.896	10.992
7.040	11.027

$pK_{a1} = 2.862$, $pK_{a2} = 4.242$, $pK_{a3} = 5.372$

Table AD64. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.125.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.081	3.874	3.672	4.654	5.168	5.038	8.487
0.222	2.114	3.904	3.718	4.670	5.206	5.044	8.612
0.416	2.146	3.936	3.769	4.686	5.246	5.050	8.697
0.612	2.179	3.950	3.792	4.704	5.290	5.056	8.776
0.776	2.209	3.968	3.822	4.720	5.332	5.062	8.852
0.990	2.249	3.990	3.859	4.728	5.354	5.070	8.933
1.208	2.294	4.010	3.894	4.740	5.385	5.076	9.002
1.410	2.337	4.028	3.924	4.752	5.419	5.094	9.166
1.630	2.388	4.046	3.958	4.760	5.442	5.112	9.304
1.832	2.439	4.066	3.990	4.772	5.476	5.126	9.396
1.956	2.472	4.086	4.024	4.782	5.507	5.140	9.482
2.078	2.508	4.104	4.057	4.792	5.534	5.154	9.551
2.212	2.548	4.124	4.093	4.802	5.566	5.166	9.619
2.318	2.582	4.142	4.123	4.814	5.601	5.178	9.676
2.438	2.620	4.158	4.152	4.826	5.641	5.190	9.730
2.520	2.653	4.176	4.184	4.836	5.677	5.202	9.771
2.616	2.691	4.192	4.213	4.844	5.704	5.214	9.817
2.702	2.725	4.208	4.241	4.856	5.749	5.234	9.887
2.786	2.761	4.224	4.271	4.868	5.797	5.254	9.953
2.862	2.797	4.240	4.301	4.876	5.830	5.276	10.011
2.934	2.832	4.256	4.331	4.884	5.864	5.298	10.063
3.012	2.872	4.274	4.365	4.892	5.899	5.324	10.123
3.076	2.907	4.292	4.400	4.900	5.939	5.350	10.175
3.116	2.931	4.310	4.434	4.908	5.976	5.376	10.222
3.168	2.963	4.328	4.470	4.918	6.022	5.406	10.271
3.218	2.995	4.348	4.507	4.928	6.082	5.436	10.316
3.266	3.026	4.368	4.547	4.934	6.125	5.464	10.355
3.316	3.063	4.386	4.582	4.940	6.168	5.534	10.436
3.374	3.108	4.400	4.610	4.946	6.210	5.592	10.493
3.426	3.150	4.416	4.644	4.952	6.254	5.646	10.542
3.488	3.205	4.432	4.678	4.960	6.323	5.732	10.611
3.516	3.232	4.448	4.710	4.966	6.382	5.830	10.675
3.548	3.263	4.462	4.741	4.972	6.448	5.946	10.739
3.578	3.293	4.480	4.778	4.976	6.507	6.030	10.782
3.608	3.325	4.498	4.819	4.982	6.593	6.130	10.826
3.640	3.360	4.514	4.853	4.988	6.685	6.244	10.872
3.672	3.398	4.532	4.895	4.994	6.783	6.390	10.921
3.700	3.432	4.548	4.925	5.000	6.922	6.514	10.959
3.734	3.475	4.562	4.956	5.006	7.132	6.630	10.992
3.756	3.504	4.578	4.991	5.012	7.424	6.742	11.026
3.784	3.541	4.592	5.023	5.016	7.676		
3.804	3.570	4.606	5.055	5.020	7.973		
3.854	3.641	4.638	5.131	5.032	8.376		

$pK_{a1} = 2.896$, $pK_{a2} = 4.250$, $pK_{a3} = 5.389$

Table AD65. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.183.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.020	3.970	3.671	4.758	5.142	5.158	9.699
0.242	2.050	3.988	3.698	4.770	5.171	5.182	9.799
0.466	2.090	4.008	3.731	4.786	5.217	5.204	9.878
0.674	2.125	4.028	3.760	4.798	5.251	5.228	9.951
0.852	2.156	4.050	3.796	4.814	5.290	5.248	10.004
1.088	2.200	4.068	3.823	4.828	5.340	5.284	10.083
1.296	2.243	4.084	3.849	4.842	5.370	5.320	10.146
1.504	2.288	4.106	3.885	4.856	5.409	5.354	10.201
1.794	2.357	4.142	3.946	4.882	5.493	5.422	10.292
1.902	2.384	4.160	3.980	4.896	5.541	5.452	10.327
1.986	2.406	4.180	4.007	4.906	5.577	5.480	10.358
2.120	2.445	4.198	4.038	4.918	5.625	5.512	10.391
2.270	2.489	4.216	4.071	4.928	5.664	5.628	10.487
2.378	2.525	4.234	4.099	4.938	5.710	5.736	10.561
2.474	2.558	4.258	4.142	4.948	5.757	5.840	10.621
2.578	2.595	4.276	4.171	4.954	5.781	5.934	10.669
2.686	2.638	4.294	4.203	4.964	5.836	6.026	10.712
2.780	2.677	4.312	4.242	4.974	5.893	6.122	10.751
2.876	2.720	4.330	4.267	4.982	5.941	6.216	10.786
2.984	2.771	4.350	4.305	4.986	5.974	6.322	10.821
3.052	2.806	4.362	4.326	4.992	6.021	6.442	10.852
3.104	2.834	4.378	4.354	4.998	6.068	6.548	10.888
3.160	2.866	4.396	4.388	5.004	6.116	6.678	10.921
3.212	2.898	4.412	4.417	5.010	6.169	6.812	10.953
3.266	2.932	4.428	4.451	5.016	6.230	6.942	10.980
3.320	2.970	4.442	4.474	5.024	6.318	7.054	11.004
3.380	3.013	4.458	4.501	5.032	6.430	5.534	10.436
3.442	3.062	4.478	4.541	5.038	6.582	5.592	10.493
3.502	3.114	4.496	4.576	5.044	6.744	5.646	10.542
3.550	3.155	4.514	4.614	5.050	6.957	5.732	10.611
3.602	3.205	4.532	4.647	5.056	7.248	5.830	10.675
3.658	3.262	4.558	4.703	5.062	7.938	5.946	10.739
3.682	3.288	4.578	4.743	5.068	8.482	6.030	10.782
3.708	3.318	4.594	4.776	5.074	8.739	6.130	10.826
3.740	3.360	4.616	4.822	5.082	8.954	6.244	10.872
3.766	3.386	4.634	4.868	5.088	9.094	6.390	10.921
3.796	3.423	4.648	4.893	5.094	9.187	6.514	10.959
3.824	3.459	4.664	4.926	5.100	9.268	6.630	10.992
3.856	3.502	4.684	4.977	5.108	9.364	6.742	11.026
3.892	3.553	4.698	5.008	5.114	9.420		
3.920	3.593	4.712	5.033	5.122	9.485		
3.946	3.633	4.744	5.108	5.134	9.566		

$pK_{a1} = 2.880$, $pK_{a2} = 4.222$, $pK_{a3} = 5.266$

Table AD66. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.159.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.041	3.810	3.485	4.598	4.840	5.042	7.409
0.184	2.070	3.834	3.518	4.614	4.877	5.046	7.832
0.328	2.091	3.856	3.548	4.634	4.917	5.052	8.379
0.482	2.116	3.878	3.578	4.650	4.951	5.058	8.659
0.644	2.145	3.900	3.610	4.660	4.972	5.062	8.788
0.836	2.178	3.920	3.640	4.676	5.010	5.068	8.943
1.024	2.214	3.942	3.673	4.692	5.046	5.076	9.096
1.212	2.251	3.962	3.704	4.704	5.072	5.082	9.194
1.382	2.288	3.982	3.735	4.716	5.101	5.090	9.287
1.538	2.323	4.002	3.766	4.734	5.141	5.096	9.353
1.694	2.360	4.026	3.804	4.750	5.182	5.104	9.430
1.830	2.394	4.046	3.836	4.762	5.211	5.112	9.495
1.972	2.433	4.066	3.868	4.778	5.252	5.120	9.553
2.104	2.470	4.088	3.905	4.794	5.295	5.128	9.603
2.244	2.511	4.112	3.945	4.808	5.333	5.136	9.649
2.364	2.550	4.134	3.982	4.820	5.367	5.144	9.690
2.468	2.586	4.156	4.019	4.836	5.414	5.170	9.803
2.568	2.622	4.178	4.055	4.852	5.462	5.194	9.889
2.672	2.663	4.200	4.092	4.866	5.512	5.220	9.964
2.768	2.703	4.218	4.123	4.872	5.548	5.248	10.034
2.874	2.751	4.234	4.151	4.878	5.558	5.276	10.095
2.962	2.793	4.252	4.181	4.884	5.583	5.306	10.150
3.020	2.822	4.270	4.213	4.890	5.599	5.334	10.198
3.090	2.861	4.284	4.237	4.898	5.627	5.362	10.240
3.172	2.908	4.302	4.268	4.908	5.666	5.390	10.277
3.228	2.943	4.322	4.305	4.918	5.709	5.456	10.354
3.282	2.979	4.340	4.337	4.928	5.751	5.520	10.417
3.346	3.025	4.356	4.366	4.938	5.802	5.582	10.472
3.446	3.103	4.378	4.406	4.948	5.851	5.646	10.519
3.486	3.137	4.394	4.436	4.958	5.904	5.720	10.569
3.540	3.185	4.412	4.469	4.966	5.954	5.848	10.643
3.580	3.223	4.432	4.508	4.976	6.024	5.984	10.708
3.600	3.239	4.452	4.545	4.984	6.087	6.122	10.765
3.620	3.263	4.472	4.585	4.992	6.154	6.268	10.816
3.642	3.286	4.490	4.620	4.998	6.206	6.386	10.854
3.672	3.319	4.508	4.659	5.006	6.308	6.522	10.893
3.700	3.350	4.528	4.697	5.014	6.420	6.656	10.928
3.724	3.378	4.544	4.729	5.020	6.521	6.794	10.961
3.748	3.407	4.562	4.767	5.026	6.656	6.930	10.981
3.780	3.447	4.580	4.803	5.034	6.906	7.060	11.020

$pK_{a1} = 2.910$, $pK_{a2} = 4.227$, $pK_{a3} = 5.282$

Table AD67. Potentiometric Titration Data for the pK_a Values of Citric Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.394.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.824	3.894	3.413	4.648	4.763	5.038	9.211
0.204	1.853	3.918	3.452	4.662	4.793	5.042	9.256
0.422	1.887	3.946	3.493	4.678	4.830	5.046	9.306
0.670	1.925	3.972	3.532	4.694	4.869	5.050	9.339
0.896	1.965	4.000	3.578	4.710	4.907	5.054	9.375
1.128	2.011	4.016	3.603	4.728	4.953	5.058	9.411
1.258	2.038	4.040	3.640	4.744	4.994	5.062	9.440
1.452	2.081	4.058	3.670	4.758	5.030	5.066	9.470
1.582	2.111	4.076	3.701	4.776	5.080	5.072	9.500
1.706	2.142	4.094	3.730	4.792	5.128	5.084	9.579
1.830	2.174	4.112	3.760	4.810	5.182	5.094	9.634
1.982	2.215	4.128	3.788	4.824	5.230	5.104	9.681
2.098	2.249	4.144	3.815	4.838	5.278	5.116	9.732
2.206	2.281	4.160	3.840	4.854	5.340	5.128	9.777
2.304	2.313	4.178	3.871	4.864	5.381	5.138	9.811
2.408	2.348	4.198	3.906	4.878	5.444	5.148	9.844
2.520	2.388	4.218	3.940	4.890	5.480	5.160	9.879
2.620	2.428	4.228	3.956	4.898	5.546	5.184	9.943
2.706	2.462	4.240	3.978	4.906	5.586	5.198	9.978
2.792	2.500	4.256	4.005	4.914	5.632	5.218	10.021
2.874	2.538	4.272	4.032	4.924	5.697	5.234	10.051
2.972	2.587	4.286	4.056	4.932	5.756	5.270	10.118
3.056	2.632	4.304	4.089	4.940	5.821	5.304	10.170
3.124	2.670	4.320	4.118	4.948	5.890	5.338	10.219
3.188	2.710	4.336	4.146	4.956	5.977	5.372	10.261
3.242	2.746	4.352	4.177	4.962	6.050	5.410	10.303
3.300	2.786	4.368	4.205	4.966	6.106	5.458	10.351
3.350	2.824	4.384	4.235	4.970	6.168	5.512	10.401
3.396	2.860	4.400	4.265	4.974	6.244	5.572	10.447
3.452	2.907	4.416	4.295	4.978	6.320	5.632	10.492
3.500	2.949	4.432	4.324	4.982	6.446	5.692	10.530
3.526	2.972	4.448	4.354	4.986	6.603	5.754	10.567
3.554	2.999	4.464	4.385	4.990	6.826	5.816	10.601
3.586	3.032	4.480	4.416	4.994	7.141	5.918	10.650
3.616	3.064	4.494	4.444	4.998	7.749	6.022	10.693
3.646	3.091	4.510	4.476	5.002	8.209	6.126	10.736
3.674	3.131	4.526	4.506	5.006	8.444	6.252	10.778
3.702	3.161	4.540	4.534	5.010	8.598	6.386	10.819
3.730	3.194	4.556	4.568	5.014	8.710	6.574	10.870
3.758	3.229	4.572	4.600	5.018	8.835	6.708	10.903
3.786	3.264	4.588	4.633	5.022	8.964	6.834	10.932
3.840	3.336	4.618	4.697	5.030	9.099	7.114	10.987
3.868	3.375	4.632	4.727	5.034	9.156	7.264	11.015

$pK_{a1} = 2.890$, $pK_{a2} = 4.182$, $pK_{a3} = 5.211$

Table AD68. Potentiometric Titration Data for the pK_a Values of Citric Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.331.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.875	3.702	3.219	4.590	4.698	5.018	9.028
0.180	1.904	3.726	3.247	4.608	4.735	5.026	9.142
0.370	1.932	3.756	3.283	4.618	4.756	5.034	9.256
0.530	1.960	3.786	3.322	4.632	4.789	5.042	9.316
0.704	1.990	3.814	3.364	4.646	4.819	5.052	9.394
0.848	2.017	3.842	3.396	4.660	4.852	5.062	9.465
1.002	2.045	3.866	3.431	4.672	4.881	5.072	9.530
1.134	2.072	3.892	3.469	4.684	4.909	5.082	9.589
1.268	2.099	3.920	3.510	4.696	4.937	5.096	9.658
1.432	2.135	3.940	3.541	4.708	4.969	5.108	9.710
1.576	2.168	3.964	3.579	4.718	4.993	5.118	9.750
1.718	2.203	3.990	3.619	4.730	5.024	5.130	9.789
1.842	2.233	4.012	3.653	4.742	5.060	5.142	9.829
1.972	2.269	4.036	3.692	4.754	5.094	5.164	9.890
2.102	2.307	4.060	3.732	4.766	5.126	5.180	9.933
2.240	2.350	4.086	3.774	4.778	5.162	5.198	9.976
2.368	2.391	4.108	3.810	4.792	5.205	5.216	10.015
2.492	2.434	4.130	3.847	4.804	5.244	5.234	10.050
2.574	2.466	4.150	3.881	4.818	5.291	5.252	10.083
2.664	2.500	4.168	3.911	4.830	5.336	5.270	10.112
2.734	2.531	4.184	3.939	4.842	5.383	5.300	10.158
2.820	2.568	4.204	3.972	4.854	5.432	5.340	10.213
2.898	2.606	4.226	4.010	4.864	5.476	5.416	10.298
2.960	2.636	4.246	4.045	4.872	5.516	5.494	10.373
3.026	2.671	4.268	4.082	4.882	5.566	5.580	10.441
3.082	2.703	4.288	4.118	4.890	5.614	5.648	10.488
3.138	2.735	4.306	4.150	4.900	5.676	5.730	10.538
3.198	2.773	4.324	4.182	4.908	5.727	5.808	10.580
3.248	2.806	4.344	4.218	4.918	5.798	5.902	10.626
3.308	2.850	4.364	4.253	4.926	5.865	6.042	10.683
3.356	2.884	4.384	4.291	4.934	5.940	6.170	10.731
3.400	2.919	4.404	4.327	4.942	6.031	6.340	10.784
3.450	2.961	4.422	4.362	4.952	6.173	6.472	10.822
3.482	2.989	4.442	4.399	4.960	6.315	6.648	10.867
3.526	3.029	4.462	4.437	4.968	6.539	6.856	10.914
3.554	3.056	4.480	4.474	4.978	7.064	6.998	10.941
3.584	3.086	4.502	4.517	4.986	7.997	7.130	10.969
3.610	3.113	4.526	4.565	4.994	8.482	7.262	10.992
3.642	3.147	4.546	4.607	5.002	8.728	7.364	11.014
3.674	3.183	4.568	4.652	5.010	8.896		

$pK_{a1} = 2.823$, $pK_{a2} = 4.150$, $pK_{a3} = 5.168$

Table AD69. Potentiometric Titration Data for the pK_a Values of Citric Acid in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.318.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.879	3.788	3.278	4.596	4.614	5.074	8.988
0.176	1.906	3.816	3.315	4.612	4.646	5.082	9.096
0.412	1.942	3.840	3.344	4.630	4.684	5.088	9.165
0.566	1.968	3.866	3.380	4.648	4.721	5.096	9.246
0.778	2.006	3.888	3.410	4.666	4.759	5.104	9.319
0.992	2.045	3.904	3.432	4.684	4.789	5.110	9.368
1.234	2.094	3.924	3.461	4.698	4.824	5.116	9.422
1.456	2.142	3.940	3.484	4.728	4.902	5.142	9.576
1.612	2.177	3.958	3.511	4.742	4.934	5.168	9.692
1.744	2.208	3.982	3.547	4.758	4.976	5.194	9.788
1.876	2.242	4.006	3.584	4.772	5.006	5.214	9.861
1.998	2.275	4.032	3.624	4.784	5.038	5.236	9.898
2.112	2.307	4.056	3.663	4.796	5.070	5.268	9.974
2.248	2.348	4.080	3.700	4.808	5.102	5.286	10.011
2.350	2.380	4.100	3.733	4.822	5.143	5.308	10.052
2.450	2.414	4.122	3.768	4.836	5.184	5.372	10.154
2.540	2.446	4.142	3.801	4.848	5.221	5.426	10.266
2.642	2.484	4.164	3.837	4.858	5.255	5.484	10.290
2.716	2.515	4.184	3.870	4.870	5.297	5.544	10.348
2.804	2.552	4.206	3.907	4.882	5.339	5.604	10.400
2.936	2.613	4.230	3.946	4.892	5.377	5.658	10.440
3.026	2.658	4.252	3.983	4.904	5.424	5.720	10.482
3.090	2.692	4.274	4.021	4.918	5.484	5.776	10.517
3.150	2.727	4.296	4.058	4.928	5.532	5.836	10.551
3.198	2.756	4.320	4.100	4.936	5.575	5.898	10.584
3.246	2.785	4.344	4.143	4.946	5.630	5.960	10.614
3.304	2.825	4.364	4.177	4.958	5.703	6.020	10.641
3.348	2.856	4.380	4.205	4.970	5.784	6.078	10.666
3.390	2.887	4.394	4.231	4.978	5.847	6.190	10.710
3.426	2.916	4.410	4.259	4.986	5.921	6.290	10.742
3.460	2.943	4.430	4.297	4.994	6.007	6.408	10.780
3.512	2.986	4.448	4.330	5.002	6.107	6.548	10.819
3.544	3.016	4.464	4.359	5.010	6.231	6.694	10.856
3.576	3.045	4.480	4.390	5.020	6.451	6.844	10.891
3.610	3.079	4.496	4.419	5.030	6.867	6.986	10.921
3.638	3.107	4.510	4.446	5.040	7.841	7.156	10.955
3.672	3.143	4.526	4.476	5.048	8.374	7.308	10.982
3.700	3.174	4.544	4.510	5.054	8.575	7.514	11.020
3.730	3.208	4.562	4.546	5.060	8.727		
3.756	3.244	4.578	4.577	5.066	8.856		

$PK_{a1} = 2.935$, $pK_{a2} = 4.211$, $pK_{a3} = 5.208$

Table AD70. Potentiometric Titration Data for the pK_a Values of Citric Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.511.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.692	3.970	3.336	4.750	4.699	5.098	9.234
0.176	1.716	3.998	3.378	4.766	4.737	5.114	9.358
0.392	1.749	4.026	3.420	4.784	4.780	5.130	9.456
0.608	1.786	4.052	3.460	4.800	4.821	5.146	9.538
0.794	1.819	4.066	3.482	4.814	4.856	5.164	9.615
0.988	1.854	4.080	3.504	4.828	4.896	5.182	9.678
1.192	1.895	4.096	3.530	4.842	4.936	5.198	9.731
1.404	1.940	4.112	3.554	4.856	4.979	5.212	9.773
1.526	1.967	4.124	3.574	4.868	5.017	5.230	9.820
1.678	2.002	4.142	3.603	4.882	5.062	5.248	9.862
1.816	2.036	4.160	3.632	4.896	5.115	5.262	9.892
1.980	2.081	4.180	3.664	4.906	5.174	5.278	9.924
2.128	2.122	4.200	3.696	4.920	5.224	5.294	9.954
2.268	2.165	4.216	3.721	4.932	5.269	5.312	9.985
2.392	2.205	4.234	3.752	4.946	5.338	5.334	10.021
2.492	2.240	4.252	3.780	4.958	5.406	5.380	10.084
2.584	2.273	4.270	3.810	4.964	5.440	5.476	10.193
2.670	2.307	4.288	3.840	4.970	5.477	5.560	10.270
2.758	2.343	4.308	3.873	4.976	5.520	5.644	10.334
2.846	2.381	4.326	3.902	4.982	5.565	5.724	10.387
2.942	2.426	4.344	3.933	4.988	5.616	5.806	10.435
3.040	2.477	4.360	3.960	4.998	5.714	5.890	10.478
3.118	2.519	4.376	3.987	5.004	5.784	6.010	10.533
3.190	2.562	4.392	4.014	5.010	5.862	6.140	10.584
3.244	2.595	4.408	4.042	5.014	5.916	6.254	10.625
3.302	2.634	4.424	4.069	5.018	5.993	6.374	10.663
3.358	2.674	4.438	4.093	5.022	6.075	6.484	10.694
3.418	2.720	4.454	4.121	5.026	6.166	6.606	10.727
3.478	2.768	4.470	4.149	5.028	6.225	6.720	10.757
3.534	2.817	4.486	4.178	5.030	6.293	6.840	10.782
3.570	2.850	4.506	4.214	5.032	6.373	6.986	10.813
3.606	2.885	4.524	4.247	5.036	6.568	7.170	10.852
3.650	2.930	4.542	4.280	5.040	6.801	7.310	10.894
3.688	2.971	4.558	4.309	5.044	7.297	7.512	10.908
3.728	3.016	4.578	4.346	5.046	7.740	7.728	10.941
3.750	3.043	4.598	4.384	5.050	8.182	8.020	10.979
3.774	3.071	4.614	4.414	5.054	8.411	8.222	11.007
3.798	3.100	4.632	4.451	5.056	8.524		
3.856	3.175	4.666	4.519	5.066	8.794		
3.880	3.207	4.682	4.551	5.072	8.912		
3.904	3.241	4.700	4.588	5.078	9.007		
3.928	3.275	4.716	4.624	5.084	9.085		
3.950	3.307	4.734	4.663	5.092	9.176		

$pK_{a1} = 2.873$, $pK_{a2} = 4.189$, $pK_{a3} = 5.121$

Table AD71. Potentiometric Titration Data for the pK_a Values of Citric Acid in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.507.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.698	3.910	3.307	4.760	4.821	5.042	9.036
0.212	1.730	3.932	3.343	4.770	4.846	5.044	9.082
0.386	1.757	3.956	3.373	4.782	4.879	5.054	9.164
0.562	1.787	3.976	3.404	4.794	4.914	5.060	9.222
0.806	1.830	3.996	3.434	4.806	4.947	5.066	9.265
1.034	1.873	4.018	3.468	4.818	4.984	5.074	9.326
1.202	1.907	4.042	3.506	4.828	5.018	5.082	9.380
1.454	1.961	4.062	3.536	4.840	5.060	5.090	9.426
1.586	1.992	4.082	3.571	4.850	5.094	5.098	9.473
1.722	2.025	4.108	3.611	4.858	5.125	5.122	9.578
1.834	2.054	4.132	3.649	4.866	5.157	5.146	9.664
1.956	2.086	4.154	3.686	4.876	5.198	5.172	9.742
2.062	2.116	4.176	3.721	4.886	5.242	5.196	9.805
2.172	2.149	4.202	3.763	4.894	5.278	5.230	9.876
2.284	2.184	4.226	3.802	4.900	5.309	5.252	9.919
2.384	2.218	4.252	3.845	4.906	5.348	5.280	9.965
2.480	2.251	4.272	3.879	4.914	5.388	5.312	10.016
2.590	2.292	4.292	3.912	4.918	5.412	5.344	10.059
2.698	2.336	4.310	3.943	4.926	5.468	5.412	10.136
2.786	2.374	4.328	3.973	4.932	5.507	5.474	10.200
2.848	2.402	4.348	4.007	4.936	5.538	5.534	10.249
2.920	2.436	4.368	4.040	4.942	5.597	5.606	10.305
2.990	2.472	4.386	4.071	4.946	5.632	5.712	10.373
3.068	2.515	4.404	4.102	4.950	5.666	5.822	10.433
3.130	2.550	4.426	4.140	4.954	5.707	5.940	10.490
3.202	2.595	4.446	4.176	4.960	5.781	6.048	10.536
3.270	2.640	4.464	4.208	4.964	5.837	6.154	10.574
3.330	2.683	4.480	4.237	4.968	5.901	6.260	10.610
3.382	2.723	4.496	4.266	4.972	5.969	6.388	10.649
3.432	2.763	4.516	4.303	4.976	6.051	6.518	10.685
3.484	2.808	4.534	4.337	4.982	6.208	6.666	10.719
3.530	2.851	4.552	4.371	4.986	6.352	6.814	10.754
3.602	2.921	4.570	4.405	4.990	6.567	6.958	10.785
3.650	2.972	4.590	4.444	4.994	6.923	7.100	10.811
3.692	3.024	4.606	4.476	4.998	7.506	7.248	10.838
3.716	3.048	4.626	4.524	5.004	8.105	7.416	10.865
3.748	3.086	4.648	4.563	5.008	8.324	7.660	10.901
3.774	3.119	4.664	4.597	5.014	8.530	7.910	10.936
3.798	3.150	4.682	4.635	5.018	8.638	8.180	10.968
3.822	3.181	4.700	4.675	5.022	8.723	8.420	10.998
3.844	3.211	4.724	4.732	5.026	8.806		
3.866	3.242	4.736	4.760	5.032	8.893		
3.890	3.276	4.748	4.790	5.036	8.959		

$pK_{a1} = 2.871$, $pK_{a2} = 4.181$, $pK_{a3} = 5.111$

Table AD72. Potentiometric Titration Data for the pK_a Values of Citric Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.711.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.496	3.784	2.963	4.618	4.349	4.992	6.105
0.206	1.527	3.812	3.001	4.638	4.391	4.994	6.175
0.446	1.566	3.836	3.033	4.652	4.418	4.996	6.267
0.586	1.589	3.866	3.078	4.666	4.447	5.000	6.479
0.722	1.614	3.896	3.122	4.680	4.476	5.004	6.920
0.844	1.635	3.926	3.167	4.692	4.501	5.006	7.226
0.976	1.661	3.954	3.212	4.706	4.532	5.010	7.653
1.118	1.689	3.972	3.240	4.718	4.560	5.014	7.853
1.282	1.724	3.992	3.272	4.730	4.588	5.018	8.058
1.486	1.769	4.008	3.297	4.742	4.616	5.022	8.185
1.650	1.809	4.024	3.323	4.756	4.650	5.026	8.304
1.794	1.845	4.038	3.346	4.772	4.691	5.030	8.407
1.900	1.873	4.054	3.372	4.786	4.727	5.034	8.493
2.018	1.907	4.070	3.402	4.798	4.761	5.038	8.558
2.128	1.939	4.090	3.432	4.810	4.793	5.042	8.622
2.242	1.975	4.110	3.465	4.822	4.830	5.048	8.709
2.354	2.011	4.128	3.495	4.832	4.862	5.054	8.800
2.466	2.051	4.144	3.521	4.842	4.896	5.062	8.904
2.570	2.090	4.160	3.547	4.852	4.930	5.068	8.975
2.654	2.124	4.182	3.583	4.862	4.966	5.074	9.038
2.744	2.162	4.196	3.607	4.874	5.014	5.082	9.115
2.830	2.201	4.208	3.627	4.884	5.054	5.090	9.182
2.916	2.243	4.228	3.660	4.894	5.099	5.098	9.243
3.004	2.289	4.248	3.694	4.902	5.139	5.106	9.298
3.072	2.327	4.270	3.730	4.912	5.188	5.114	9.354
3.136	2.365	4.290	3.764	4.918	5.222	5.120	9.386
3.194	2.402	4.310	3.797	4.924	5.243	5.126	9.418
3.262	2.448	4.326	3.824	4.930	5.295	5.134	9.459
3.302	2.477	4.344	3.855	4.938	5.351	5.142	9.493
3.350	2.513	4.362	3.885	4.942	5.385	5.154	9.543
3.396	2.550	4.380	3.917	4.946	5.424	5.168	9.592
3.428	2.577	4.396	3.946	4.950	5.459	5.180	9.633
3.454	2.600	4.412	3.973	4.954	5.488	5.192	9.671
3.480	2.621	4.430	4.003	4.960	5.536	5.202	9.700
3.518	2.659	4.450	4.038	4.964	5.581	5.212	9.727
3.558	2.698	4.470	4.074	4.968	5.627	5.224	9.761
3.592	2.733	4.490	4.110	4.970	5.653	5.236	9.789
3.629	2.768	4.510	4.146	4.972	5.681	5.260	9.840
3.656	2.804	4.530	4.182	4.976	5.738	5.284	9.886
3.686	2.839	4.548	4.215	4.980	5.807	5.306	9.925
3.710	2.868	4.566	4.249	4.984	5.884	5.330	9.962
3.732	2.894	4.584	4.283	4.986	5.933	5.360	10.006
3.758	2.929	4.602	4.319	4.988	5.986	5.400	10.056

Table AD72. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.442	10.103	8.424	10.955
5.482	10.145	8.750	10.993
5.526	10.185		
5.600	10.244		
5.666	10.292		
5.756	10.347		
5.846	10.397		
5.938	10.443		
6.026	10.482		
6.168	10.535		
6.306	10.582		
6.460	10.624		
6.618	10.666		
6.774	10.703		
6.982	10.746		
7.196	10.786		
7.426	10.826		
7.604	10.850		
7.872	10.890		
8.128	10.922		

$pK_{a1} = 2.950$, $pK_{a2} = 4.271$, $pK_{a3} = 5.178$

Table AD73. Potentiometric Titration Data for the pK_a Values of Citric Acid in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.699.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.508	3.926	3.171	4.730	4.538	5.060	8.364
0.194	1.537	3.948	3.205	4.742	4.566	5.066	8.494
0.400	1.571	3.978	3.252	4.756	4.597	5.072	8.606
0.588	1.602	4.002	3.288	4.772	4.632	5.076	8.670
0.742	1.630	4.028	3.330	4.786	4.668	5.080	8.732
0.914	1.663	4.056	3.375	4.802	4.708	5.088	8.843
1.094	1.697	4.080	3.410	4.814	4.742	5.098	8.964
1.268	1.734	4.116	3.470	4.822	4.762	5.108	9.069
1.432	1.770	4.130	3.493	4.834	4.797	5.118	9.161
1.590	1.807	4.146	3.519	4.848	4.838	5.130	9.247
1.716	1.838	4.164	3.547	4.860	4.877	5.140	9.310
1.864	1.877	4.180	3.573	4.870	4.922	5.150	9.370
1.962	1.910	4.196	3.599	4.884	4.956	5.176	9.495
2.108	1.946	4.212	3.624	4.896	5.000	5.196	9.572
2.240	1.987	4.228	3.650	4.908	5.049	5.218	9.645
2.366	2.029	4.244	3.676	4.918	5.092	5.238	9.701
2.492	2.074	4.262	3.705	4.928	5.143	5.256	9.748
2.588	2.111	4.280	3.734	4.940	5.204	5.276	9.796
2.692	2.154	4.296	3.761	4.946	5.236	5.292	9.829
2.806	2.204	4.312	3.787	4.954	5.285	5.312	9.869
2.910	2.254	4.330	3.814	4.958	5.309	5.330	9.901
2.962	2.281	4.346	3.842	4.964	5.348	5.350	9.935
3.024	2.314	4.364	3.872	4.972	5.406	5.372	9.968
3.086	2.350	4.382	3.902	4.976	5.439	5.394	10.001
3.150	2.388	4.400	3.932	4.980	5.476	5.414	10.027
3.204	2.423	4.420	3.964	4.984	5.512	5.476	10.098
3.244	2.450	4.440	3.999	4.988	5.552	5.536	10.157
3.296	2.487	4.462	4.036	4.992	5.595	5.600	10.212
3.358	2.533	4.480	4.067	4.998	5.671	5.650	10.259
3.420	2.584	4.498	4.099	5.002	5.717	5.744	10.312
3.480	2.636	4.512	4.124	5.006	5.778	5.818	10.358
3.534	2.686	4.528	4.150	5.010	5.848	5.908	10.404
3.586	2.739	4.548	4.190	5.014	5.932	5.998	10.446
3.646	2.804	4.566	4.220	5.018	6.026	6.092	10.486
3.684	2.846	4.584	4.252	5.022	6.149	6.186	10.522
3.710	2.878	4.602	4.285	5.026	6.298	6.294	10.559
3.738	2.912	4.620	4.318	5.030	6.532	6.404	10.594
3.766	2.948	4.640	4.359	5.034	6.885	6.586	10.643
3.794	2.985	4.660	4.396	5.040	7.514	6.800	10.694
3.820	3.019	4.674	4.423	5.044	7.806	7.040	10.744
3.850	3.060	4.688	4.451	5.048	8.012	7.272	10.786
3.880	3.103	4.702	4.480	5.052	8.144	7.504	10.825
3.902	3.136	4.718	4.514	5.056	8.262	7.740	10.859

$pK_{a1} = 3.012$, $pK_{a2} = 4.292$, $pK_{a3} = 5.162$

Table AD74. Potentiometric Titration Data for the pK_a Values of Citric Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.097.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.115	3.972	3.022	4.736	4.396	5.062	8.966
0.240	1.150	3.990	3.051	4.754	4.437	5.068	9.039
0.538	1.200	4.010	3.086	4.772	4.481	5.074	9.100
0.718	1.234	4.030	3.121	4.790	4.527	5.080	9.153
0.904	1.268	4.048	3.153	4.804	4.565	5.088	9.217
1.090	1.305	4.066	3.184	4.816	4.596	5.094	9.256
1.308	1.352	4.084	3.214	4.830	4.641	5.102	9.310
1.498	1.396	4.102	3.248	4.844	4.686	5.118	9.397
1.694	1.444	4.122	3.283	4.856	4.726	5.132	9.462
1.902	1.502	4.140	3.315	4.868	4.769	5.146	9.521
2.058	1.548	4.156	3.342	4.876	4.799	5.162	9.578
2.206	1.596	4.174	3.373	4.884	4.832	5.174	9.615
2.384	1.657	4.190	3.395	4.892	4.865	5.188	9.655
2.520	1.710	4.204	3.425	4.900	4.899	5.204	9.699
2.662	1.770	4.220	3.453	4.906	4.926	5.226	9.750
2.798	1.833	4.238	3.483	4.916	4.975	5.246	9.792
2.948	1.913	4.256	3.514	4.924	5.017	5.268	9.835
3.078	1.991	4.274	3.544	4.932	5.062	5.290	9.876
3.180	2.059	4.290	3.571	4.938	5.098	5.312	9.915
3.254	2.114	4.308	3.601	4.946	5.154	5.336	9.949
3.326	2.173	4.326	3.632	4.954	5.216	5.390	10.016
3.374	2.215	4.346	3.663	4.960	5.270	5.448	10.077
3.412	2.252	4.366	3.701	4.970	5.367	5.514	10.138
3.450	2.288	4.384	3.733	4.974	5.415	5.576	10.191
3.492	2.328	4.400	3.755	4.978	5.469	5.646	10.240
3.530	2.369	4.418	3.790	4.984	5.560	5.744	10.299
3.568	2.412	4.432	3.813	4.988	5.628	5.876	10.368
3.594	2.443	4.450	3.845	4.992	5.697	6.016	10.428
3.618	2.472	4.468	3.875	4.996	5.792	6.142	10.477
3.642	2.503	4.484	3.903	5.000	5.910	6.294	10.526
3.668	2.537	4.504	3.941	5.004	6.053	6.430	10.566
3.692	2.569	4.522	3.972	5.008	6.246	6.620	10.614
3.718	2.606	4.540	4.005	5.012	6.555	6.838	10.660
3.744	2.644	4.560	4.040	5.016	7.131	7.050	10.704
3.770	2.682	4.580	4.078	5.020	7.625	7.242	10.738
3.796	2.722	4.600	4.114	5.028	8.189	7.424	10.770
3.820	2.759	4.620	4.154	5.032	8.361	7.610	10.797
3.846	2.801	4.640	4.192	5.036	8.486	7.778	10.821
3.874	2.848	4.660	4.231	5.038	8.543	7.978	10.848
3.900	2.892	4.676	4.263	5.042	8.631	8.166	10.869
3.920	2.928	4.692	4.296	5.048	8.754	8.408	10.896
3.934	2.951	4.706	4.326	5.052	8.823	8.662	10.923
3.954	2.986	4.724	4.366	5.056	8.885	8.924	10.946

$pK_{a1} = 3.146$, $pK_{a2} = 4.496$, $pK_{a3} = 5.356$

Table AD75. Potentiometric Titration Data for the pK_a Values of Citric Acid in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.015 mmol excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.086.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.127	3.924	2.957	4.724	4.394	5.080	9.187
0.192	1.155	3.944	2.992	4.738	4.425	5.096	9.300
0.368	1.185	3.962	3.024	4.756	4.470	5.116	9.411
0.572	1.220	3.984	3.062	4.772	4.509	5.134	9.492
0.740	1.251	4.004	3.098	4.786	4.546	5.154	9.566
0.928	1.287	4.024	3.134	4.804	4.595	5.166	9.606
1.086	1.319	4.042	3.166	4.818	4.637	5.180	9.649
1.268	1.357	4.060	3.198	4.832	4.680	5.194	9.688
1.470	1.404	4.080	3.233	4.846	4.727	5.210	9.725
1.684	1.456	4.100	3.268	4.864	4.792	5.230	9.773
1.864	1.505	4.118	3.300	4.880	4.856	5.252	9.816
1.978	1.538	4.136	3.332	4.892	4.907	5.272	9.853
2.096	1.574	4.156	3.366	4.908	4.986	5.296	9.894
2.206	1.610	4.176	3.400	4.926	5.085	5.320	9.931
2.316	1.647	4.194	3.430	4.932	5.123	5.382	10.008
2.430	1.689	4.210	3.459	4.936	5.153	5.438	10.072
2.538	1.723	4.230	3.492	4.942	5.198	5.498	10.128
2.672	1.789	4.248	3.524	4.948	5.242	5.556	10.176
2.796	1.848	4.262	3.549	4.952	5.279	5.614	10.219
2.916	1.910	4.278	3.574	4.958	5.337	5.720	10.299
3.042	1.984	4.294	3.601	4.962	5.378	5.830	10.359
3.148	2.053	4.312	3.632	4.966	5.422	5.948	10.411
3.210	2.098	4.332	3.666	4.970	5.470	6.060	10.457
3.284	2.154	4.352	3.701	4.974	5.525	6.184	10.501
3.336	2.198	4.372	3.735	4.980	5.621	6.344	10.550
3.386	2.243	4.390	3.765	4.984	5.700	6.492	10.591
3.444	2.298	4.408	3.796	4.990	5.846	6.642	10.628
3.500	2.355	4.424	3.823	4.994	5.977	6.790	10.664
3.546	2.406	4.440	3.850	5.000	6.248	6.942	10.724
3.592	2.460	4.458	3.882	5.004	6.542	7.258	10.756
3.618	2.493	4.472	3.907	5.010	7.324	7.408	10.783
3.642	2.523	4.488	3.935	5.016	7.920	7.598	10.811
3.668	2.557	4.508	3.971	5.022	8.239	7.812	10.838
3.690	2.589	4.528	4.007	5.028	8.422	8.036	10.864
3.720	2.631	4.548	4.042	5.034	8.580	8.300	10.896
3.742	2.663	4.568	4.079	5.040	8.704	8.518	10.909
3.768	2.702	4.584	4.109	5.044	8.759	8.778	10.942
3.792	2.740	4.602	4.143	5.048	8.839	9.090	10.969
3.820	2.783	4.624	4.186	5.052	8.895	9.348	10.994
3.842	2.818	4.640	4.217	5.058	8.972		
3.862	2.851	4.662	4.261	5.062	9.018		
3.882	2.885	4.682	4.303	5.068	9.083		
3.904	2.923	4.704	4.349	5.074	9.139		

$pK_{a1} = 3.116$, $pK_{a2} = 4.485$, $pK_{a3} = 5.346$.

Table AD76. Potentiometric Titration Data for the pK_a Values of EDTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.085.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.019	3.898	2.955	4.634	4.062	5.048	6.239
0.136	2.037	3.938	2.982	4.642	4.098	5.054	6.270
0.326	2.063	3.972	3.003	4.650	4.137	5.066	6.331
0.490	2.087	4.010	3.028	4.658	4.180	5.078	6.398
0.618	2.105	4.054	3.060	4.666	4.219	5.090	6.464
0.738	2.122	4.086	3.085	4.672	4.252	5.100	6.528
0.868	2.142	4.106	3.101	4.680	4.294	5.112	6.608
0.996	2.162	4.130	3.121	4.686	4.332	5.124	6.697
1.116	2.182	4.152	3.139	4.694	4.376	5.136	6.804
1.254	2.204	4.178	3.164	4.702	4.421	5.148	6.932
1.382	2.225	4.196	3.182	4.710	4.468	5.162	7.108
1.480	2.242	4.220	3.206	4.716	4.508	5.172	7.278
1.586	2.259	4.246	3.232	4.724	4.558	5.182	7.467
1.680	2.278	4.272	3.260	4.732	4.607	5.194	7.710
1.772	2.295	4.294	3.284	4.740	4.661	5.204	7.884
1.866	2.313	4.318	3.314	4.748	4.712	5.214	8.031
1.962	2.330	4.338	3.342	4.756	4.765	5.216	8.165
2.054	2.350	4.360	3.370	4.766	4.836	5.238	8.276
2.146	2.369	4.380	3.401	4.774	4.883	5.250	8.375
2.246	2.392	4.400	3.430	4.784	4.948	5.262	8.463
2.320	2.408	4.420	3.462	4.794	5.017	5.274	8.536
2.414	2.429	4.434	3.488	4.804	5.078	5.284	8.593
2.514	2.453	4.448	3.515	4.812	5.127	5.294	8.650
2.604	2.473	4.468	3.554	4.822	5.191	5.304	8.699
2.700	2.499	4.476	3.571	4.834	5.255	5.316	8.756
2.802	2.526	4.486	3.587	4.844	5.320	5.330	8.817
2.878	2.548	4.496	3.611	4.870	5.454	5.344	8.879
2.968	2.573	4.504	3.633	4.890	5.548	5.358	8.937
3.042	2.594	4.514	3.659	4.902	5.605	5.368	8.976
3.118	2.619	4.522	3.678	4.914	5.660	5.378	9.016
3.194	2.644	4.530	3.701	4.926	5.714	5.388	9.051
3.270	2.669	4.536	3.718	4.936	5.757	5.400	9.095
3.340	2.695	4.548	3.748	4.948	5.805	5.408	9.124
3.410	2.721	4.562	3.792	4.960	5.858	5.418	9.158
3.480	2.749	4.572	3.823	4.974	5.917	5.428	9.195
3.552	2.780	4.584	3.861	4.988	5.976	5.440	9.238
3.618	2.809	4.594	3.898	5.002	6.038	5.448	9.263
3.694	2.844	4.604	3.938	5.010	6.071	5.460	9.304
3.766	2.882	4.614	3.978	5.026	6.141	5.472	9.348
3.832	2.917	4.626	4.023	5.036	6.187	5.482	9.381

Table AD76. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.494	9.419	5.892	10.354
5.508	9.460	5.934	10.400
5.520	9.502	5.982	10.453
5.534	9.545	6.028	10.500
5.544	9.576	6.078	10.542
5.554	9.610	6.150	10.602
5.566	9.646	6.218	10.649
5.576	9.678	6.296	10.696
5.590	9.722	6.372	10.740
5.604	9.762	6.458	10.783
5.616	9.800	6.574	10.834
5.628	9.835	6.692	10.881
5.642	9.873	6.842	10.932
5.660	9.920	6.996	10.981
5.682	9.974	7.144	11.024
5.704	10.028		
5.726	10.076		
5.762	10.148		
5.804	10.221		
5.850	10.292		

$pK_{a1} = 2.272$, $pK_{a2} = 2.590$, $pK_{a3} = 5.961$, $pK_{a4} = 9.106$

Table AD77. Potentiometric Titration Data for the pK_a Values of EDTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.063.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.039	4.324	3.319	4.946	5.745	5.492	9.327
0.188	2.062	4.354	3.357	4.958	5.799	5.504	9.365
0.422	2.095	4.378	3.390	4.970	5.847	5.516	9.406
0.616	2.123	4.402	3.427	4.980	5.891	5.530	9.450
0.778	2.146	4.426	3.464	4.992	5.939	5.542	9.491
0.958	2.174	4.450	3.506	5.004	5.994	5.568	9.568
1.104	2.196	4.470	3.546	5.016	6.039	5.586	9.625
1.248	2.220	4.482	3.569	5.028	6.099	5.606	9.685
1.388	2.243	4.500	3.611	5.040	6.147	5.630	9.753
1.524	2.266	4.522	3.660	5.052	6.202	5.658	9.830
1.662	2.291	4.544	3.715	5.064	6.261	5.682	9.892
1.802	2.317	4.564	3.772	5.078	6.332	5.710	9.959
1.950	2.345	4.576	3.806	5.090	6.397	5.734	10.009
2.088	2.372	4.586	3.841	5.102	6.468	5.760	10.060
2.220	2.400	4.596	3.874	5.114	6.545	5.788	10.111
2.340	2.426	4.608	3.919	5.128	6.651	5.842	10.194
2.458	2.453	4.618	3.965	5.140	6.747	5.882	10.250
2.574	2.481	4.630	4.014	5.152	6.871	5.938	10.319
2.690	2.510	4.638	4.049	5.164	7.020	5.984	10.369
2.812	2.541	4.648	4.093	5.176	7.209	6.038	10.421
2.902	2.568	4.658	4.142	5.188	7.444	6.086	10.462
2.988	2.590	4.672	4.208	5.198	7.643	6.146	10.510
3.076	2.617	4.686	4.284	5.210	7.850	6.232	10.569
3.152	2.642	4.700	4.362	5.224	8.037	6.326	10.624
3.246	2.672	4.710	4.421	5.238	8.173	6.420	10.676
3.338	2.705	4.722	4.493	5.250	8.277	6.520	10.723
3.432	2.740	4.734	4.570	5.264	8.382	6.616	10.766
3.532	2.779	4.746	4.644	5.278	8.470	6.716	10.806
3.622	2.818	4.758	4.720	5.292	8.551	6.814	10.838
3.708	2.859	4.770	4.798	5.306	8.623	6.906	10.867
3.760	2.884	4.782	4.875	5.320	8.691	7.004	10.896
3.820	2.916	4.794	4.954	5.334	8.753	7.132	10.931
3.882	2.951	4.806	5.028	5.348	8.812	7.304	10.979
3.934	2.982	4.818	5.104	5.362	8.872		
3.986	3.016	4.830	5.176	5.374	8.916		
4.040	3.053	4.844	5.254	5.388	8.971		
4.094	3.094	4.858	5.333	5.402	9.022		
4.144	3.134	4.872	5.408	5.414	9.062		
4.188	3.173	4.884	5.467	5.426	9.105		
4.218	3.203	4.900	5.542	5.442	9.161		
4.244	3.227	4.912	5.600	5.456	9.206		
4.274	3.261	4.924	5.650	5.466	9.241		
4.300	3.291	4.934	5.695	5.476	9.275		

$pK_{a1} = 2.221$, $pK_{a2} = 2.572$, $pK_{a3} = 5.902$, $pK_{a4} = 9.062$

Table AD78. Potentiometric Titration Data for the pK_a Values of EDTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = 7 - 3(mV + 17.23)/(158.37 + 17.23) - 0.014.

NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV
0.000	269.50	4.360	199.50	4.790	148.80	4.860	129.40
0.200	268.10	4.370	199.00	4.800	146.30	4.870	126.20
0.400	265.90	4.380	198.60	4.810	143.60	4.880	123.00
0.600	264.40	4.390	198.10	4.820	140.70	4.890	119.70
0.800	262.70	4.400	197.20	4.830	137.80	4.900	116.20
1.000	261.20	4.410	196.80	4.840	135.20	5.270	19.90
1.180	259.60	4.420	196.20	4.850	132.30	5.280	14.77
1.360	258.00	4.430	195.70	4.860	129.40	5.290	13.26
1.540	256.40	4.440	195.20	4.870	126.20	5.300	11.62
1.720	254.10	4.450	194.40	4.880	123.00	5.310	9.86
1.890	252.40	4.460	194.00	4.890	119.70	5.320	8.02
2.060	250.80	4.470	193.10	4.900	116.20	5.330	5.84
2.210	249.00	4.480	192.40	4.910	112.50	5.340	3.25
2.360	246.80	4.490	191.70	4.920	108.50	5.350	0.23
2.510	244.80	4.500	191.10	4.930	105.00	5.370	-5.71
2.660	243.00	4.510	190.20	4.940	101.00	5.390	-13.00
2.800	240.90	4.520	189.40	4.950	97.01	5.420	-26.90
2.940	239.10	4.530	188.20	4.960	93.80	5.450	-48.30
3.060	236.90	4.540	186.90	4.970	90.66	5.500	-84.10
3.180	235.00	4.550	186.00	4.980	87.16	5.550	-103.00
3.290	233.10	4.560	184.40	4.990	83.36	5.600	-115.00
3.400	231.10	4.570	183.40	5.000	80.48	5.650	-125.00
3.500	229.00	4.580	182.60	5.010	77.45	5.720	-137.00
3.600	226.60	4.590	181.60	5.020	74.53	5.790	-147.00
3.700	224.10	4.600	180.30	5.030	71.99	5.860	-157.00
3.800	221.40	4.610	179.30	5.040	69.34	5.930	-167.00
3.890	218.60	4.620	178.10	5.050	66.78	6.020	-179.00
3.960	216.30	4.630	176.90	5.060	64.25	6.110	-191.00
4.030	214.20	4.640	175.70	5.070	61.62	6.210	-202.00
4.080	212.20	4.650	174.30	5.080	59.32	6.310	-210.00
4.130	210.60	4.660	173.10	5.090	57.22	6.410	-217.00
4.160	209.40	4.670	172.10	5.100	54.81	6.510	-223.00
4.190	208.00	4.680	170.40	5.110	52.14	6.620	-228.00
4.210	207.30	4.690	168.90	5.120	50.04	6.730	-232.00
4.230	206.30	4.700	167.60	5.130	47.83	6.850	-236.00
4.250	205.60	4.710	165.90	5.140	45.50	6.970	-239.00
4.270	204.50	4.720	164.20	5.150	43.56	7.110	-242.00
4.290	203.60	4.730	162.40	5.160	41.42	7.250	-245.00
4.310	202.50	4.740	160.40	4.810	143.60	7.400	-248.00
4.320	202.10	4.750	158.10	4.820	140.70	7.550	-250.00
4.330	201.50	4.760	155.60	4.830	137.80	7.700	-253.00
4.340	200.70	4.770	153.60	4.840	135.20	7.850	-255.00
4.350	200.00	4.780	151.40	4.850	132.30	8.020	-256.00

$pK_{a1} = 2.082$, $pK_{a2} = 2.654$, $pK_{a3} = 6.015$, $pK_{a4} = 9.114$

Table AD79. Potentiometric Titration Data for the pK_a Values of EDTA in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = 7 - 3(mV + 19.40)/(157.31 + 19.40) - 0.130.

NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV
0.000	263.01	4.360	201.02	4.790	167.96	4.860	156.73
0.200	262.41	4.370	200.48	4.800	166.75	4.870	154.77
0.400	261.08	4.380	199.97	4.810	165.06	4.880	152.78
0.600	259.72	4.390	199.61	4.820	163.47	4.890	150.39
0.800	258.17	4.400	199.35	4.830	161.74	4.900	148.22
1.000	256.77	4.410	198.75	4.840	160.26	5.270	39.32
1.180	255.34	4.420	198.19	4.850	158.39	5.280	37.35
1.360	253.40	4.430	197.52	4.860	156.73	5.290	35.11
1.540	251.59	4.440	196.90	4.870	154.77	5.300	33.23
1.720	250.10	4.450	196.59	4.880	152.78	5.310	31.07
1.890	248.36	4.460	196.19	4.890	150.39	5.320	29.19
2.060	246.80	4.470	195.77	4.900	148.22	5.330	27.05
2.210	244.90	4.480	195.25	4.910	145.37	5.340	25.20
2.360	243.13	4.490	194.68	4.920	142.98	5.350	23.03
2.510	241.53	4.500	194.22	4.930	139.83	5.370	18.86
2.660	239.72	4.510	193.56	4.940	137.20	5.390	12.13
2.800	237.92	4.520	192.98	4.950	134.24	5.420	7.50
2.940	235.65	4.530	192.02	4.960	131.21	5.450	1.07
3.060	234.10	4.540	191.55	4.970	127.73	5.500	-14.68
3.180	232.19	4.550	190.84	4.980	124.49	5.550	-44.31
3.290	229.99	4.560	190.31	4.990	121.15	5.600	-87.00
3.400	227.95	4.570	189.51	5.000	117.87	5.650	-110.38
3.500	225.71	4.580	188.99	5.010	114.21	5.720	-129.84
3.600	223.79	4.590	188.15	5.020	111.31	5.790	-143.89
3.700	221.73	4.600	187.51	5.030	107.53	5.860	-155.68
3.800	219.33	4.610	186.59	5.040	104.26	5.930	-167.31
3.890	217.06	4.620	185.88	5.050	100.50	6.020	-180.22
3.960	215.32	4.630	184.96	5.060	97.28	6.110	-193.04
4.030	213.08	4.640	184.09	5.070	93.62	6.210	-204.56
4.080	211.49	4.650	183.28	5.080	90.03	6.310	-213.77
4.130	209.91	4.660	182.63	5.090	86.00	6.410	-220.88
4.160	208.80	4.670	181.69	5.100	82.90	6.510	-226.69
4.190	207.50	4.680	180.88	5.110	79.62	6.620	-231.71
4.210	207.00	4.690	179.81	5.120	76.50	6.730	-236.03
4.230	206.23	4.700	178.99	5.130	73.06	6.850	-239.89
4.250	205.62	4.710	177.82	5.140	70.15	6.970	-243.21
4.270	204.71	4.720	176.58	5.150	67.00	7.110	-246.58
4.290	203.74	4.730	175.58	5.160	64.26	7.250	-249.50
4.310	202.93	4.740	174.60	4.810	165.06	7.400	-252.33
4.320	202.62	4.750	173.32	4.820	163.47	7.550	-254.58
4.330	202.29	4.760	172.26	4.830	161.74	7.700	-256.71
4.340	201.91	4.770	170.65	4.840	160.26	7.850	-258.67
4.350	201.45	4.780	169.43	4.850	158.39	8.020	-260.61

$pK_{a1} = 2.00$, $pK_{a2} = 2.45$, $pK_{a3} = 6.08$, $pK_{a4} = 9.21$

Table AD80. Potentiometric Titration Data for the pK_a Values of EDTA in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = 7 - 3(mV + 19.40)/(157.31 + 19.40) - 0.100.

NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV
0.000	264.58	4.360	200.99	4.790	163.01	4.860	149.32
0.200	263.63	4.370	200.50	4.800	161.32	4.870	146.39
0.400	262.60	4.380	200.00	4.810	159.36	4.880	144.17
0.600	261.17	4.390	199.31	4.820	157.60	4.890	141.46
0.800	259.64	4.400	198.90	4.830	155.48	4.900	139.01
1.000	258.06	4.410	198.21	4.840	153.57	5.270	32.20
1.180	256.55	4.420	197.73	4.850	151.30	5.280	30.53
1.360	255.00	4.430	197.14	4.860	149.32	5.290	28.59
1.540	253.34	4.440	196.66	4.870	146.39	5.300	26.70
1.720	251.53	4.450	195.70	4.880	144.17	5.310	24.18
1.890	249.87	4.460	195.30	4.890	141.46	5.320	22.41
2.060	248.10	4.470	194.76	4.900	139.01	5.330	19.73
2.210	246.43	4.480	194.33	4.910	135.49	5.340	13.95
2.360	244.63	4.490	193.69	4.920	132.84	5.350	12.14
2.510	242.80	4.500	193.21	4.930	129.28	5.370	9.11
2.660	240.90	4.510	192.53	4.940	125.71	5.390	5.07
2.800	239.00	4.520	191.88	4.950	121.59	5.420	-2.32
2.940	237.00	4.530	191.22	4.960	118.24	5.450	-12.14
3.060	235.09	4.540	190.55	4.970	114.22	5.500	-38.26
3.180	233.20	4.550	189.81	4.980	111.09	5.550	-85.56
3.290	231.27	4.560	188.76	4.990	106.87	5.600	-108.44
3.400	229.22	4.570	187.98	5.000	103.73	5.650	-123.34
3.500	227.07	4.580	187.31	5.010	99.74	5.720	-138.67
3.600	225.03	4.590	186.36	5.020	96.43	5.790	-151.32
3.700	222.80	4.600	185.62	5.030	92.51	5.860	-162.31
3.800	220.35	4.610	184.70	5.040	89.30	5.930	-173.68
3.890	217.91	4.620	183.90	5.050	86.04	6.020	-186.50
3.960	216.01	4.630	182.95	5.060	83.14	6.110	-198.47
4.030	213.80	4.640	182.23	5.070	79.69	6.210	-209.06
4.080	212.26	4.650	181.23	5.080	77.06	6.310	-217.35
4.130	210.60	4.660	180.38	5.090	73.99	6.410	-223.70
4.160	209.50	4.670	179.20	5.100	71.39	6.510	-228.95
4.190	208.35	4.680	178.30	5.110	67.98	6.620	-233.80
4.210	207.51	4.690	177.27	5.120	65.59	6.730	-237.95
4.230	206.66	4.700	176.18	5.130	62.95	6.850	-241.66
4.250	205.87	4.710	174.70	5.140	60.57	6.970	-244.69
4.270	205.06	4.720	173.65	5.150	57.89	7.110	-248.01
4.290	204.25	4.730	172.27	5.160	55.52	7.250	-250.73
4.310	203.44	4.740	171.04	4.810	159.36	7.400	-253.31
4.320	203.03	4.750	169.42	4.820	157.60	7.550	-255.73
4.330	202.58	4.760	168.06	4.830	155.48	7.700	-257.84
4.340	202.15	4.770	166.43	4.840	153.57	7.850	-259.71
4.350	201.37	4.780	164.94	4.850	151.30	8.020	-261.54

$pK_{a1} = 2.00$, $pK_{a2} = 2.42$, $pK_{a3} = 6.07$, $pK_{a4} = 9.20$

Table AD81. Potentiometric Titration Data for the pK_a Values of EDTA in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = 7 - 3(mV + 19.40)/(157.31 + 19.40) + 0.010.

NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV
0.000	271.73	8.720	207.26	9.579	165.39	9.719	148.85
0.400	270.48	8.740	206.70	9.599	163.42	9.739	146.21
0.800	269.02	8.760	206.09	9.619	161.27	9.759	143.36
1.200	267.47	8.780	205.50	9.639	158.98	9.779	140.50
1.600	265.89	8.800	205.00	9.659	156.60	9.799	137.16
2.000	264.34	8.820	204.45	9.679	154.15	10.539	37.46
2.360	262.90	8.840	203.89	9.699	151.59	10.559	35.42
2.720	261.48	8.860	203.30	9.719	148.85	10.579	33.50
3.080	259.84	8.880	202.73	9.739	146.21	10.599	31.21
3.440	258.15	8.900	202.20	9.759	143.36	10.619	29.18
3.780	256.43	8.920	201.54	9.779	140.50	10.639	26.89
4.120	254.67	8.940	200.97	9.799	137.16	10.659	24.56
4.420	253.04	8.960	200.36	9.819	133.77	10.679	22.11
4.720	251.29	8.980	199.64	9.839	130.45	10.699	19.65
5.020	249.40	9.000	198.97	9.859	127.07	10.739	12.88
5.320	247.41	9.020	198.23	9.879	123.46	10.779	8.94
5.600	245.55	9.040	197.52	9.899	119.88	10.839	-0.15
5.880	243.53	9.060	196.81	9.919	116.32	10.899	-11.63
6.120	241.63	9.080	196.02	9.939	112.73	10.999	-41.09
6.360	239.74	9.100	195.24	9.959	109.05	11.099	-67.82
6.580	237.82	9.120	194.37	9.979	105.69	11.199	-85.24
6.800	235.83	9.140	193.53	9.999	102.46	11.299	-98.25
7.000	233.95	9.160	192.70	10.019	99.12	11.439	-111.98
7.200	231.79	9.180	191.85	10.039	95.80	11.579	-124.55
7.400	229.44	9.200	190.88	10.059	92.57	11.719	-136.24
7.600	227.05	9.220	190.01	10.079	89.47	11.859	-149.03
7.780	224.77	9.240	189.07	10.099	86.65	12.039	-165.24
7.920	222.83	9.260	188.12	10.119	83.71	12.219	-181.79
8.060	220.61	9.280	187.12	10.139	81.11	12.419	-195.59
8.160	219.04	9.300	186.13	10.159	78.40	12.619	-206.04
8.260	217.38	9.320	185.00	10.179	75.98	12.819	-213.33
8.320	216.28	9.340	183.93	10.199	73.35	13.019	-219.38
8.380	215.09	9.360	182.78	10.219	70.90	13.239	-224.43
8.420	214.29	9.380	181.56	10.239	68.38	13.459	-228.74
8.460	213.49	9.400	180.26	10.259	66.02	13.699	-232.59
8.500	212.68	9.420	178.99	10.279	63.64	13.939	-235.84
8.540	211.88	9.440	177.61	10.299	61.39	14.219	-239.20
8.580	210.98	9.460	176.17	10.319	59.33	14.499	-242.01
8.620	209.92	9.480	174.44	9.619	161.27	14.799	-244.64
8.640	209.43	9.500	172.74	9.639	158.98	15.099	-246.98
8.660	209.00	9.519	171.03	9.659	156.60	15.399	-249.17
8.680	208.37	9.539	169.26	9.679	154.15	15.699	-251.09
8.700	207.81	9.559	167.34	9.699	151.59	16.039	-253.05

$pK_{a1} = 2.061$, $pK_{a2} = 2.224$, $pK_{a3} = 5.887$, $pK_{a4} = 8.794$

Table AD82. Potentiometric Titration Data for the pK_a Values of EDTA in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = 7 - 3(mV + 19.25)/(157.35 + 19.25) + 0.041.

NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV	NaOH, mL	mV
0.000	274.38	4.360	205.87	4.790	157.75	4.860	138.95
0.200	272.46	4.370	205.23	4.800	155.69	4.870	135.56
0.400	270.91	4.380	204.38	4.810	152.86	4.880	132.70
0.600	269.33	4.390	203.86	4.820	150.06	4.890	129.27
0.800	267.66	4.400	203.28	4.830	147.18	4.900	126.22
1.000	265.96	4.410	202.74	4.840	144.74	5.270	35.41
1.180	264.37	4.420	202.11	4.850	141.72	5.280	33.02
1.360	262.74	4.430	201.50	4.860	138.95	5.290	31.38
1.540	261.02	4.440	200.82	4.870	135.56	5.300	28.83
1.720	259.18	4.450	200.26	4.880	132.70	5.310	26.96
1.890	257.38	4.460	199.55	4.890	129.27	5.320	24.34
2.060	255.59	4.470	198.93	4.900	126.22	5.330	22.28
2.210	253.86	4.480	198.21	4.910	123.09	5.340	19.32
2.360	252.05	4.490	197.53	4.920	119.28	5.350	14.17
2.510	250.16	4.500	196.68	4.930	116.31	5.370	10.47
2.660	248.13	4.510	196.02	4.940	112.37	5.390	5.81
2.800	246.16	4.520	195.22	4.950	109.51	5.420	-2.89
2.940	244.05	4.530	194.44	4.960	105.77	5.450	-13.56
3.060	242.12	4.540	193.43	4.970	103.00	5.500	-40.09
3.180	240.13	4.550	192.62	4.980	99.30	5.550	-69.61
3.290	238.10	4.560	191.58	4.990	96.65	5.600	-87.94
3.400	236.01	4.570	190.73	5.000	93.26	5.650	-100.40
3.500	233.97	4.580	189.72	5.010	90.80	5.720	-115.09
3.600	231.77	4.590	188.61	5.020	87.43	5.790	-127.67
3.700	229.37	4.600	187.69	5.030	84.34	5.860	-139.55
3.800	226.77	4.610	186.67	5.040	81.58	5.930	-152.40
3.890	224.38	4.620	185.57	5.050	79.44	6.020	-169.01
3.960	222.25	4.630	184.45	5.060	76.61	6.110	-184.97
4.030	219.96	4.640	183.31	5.070	74.67	6.210	-197.75
4.080	218.28	4.650	182.19	5.080	72.05	6.310	-207.70
4.130	216.55	4.660	180.94	5.090	70.14	6.410	-214.65
4.160	215.36	4.670	179.70	5.100	67.58	6.510	-220.62
4.190	214.02	4.680	178.36	5.110	65.75	6.620	-225.40
4.210	213.26	4.690	176.96	5.120	63.65	6.730	-229.62
4.230	212.32	4.700	175.43	5.130	61.93	6.850	-233.44
4.250	211.48	4.710	173.98	5.140	59.90	6.970	-236.71
4.270	210.58	4.720	172.36	5.150	58.30	7.110	-239.97
4.290	209.60	4.730	170.41	5.160	56.29	7.250	-242.70
4.310	208.64	4.740	168.63	4.810	152.86	7.400	-245.28
4.320	208.14	4.750	166.45	4.820	150.06	7.550	-247.64
4.330	207.59	4.760	164.65	4.830	147.18	7.700	-249.88
4.340	207.04	4.770	162.31	4.840	144.74	7.850	-251.65
4.350	206.40	4.780	160.33	4.850	141.72	8.020	-253.67

$pK_{a1} = 1.992$, $pK_{a2} = 2.533$, $pK_{a3} = 5.888$, $pK_{a4} = 8.874$

Table AD83. Potentiometric Titration Data for the pK_a Values of EDTA in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.202.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.812	4.710	2.899	5.448	5.453	5.886	8.050
0.118	1.825	4.762	2.942	5.460	5.505	5.896	8.096
0.300	1.846	4.786	2.961	5.472	5.556	5.906	8.139
0.438	1.862	4.814	2.986	5.484	5.603	5.916	8.182
0.580	1.879	4.848	3.018	5.500	5.664	5.928	8.230
0.742	1.899	4.882	3.052	5.512	5.712	5.940	8.277
0.934	1.923	4.916	3.090	5.522	5.749	5.950	8.316
1.100	1.943	4.944	3.125	5.532	5.786	5.960	8.353
1.278	1.970	4.972	3.195	5.542	5.825	5.972	8.396
1.412	1.987	5.018	3.225	5.552	5.862	5.984	8.441
1.536	2.005	5.046	3.271	5.562	5.901	5.996	8.483
1.680	2.026	5.064	3.302	5.572	5.940	6.008	8.522
1.826	2.050	5.084	3.342	5.582	5.978	6.020	8.566
1.956	2.070	5.102	3.379	5.592	6.019	6.030	8.601
2.096	2.093	5.120	3.420	5.604	6.068	6.042	8.644
2.244	2.117	5.142	3.475	5.616	6.115	6.054	8.685
2.380	2.141	5.166	3.545	5.630	6.174	6.064	8.722
2.504	2.163	5.184	3.605	5.640	6.220	6.076	8.766
2.624	2.185	5.200	3.666	5.652	6.278	6.086	8.801
2.748	2.208	5.216	3.735	5.662	6.328	6.098	8.847
2.880	2.236	5.234	3.830	5.672	6.391	6.110	8.891
3.004	2.263	5.254	3.955	5.682	6.442	6.120	8.931
3.124	2.289	5.264	4.032	5.692	6.498	6.132	8.975
3.248	2.318	5.276	4.136	5.702	6.559	6.142	9.015
3.368	2.348	5.290	4.273	5.712	6.629	6.154	9.064
3.472	2.375	5.302	4.403	5.722	6.723	6.166	9.112
3.588	2.407	5.310	4.494	5.732	6.809	6.178	9.162
3.708	2.441	5.318	4.579	5.744	6.925	6.188	9.206
3.810	2.473	5.328	4.684	5.754	7.030	6.200	9.256
3.910	2.505	5.340	4.801	5.766	7.159	6.210	9.298
4.006	2.539	5.350	4.888	5.778	7.288	6.222	9.348
4.094	2.573	5.358	4.954	5.788	7.394	6.234	9.396
4.180	2.607	5.368	5.034	5.798	7.483	6.246	9.444
4.256	2.639	5.378	5.099	5.810	7.591	6.256	9.482
4.342	2.678	5.388	5.160	5.820	7.670	6.266	9.521
4.422	2.719	5.398	5.215	5.832	7.755	6.278	9.564
4.502	2.763	5.408	5.263	5.842	7.819	6.288	9.598
4.554	2.794	5.418	5.319	5.852	7.878	6.298	9.631
4.602	2.824	5.426	5.355	5.862	7.931	6.306	9.657
4.660	2.862	5.436	5.402	5.874	7.993	6.316	9.688

Table AD83. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
6.326	9.717	7.764	10.763
6.338	9.751	7.914	10.800
6.368	9.824	8.064	10.833
6.394	9.883	8.226	10.866
6.422	9.938	8.448	10.908
6.450	9.988		
6.476	10.031		
6.544	10.123		
6.612	10.200		
6.676	10.263		
6.738	10.316		
6.798	10.362		
6.862	10.405		
6.926	10.444		
7.024	10.497		
7.138	10.551		
7.262	10.603		
7.374	10.646		
7.492	10.685		
7.618	10.723		

$pK_{a1} = 1.923$, $pK_{a2} = 2.305$, $pK_{a3} = 5.986$, $pK_{a4} = 8.684$

Table AD84. Potentiometric Titration Data for the pK_a Values of EDTA in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.178.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.834	4.814	3.010	5.548	5.888	6.032	8.627
0.130	1.848	4.840	3.035	5.558	5.926	6.042	8.661
0.302	1.868	4.868	3.063	5.570	5.983	6.054	8.696
0.446	1.886	4.898	3.095	5.580	6.016	6.062	8.731
0.590	1.901	4.922	3.124	5.592	6.062	6.074	8.772
0.742	1.922	4.944	3.148	5.604	6.110	6.086	8.817
0.898	1.941	4.968	3.181	5.614	6.151	6.098	8.856
1.038	1.959	4.990	3.212	5.626	6.202	6.110	8.902
1.180	1.978	5.012	3.245	5.636	6.248	6.122	8.948
1.324	1.997	5.030	3.273	5.648	6.306	6.134	8.992
1.466	2.018	5.052	3.311	5.658	6.356	6.148	9.047
1.602	2.037	5.076	3.357	5.668	6.407	6.162	9.102
1.742	2.059	5.100	3.407	5.680	6.476	6.174	9.152
1.878	2.079	5.124	3.464	5.690	6.538	6.186	9.203
2.022	2.102	5.148	3.529	5.702	6.617	6.198	9.252
2.152	2.123	5.168	3.591	5.712	6.699	6.210	9.302
2.280	2.144	5.192	3.680	5.724	6.800	6.222	9.351
2.406	2.166	5.210	3.757	5.736	6.907	6.234	9.416
2.522	2.187	5.224	3.830	5.748	7.031	6.246	9.454
2.654	2.212	5.238	3.912	5.758	7.141	6.256	9.492
2.772	2.235	5.254	4.026	5.770	7.269	6.266	9.527
2.914	2.264	5.270	4.165	5.782	7.390	6.274	9.556
3.018	2.286	5.284	4.302	5.794	7.506	6.284	9.591
3.126	2.311	5.298	4.453	5.806	7.604	6.294	9.626
3.242	2.337	5.314	4.633	5.818	7.706	6.306	9.665
3.352	2.364	5.330	4.794	5.830	7.800	6.318	9.703
3.450	2.390	5.342	4.902	5.840	7.853	6.334	9.747
3.542	2.414	5.354	4.997	5.850	7.903	6.346	9.779
3.626	2.437	5.368	5.091	5.860	7.955	6.358	9.811
3.706	2.462	5.380	5.170	5.872	8.021	6.372	9.844
3.808	2.493	5.392	5.237	5.882	8.059	6.384	9.871
3.914	2.528	5.406	5.309	5.894	8.112	6.396	9.899
4.002	2.559	5.422	5.386	5.906	8.160	6.432	9.968
4.168	2.634	5.436	5.449	5.916	8.201	6.462	10.020
4.256	2.660	5.448	5.502	5.928	8.249	6.492	10.067
4.350	2.705	5.460	5.551	5.940	8.300	6.526	10.116
4.424	2.742	5.472	5.602	5.952	8.343	6.558	10.156
4.502	2.784	5.482	5.640	5.964	8.387	6.594	10.199
4.578	2.830	5.494	5.685	5.974	8.422	6.700	10.300
4.626	2.862	5.506	5.732	5.986	8.469	6.808	10.382
4.678	2.897	5.516	5.771	5.998	8.508	6.908	10.448
4.734	2.940	5.528	5.815	6.010	8.551	7.006	10.505
4.780	2.978	5.538	5.851	6.022	8.597	7.098	10.550

$pK_{a1} = 1.922$, $pK_{a2} = 2.240$, $pK_{a3} = 5.987$, $pK_{a4} = 8.689$

Table AD85. Potentiometric Titration Data for the pK_a Values of EDTA in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.398.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.653	4.590	3.004	5.048	4.972	5.502	6.994
0.174	1.674	4.618	3.044	5.058	5.025	5.512	7.070
0.332	1.694	4.644	3.087	5.070	5.089	5.522	7.153
0.478	1.711	4.656	3.109	5.082	5.153	5.530	7.212
0.614	1.729	4.668	3.131	5.092	5.203	5.540	7.280
0.804	1.755	4.680	3.155	5.106	5.267	5.552	7.361
1.002	1.782	4.692	3.178	5.116	5.319	5.562	7.427
1.172	1.807	4.704	3.205	5.126	5.356	5.572	7.481
1.340	1.832	4.716	3.232	5.138	5.400	5.582	7.545
1.550	1.856	4.726	3.256	5.150	5.445	5.592	7.598
1.706	1.891	4.736	3.281	5.162	5.493	5.602	7.644
1.880	1.919	4.748	3.314	5.172	5.530	5.614	7.694
2.024	1.945	4.756	3.336	5.182	5.566	5.624	7.743
2.158	1.970	4.764	3.360	5.192	5.603	5.634	7.784
2.294	1.994	4.776	3.397	5.204	5.647	5.644	7.821
2.444	2.026	4.790	3.446	5.214	5.683	5.654	7.858
2.596	2.058	4.802	3.487	5.228	5.732	5.666	7.903
2.742	2.092	4.812	3.524	5.240	5.771	5.678	7.949
2.882	2.124	4.824	3.574	5.250	5.804	5.690	7.990
3.024	2.159	4.834	3.618	5.260	5.841	5.704	8.041
3.178	2.203	4.844	3.664	5.272	5.884	5.716	8.082
3.324	2.246	4.852	3.704	5.282	5.917	5.728	8.123
3.452	2.287	4.862	3.755	5.294	5.951	5.738	8.155
3.582	2.331	4.872	3.824	5.308	5.998	5.748	8.184
3.666	2.363	4.882	3.890	5.332	6.052	5.758	8.219
3.762	2.401	4.890	3.948	5.334	6.095	5.768	8.251
3.862	2.444	4.900	3.994	5.346	6.149	5.780	8.287
3.948	2.485	4.908	4.058	5.358	6.190	5.792	8.326
4.028	2.526	4.916	4.094	5.368	6.234	5.802	8.358
4.106	2.569	4.928	4.185	5.380	6.278	5.812	8.392
4.172	2.610	4.938	4.247	5.392	6.336	5.824	8.429
4.238	2.654	4.948	4.303	5.404	6.389	5.834	8.465
4.302	2.700	4.960	4.401	5.416	6.446	5.848	8.514
4.342	2.732	4.970	4.470	5.426	6.498	5.858	8.574
4.386	2.770	4.982	4.541	5.438	6.560	5.892	8.607
4.430	2.812	4.992	4.617	5.450	6.633	5.884	8.651
4.482	2.865	5.004	4.689	5.460	6.707	5.896	8.692
4.512	2.899	5.014	4.751	5.470	6.774	5.906	8.726
4.538	2.932	5.026	4.828	5.482	6.848	5.916	8.765
4.564	2.964	5.038	4.901	5.492	6.918	5.928	8.817

Table AD85. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.928	8.817	6.142	9.659	6.456	10.138	8.332	10.801
5.940	8.865	6.150	9.681	6.492	10.170	8.496	10.829
5.954	8.936	6.160	9.705	6.542	10.210	8.660	10.852
5.968	8.994	6.170	9.728	6.590	10.246		
5.982	9.055	6.180	9.751	6.654	10.288		
5.994	9.112	6.190	9.773	6.718	10.327		
6.004	9.154	6.200	9.793	6.796	10.371		
6.014	9.203	6.210	9.813	6.882	10.413		
6.022	9.237	6.220	9.831	6.976	10.454		
6.034	9.290	6.230	9.849	7.072	10.493		
6.044	9.332	6.240	9.868	7.178	10.532		
6.054	9.371	6.248	9.881	7.280	10.565		
6.064	9.411	6.258	9.897	7.380	10.596		
6.072	9.441	6.270	9.918	7.494	10.628		
6.082	9.477	6.280	9.933	7.598	10.656		
6.092	9.522	6.304	9.966	7.704	10.681		
6.102	9.549	6.330	10.002	7.822	10.707		
6.112	9.577	6.360	10.038	7.934	10.731		
6.122	9.606	6.394	10.076	8.072	10.757		
6.132	9.632	6.426	10.109	8.194	10.779		

$pK_{a1} = 1.903$, $pK_{a2} = 2.308$, $pK_{a3} = 6.180$, $pK_{a4} = 8.608$

Table AD86. Potentiometric Titration Data for the pK_a Values of EDTA in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.438.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.623	4.794	3.522	5.530	7.371	6.046	9.435
0.140	1.639	4.824	3.655	5.542	7.439	6.056	9.474
0.280	1.656	4.848	3.783	5.552	7.500	6.068	9.513
0.430	1.673	4.872	3.928	5.560	7.539	6.080	9.552
0.578	1.694	4.896	4.082	5.568	7.578	6.092	9.590
0.732	1.715	4.918	4.230	5.580	7.634	6.104	9.624
1.062	1.762	4.948	4.432	5.590	7.683	6.130	9.700
1.234	1.787	4.972	4.598	5.602	7.733	6.142	9.725
1.410	1.814	4.998	4.776	5.614	7.783	6.158	9.760
1.630	1.849	5.024	4.935	5.624	7.824	6.174	9.791
1.810	1.880	5.050	5.078	5.634	7.865	6.190	9.824
1.996	1.915	5.078	5.215	5.644	7.901	6.202	9.845
2.172	1.946	5.102	5.319	5.654	7.939	6.214	9.865
2.304	1.972	5.128	5.430	5.666	7.980	6.226	9.887
2.452	2.003	5.154	5.525	5.678	8.022	6.240	9.911
2.588	2.031	5.176	5.609	5.688	8.059	6.254	9.929
2.724	2.062	5.202	5.691	5.698	8.092	6.266	9.950
2.870	2.098	5.224	5.770	5.712	8.139	6.296	9.990
2.994	2.129	5.238	5.817	5.722	8.181	6.324	10.023
3.154	2.173	5.254	5.872	5.748	8.261	6.352	10.055
3.302	2.216	5.270	5.927	5.764	8.310	6.380	10.088
3.442	2.262	5.282	5.969	5.780	8.363	6.438	10.142
3.522	2.289	5.296	6.019	5.796	8.417	6.498	10.193
3.614	2.323	5.308	6.064	5.812	8.469	6.556	10.238
3.710	2.360	5.322	6.114	5.828	8.529	6.612	10.277
3.806	2.401	5.334	6.162	5.846	8.589	6.668	10.312
3.884	2.437	5.348	6.219	5.866	8.656	6.752	10.358
3.964	2.476	5.358	6.264	5.884	8.733	6.850	10.407
4.032	2.513	5.370	6.318	5.898	8.797	6.950	10.452
4.114	2.560	5.382	6.373	5.914	8.861	7.036	10.485
4.180	2.603	5.394	6.428	5.924	8.900	7.126	10.519
4.256	2.657	5.406	6.489	5.932	8.939	7.240	10.558
4.324	2.710	5.416	6.552	5.940	8.974	7.342	10.590
4.398	2.776	5.426	6.615	5.950	9.024	7.464	10.624
4.512	2.901	5.438	6.693	5.958	9.060	7.580	10.656
4.562	2.967	5.446	6.750	5.968	9.108	7.702	10.681
4.610	3.043	5.458	6.834	5.980	9.176	7.828	10.709
4.634	3.085	5.470	6.921	5.988	9.201	7.962	10.738
4.660	3.136	5.480	6.999	5.996	9.235	8.076	10.759
4.684	3.190	5.490	7.079	6.008	9.286	8.218	10.784
4.710	3.252	5.498	7.146	6.020	9.338	8.402	10.813
4.736	3.321	5.510	7.226	6.028	9.369	8.572	10.840
4.766	3.417	5.520	7.295	6.038	9.406	8.734	10.863

pK_{a1} = 1.990, pK_{a2} = 2.376, pK_{a3} = 6.201, pK_{a4} = 8.634

Table AD87. Potentiometric Titration Data for the pK_a Values of EDTA in 3.00 m NaCl at 25°C. Initial Volume = 15.2 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.566.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.445	5.248	3.174	5.950	7.299	6.488	9.491
0.136	1.459	5.266	3.235	5.960	7.352	6.500	9.528
0.352	1.484	5.286	3.315	5.974	7.420	6.510	9.556
0.514	1.503	5.302	3.391	5.988	7.484	6.524	9.594
0.712	1.527	5.326	3.537	6.000	7.534	6.536	9.625
0.868	1.546	5.348	3.726	6.012	7.586	6.550	9.658
1.048	1.569	5.374	4.060	6.026	7.644	6.560	9.679
1.274	1.599	5.402	4.464	6.038	7.689	6.574	9.711
1.478	1.627	5.422	4.701	6.052	7.740	6.602	9.764
1.634	1.648	5.448	4.936	6.064	7.785	6.626	9.804
1.820	1.677	5.474	5.123	6.076	7.826	6.648	9.840
2.008	1.705	5.498	5.260	6.090	7.875	6.674	9.877
2.188	1.733	5.522	5.376	6.102	7.915	6.690	9.899
2.330	1.757	5.532	5.424	6.116	7.961	6.716	9.933
2.498	1.786	5.546	5.485	6.134	8.019	6.754	9.976
2.640	1.811	5.558	5.535	6.146	8.059	6.786	10.009
2.806	1.841	5.568	5.575	6.158	8.096	6.824	10.046
2.964	1.874	5.586	5.643	6.168	8.130	6.880	10.094
3.116	1.906	5.604	5.705	6.182	8.177	6.964	10.156
3.282	1.943	5.632	5.799	6.192	8.209	7.032	10.202
3.374	1.966	5.642	5.836	6.206	8.258	7.104	10.244
3.480	1.991	5.654	5.874	6.220	8.308	7.172	10.280
3.602	2.022	5.668	5.924	6.234	8.358	7.274	10.329
3.706	2.051	5.682	5.972	6.246	8.401	7.382	10.375
3.834	2.089	5.696	6.023	6.260	8.454	7.522	10.426
3.922	2.116	5.708	6.063	6.274	8.509	7.666	10.473
4.050	2.159	5.722	6.112	6.284	8.549	7.796	10.510
4.144	2.193	5.734	6.155	6.298	8.609	7.946	10.550
4.232	2.227	5.746	6.197	6.310	8.664	8.112	10.589
4.324	2.265	5.760	6.256	6.324	8.731	8.322	10.634
4.422	2.309	5.774	6.314	6.336	8.791	8.528	10.670
4.528	2.362	5.788	6.372	6.348	8.855	8.762	10.713
4.614	2.409	5.804	6.444	6.360	8.914	7.342	10.590
4.706	2.467	5.816	6.500	6.372	8.978	7.464	10.624
4.806	2.538	5.830	6.573	6.384	9.042	7.580	10.656
4.904	2.620	5.844	6.647	6.396	9.105	7.702	10.681
4.984	2.701	5.856	6.724	6.408	9.170	7.828	10.709
5.050	2.781	5.880	6.900	6.420	9.227	7.962	10.738
5.088	2.834	5.892	6.960	6.432	9.281	8.076	10.759
5.134	2.908	5.904	7.027	6.442	9.323	8.218	10.784
5.174	2.984	5.916	7.108	6.452	9.362	8.402	10.813
5.200	3.042	5.928	7.178	6.464	9.408	8.572	10.840
5.226	3.109	5.938	7.236	6.476	9.453	8.734	10.863

$pK_{a1} = 1.942$, $pK_{a2} = 2.186$, $pK_{a3} = 6.405$, $pK_{a4} = 8.608$

Table AD88. Potentiometric Titration Data for the pK_a Values of EDTA in 3.00 m NaCl at 25°C. Initial Volume = 15.2 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.583.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.424	4.586	2.365	5.950	7.082	6.494	9.355
0.180	1.444	4.658	2.406	5.964	7.161	6.508	9.406
0.376	1.465	4.728	2.450	5.982	7.263	6.522	9.455
0.542	1.484	4.826	2.520	5.998	7.347	6.534	9.494
0.718	1.505	4.924	2.602	6.016	7.435	6.548	9.536
0.894	1.528	5.022	2.702	6.034	7.511	6.564	9.581
1.094	1.552	5.112	2.817	6.052	7.584	6.578	9.617
1.282	1.578	5.200	2.971	6.068	7.647	6.592	9.652
1.466	1.603	5.302	3.259	6.088	7.722	6.606	9.682
1.636	1.624	5.412	4.198	6.106	7.782	6.640	9.748
1.810	1.652	5.474	4.851	6.122	7.840	6.668	9.800
1.988	1.680	5.524	5.195	6.136	7.887	6.698	9.845
2.118	1.700	5.550	5.331	6.150	7.934	6.728	9.888
2.236	1.719	5.578	5.454	6.164	7.980	6.764	9.932
2.372	1.741	5.604	5.560	6.180	8.032	6.800	9.974
2.528	1.768	5.628	5.651	6.196	8.085	6.838	10.014
2.662	1.795	5.658	5.754	6.212	8.137	6.902	10.072
2.808	1.821	5.674	5.810	6.226	8.185	6.964	10.120
2.952	1.849	5.690	5.867	6.242	8.238	7.024	10.166
3.082	1.876	5.706	5.922	6.256	8.287	7.098	10.214
3.218	1.906	5.720	5.971	6.274	8.351	7.210	10.276
3.354	1.938	5.740	6.041	6.290	8.408	7.318	10.326
3.474	1.966	5.754	6.093	6.308	8.479	7.426	10.373
3.580	1.994	5.768	6.143	6.326	8.553	7.520	10.408
3.694	2.024	5.782	6.197	6.340	8.614	7.616	10.441
3.794	2.053	5.796	6.253	6.352	8.666	7.726	10.477
3.902	2.086	5.812	6.318	6.368	8.742	7.850	10.511
3.980	2.111	5.828	6.391	6.382	8.810	7.958	10.542
4.054	2.134	5.842	6.454	6.396	8.883	8.078	10.570
4.150	2.170	5.856	6.522	6.410	8.953	8.196	10.600
4.214	2.195	5.868	6.587	6.424	9.027	8.318	10.623
4.286	2.223	5.882	6.663	6.438	9.100	8.456	10.650
4.362	2.255	5.898	6.760	6.452	9.168	8.626	10.681
4.446	2.292	5.918	6.880	6.466	9.234	8.774	10.709
4.516	2.327	5.936	6.994	6.480	9.296		

$pK_{a1} = 1.791$, $pK_{a2} = 2.274$, $pK_{a3} = 6.383$, $pK_{a4} = 8.591$

Table AD89. Potentiometric Titration Data for the pK_a Values of EDTA in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.04.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.978	4.500	1.941	5.260	3.228	5.434	5.352
0.110	0.990	4.530	1.957	5.266	3.289	5.436	5.363
0.210	1.003	4.556	1.973	5.272	3.355	5.440	5.384
0.306	1.014	4.578	1.986	5.278	3.439	5.444	5.403
0.480	1.035	4.604	2.004	5.284	3.530	5.448	5.422
0.638	1.054	4.628	2.020	5.288	3.599	5.454	5.451
0.840	1.081	4.658	2.040	5.290	3.641	5.458	5.469
0.994	1.101	4.690	2.063	5.294	3.725	5.464	5.497
1.166	1.124	4.716	2.082	5.298	3.816	5.468	5.514
1.348	1.149	4.742	2.103	5.302	3.911	5.472	5.532
1.512	1.174	4.768	2.125	5.308	4.051	5.478	5.557
1.668	1.197	4.794	2.147	5.312	4.138	5.482	5.574
1.824	1.221	4.824	2.174	5.316	4.217	5.486	5.590
1.974	1.245	4.850	2.199	5.320	4.288	5.490	5.605
2.134	1.271	4.878	2.228	5.324	4.356	5.494	5.621
2.260	1.294	4.902	2.254	5.328	4.418	5.498	5.638
2.452	1.327	4.926	2.281	5.334	4.503	5.502	5.652
2.598	1.355	4.952	2.313	5.338	4.556	5.506	5.667
2.774	1.390	4.978	2.347	5.342	4.610	5.510	5.681
2.950	1.426	5.004	2.383	5.346	4.659	5.516	5.706
3.122	1.465	5.030	2.423	5.350	4.707	5.520	5.719
3.220	1.487	5.052	2.459	5.354	4.755	5.528	5.746
3.304	1.508	5.088	2.527	5.358	4.800	5.534	5.770
3.382	1.527	5.098	2.548	5.362	4.841	5.538	5.783
3.468	1.551	5.110	2.575	5.366	4.881	5.544	5.804
3.552	1.573	5.120	2.598	5.370	4.918	5.548	5.822
3.634	1.597	5.130	2.622	5.374	4.958	5.552	5.836
3.714	1.620	5.140	2.648	5.378	4.991	5.556	5.848
3.790	1.644	5.148	2.670	5.382	5.023	5.560	5.863
3.878	1.673	5.160	2.705	5.386	5.054	5.564	5.877
3.966	1.703	5.170	2.754	5.390	5.085	5.570	5.898
4.048	1.733	5.178	2.777	5.394	5.113	5.574	5.913
4.136	1.767	5.188	2.812	5.398	5.141	5.578	5.925
4.220	1.802	5.196	2.844	5.404	5.179	5.584	5.946
4.304	1.840	5.208	2.895	5.408	5.204	5.590	5.968
4.334	1.854	5.220	2.952	5.412	5.229	5.596	5.989
4.384	1.878	5.230	3.009	5.416	5.253	5.600	6.003
4.414	1.893	5.238	3.057	5.420	5.277	5.606	6.022
4.442	1.907	5.246	3.112	5.424	5.299	5.612	6.043
4.470	1.923	5.252	3.158	5.430	5.332	5.618	6.064

Table AD89. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.624	6.085	5.904	7.339	6.242	8.584	6.582	9.844
5.630	6.107	5.914	7.381	6.250	8.621	6.594	9.861
5.636	6.127	5.924	7.425	6.260	8.670	6.606	9.880
5.644	6.157	5.934	7.465	6.270	8.723	6.620	9.899
5.650	6.177	5.942	7.498	6.280	8.777	6.630	9.914
5.660	6.212	5.950	7.529	6.288	8.819	6.642	9.930
5.668	6.242	5.960	7.567	6.296	8.863	6.654	9.945
5.676	6.273	5.970	7.603	6.304	8.908	6.666	9.960
5.682	6.295	5.980	7.633	6.314	8.967	6.678	9.975
5.690	6.326	5.990	7.674	6.322	9.014	6.688	9.986
5.702	6.372	6.002	7.715	6.330	9.057	6.718	10.018
5.710	6.407	6.010	7.742	6.340	9.111	6.746	10.046
5.716	6.431	6.020	7.775	6.352	9.175	6.792	10.089
5.724	6.464	6.030	7.810	6.360	9.216	6.858	10.143
5.734	6.508	6.038	7.833	6.368	9.257	6.922	10.189
5.744	6.553	6.048	7.869	6.378	9.300	6.990	10.233
5.752	6.589	6.058	7.900	6.388	9.344	7.044	10.265
5.760	6.628	6.070	7.940	6.398	9.385	7.100	10.296
5.770	6.677	6.084	7.986	6.408	9.422	7.162	10.327
5.778	6.717	6.096	8.025	6.418	9.460	7.250	10.366
5.786	6.755	6.106	8.059	6.428	9.493	7.358	10.412
5.792	6.789	6.114	8.086	6.436	9.519	7.476	10.454
5.798	6.817	6.122	8.113	6.446	9.550	7.600	10.495
5.806	6.856	6.130	8.137	6.458	9.584	7.746	10.537
5.816	6.909	6.140	8.175	6.470	9.615	7.900	10.577
5.826	6.962	6.150	8.209	6.480	9.642	8.060	10.619
5.836	7.014	6.162	8.253	6.490	9.665	8.210	10.646
5.842	7.046	6.172	8.289	6.500	9.688	8.406	10.684
5.850	7.086	6.180	8.320	6.510	9.711	8.594	10.716
5.858	7.124	6.190	8.361	6.520	9.731	8.778	10.746
5.866	7.167	6.200	8.400	6.530	9.750	8.984	10.776
5.872	7.196	6.212	8.450	6.542	9.774	9.138	10.796
5.880	7.233	6.220	8.484	6.550	9.788	9.242	10.813
5.886	7.261	6.226	8.512	6.560	9.806		
5.894	7.296	6.234	8.546	6.570	9.823		

$pK_{a1} = 1.965$, $pK_{a2} = 2.446$, $pK_{a3} = 6.946$, $pK_{a4} = 8.978$

Table AD90. Potentiometric Titration Data for the pK_a Values of EDTA in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol EDTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.021.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.999	4.836	2.267	5.290	4.934	5.724	7.311
0.190	1.021	4.862	2.297	5.300	5.036	5.736	7.361
0.384	1.044	4.882	2.322	5.312	5.145	5.746	7.405
0.576	1.067	4.902	2.349	5.324	5.236	5.756	7.454
0.764	1.090	4.916	2.367	5.334	5.309	5.768	7.509
0.958	1.117	4.934	2.394	5.344	5.368	5.780	7.558
1.152	1.143	4.950	2.419	5.356	5.439	5.790	7.594
1.366	1.173	4.966	2.444	5.368	5.505	5.800	7.633
1.546	1.200	4.978	2.464	5.378	5.569	5.810	7.678
1.666	1.218	4.994	2.492	5.390	5.616	5.820	7.712
1.824	1.243	5.010	2.524	5.400	5.662	5.832	7.755
1.980	1.268	5.020	2.542	5.412	5.717	5.844	7.802
2.136	1.295	5.030	2.563	5.422	5.766	5.854	7.837
2.302	1.323	5.044	2.596	5.434	5.818	5.866	7.880
2.452	1.352	5.054	2.619	5.446	5.866	5.878	7.922
2.600	1.378	5.064	2.644	5.456	5.907	5.890	7.973
2.740	1.407	5.074	2.671	5.466	5.947	5.900	8.003
2.880	1.437	5.086	2.705	5.478	5.997	5.910	8.038
3.012	1.467	5.096	2.736	5.488	6.038	5.920	8.076
3.142	1.497	5.106	2.770	5.500	6.087	5.930	8.106
3.284	1.531	5.116	2.807	5.510	6.130	5.942	8.151
3.434	1.570	5.126	2.845	5.522	6.184	5.952	8.187
3.582	1.612	5.136	2.888	5.532	6.233	5.962	8.228
3.724	1.656	5.144	2.923	5.544	6.286	5.972	8.262
3.864	1.702	5.152	2.964	5.554	6.334	5.982	8.299
3.968	1.739	5.158	2.996	5.566	6.392	5.992	8.340
4.044	1.769	5.166	3.044	5.576	6.436	6.002	8.384
4.128	1.803	5.172	3.083	5.586	6.488	6.012	8.426
4.214	1.841	5.182	3.158	5.596	6.541	6.022	8.460
4.278	1.871	5.192	3.262	5.606	6.602	6.034	8.512
4.340	1.901	5.200	3.357	5.618	6.669	6.046	8.561
4.394	1.930	5.208	3.465	5.628	6.733	6.056	8.608
4.450	1.962	5.218	3.640	5.640	6.810	6.066	8.656
4.506	1.996	5.226	3.857	5.650	6.875	6.078	8.710
4.564	2.033	5.234	4.055	5.660	6.939	6.088	8.756
4.612	2.068	5.242	4.239	5.670	6.989	6.098	8.806
4.672	2.112	5.250	4.389	5.680	7.053	6.108	8.860
4.726	2.157	5.260	4.549	5.692	7.125	6.120	8.920
4.776	2.204	5.270	4.707	5.702	7.178	6.130	8.966
4.808	2.237	5.280	4.826	5.714	7.252	6.140	9.011

Table AD90. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
6.150	9.061	6.324	9.647	6.574	9.990	8.794	10.704
6.160	9.113	6.336	9.673	6.600	10.015	9.034	10.736
6.168	9.145	6.346	9.689	6.626	10.036	9.296	10.769
6.176	9.183	6.356	9.709	6.656	10.059		
6.188	9.238	6.366	9.728	6.718	10.106		
6.196	9.268	6.376	9.745	6.780	10.147		
6.204	9.297	6.386	9.761	6.842	10.187		
6.210	9.322	6.398	9.780	6.912	10.224		
6.218	9.351	6.410	9.798	7.016	10.275		
6.226	9.380	6.422	9.814	7.112	10.316		
6.234	9.406	6.434	9.832	7.214	10.356		
6.242	9.431	6.444	9.847	7.334	10.398		
6.250	9.457	6.456	9.862	7.472	10.443		
6.258	9.483	6.468	9.876	7.614	10.482		
6.268	9.511	6.480	9.891	7.756	10.518		
6.278	9.537	6.492	9.907	7.902	10.551		
6.286	9.559	6.506	9.921	8.036	10.579		
6.294	9.578	6.518	9.933	8.184	10.607		
6.304	9.602	6.532	9.948	8.362	10.639		
6.314	9.626	6.548	9.965	8.576	10.673		

$pK_{a1} = 1.979$, $pK_{a2} = 2.464$, $pK_{a3} = 6.950$, $pK_{a4} = 9.043$

Table AD91. Potentiometric Titration Data for the pK_a Values of Oxine in 0.0010 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0122 mmol Oxine, 0.015 mmol Excess HCl, Titrant = 0.0020 M NaOH, pcH = pHr - 0.209.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	3.865	5.222	5.494	7.298	7.973	9.432	9.658
0.082	3.884	5.346	5.537	7.306	8.019	9.530	9.685
0.164	3.906	5.504	5.589	7.314	8.060	9.614	9.706
0.312	3.948	5.624	5.634	7.320	8.092	9.698	9.728
0.466	3.992	5.752	5.683	7.350	8.213	9.776	9.744
0.592	4.030	5.892	5.738	7.358	8.248	9.876	9.764
0.736	4.076	6.024	5.796	7.378	8.314	10.012	9.800
0.880	4.123	6.174	5.867	7.406	8.394	10.148	9.828
1.030	4.175	6.316	5.942	7.434	8.463	10.286	9.856
1.158	4.219	6.400	5.991	7.462	8.524	10.430	9.888
1.288	4.265	6.494	6.051	7.488	8.571	10.582	9.922
1.406	4.305	6.574	6.107	7.516	8.619	10.788	9.956
1.526	4.348	6.660	6.174	7.550	8.675	10.924	9.980
1.648	4.393	6.742	6.246	7.598	8.738	11.178	10.027
1.774	4.438	6.824	6.330	7.642	8.793	11.342	10.051
1.898	4.483	6.900	6.424	7.670	8.824	11.584	10.093
2.044	4.534	6.952	6.498	7.704	8.861	11.792	10.123
2.174	4.580	7.000	6.578	7.732	8.899	11.982	10.154
2.312	4.626	7.048	6.676	7.768	8.927	12.140	10.176
2.452	4.674	7.102	6.808	7.798	8.955	12.322	10.200
2.586	4.719	7.110	6.838	7.846	8.995	12.482	10.223
2.708	4.757	7.120	6.875	7.902	9.036	12.666	10.248
2.830	4.794	7.152	6.988	7.970	9.084	12.896	10.275
2.946	4.830	7.160	7.026	8.056	9.140	13.124	10.304
3.070	4.868	7.168	7.064	8.112	9.174	13.370	10.334
3.206	4.908	7.182	7.134	8.198	9.221	13.620	10.363
3.338	4.947	7.190	7.183	8.254	9.248	13.832	10.386
3.462	4.983	7.198	7.229	8.320	9.280	13.998	10.403
3.584	5.017	7.204	7.270	8.392	9.313	14.174	10.420
3.718	5.056	7.212	7.322	8.462	9.342	14.346	10.436
3.860	5.096	7.222	7.396	8.532	9.365		
3.980	5.130	7.232	7.469	8.602	9.390		
4.094	5.161	7.240	7.532	8.670	9.423		
4.226	5.199	7.246	7.587	8.746	9.450		
4.378	5.241	7.254	7.647	8.826	9.477		
4.546	5.288	7.262	7.715	8.940	9.519		
4.686	5.329	7.268	7.772	9.022	9.543		
4.820	5.369	7.272	7.816	9.120	9.573		
4.980	5.418	7.284	7.883	9.220	9.601		
5.098	5.455	7.290	7.925	9.342	9.635		

$pK_{a1} = 4.977$, $pK_{a2} = 9.812$

Table AD92. Potentiometric Titration Data for the pK_a Values of Oxine in 0.0010 m NaCl at 25°C. Initial Volume = 10.0 mL, 0.0122 mmol Oxine, 0.010 mmol Excess HCl, Titrant = 0.0020 M NaOH, pcH = pHr - 0.209.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	3.889	4.556	6.301	5.034	8.549	7.584	10.013
0.160	3.952	4.606	6.380	5.044	8.575	7.732	10.051
0.342	4.031	4.658	6.480	5.054	8.601	7.882	10.083
0.514	4.113	4.692	6.557	5.066	8.629	8.010	10.111
0.670	4.191	4.722	6.637	5.078	8.657	8.166	10.144
0.828	4.273	4.752	6.733	5.096	8.693	8.312	10.174
1.004	4.366	4.762	6.774	5.122	8.743	8.440	10.201
1.092	4.413	4.774	6.822	5.148	8.790	8.576	10.230
1.178	4.459	4.782	6.859	5.174	8.832	8.706	10.254
1.260	4.502	4.792	6.909	5.204	8.879	8.844	10.278
1.344	4.545	4.800	6.954	5.234	8.921	9.034	10.312
1.442	4.596	4.810	7.010	5.268	8.961	9.166	10.334
1.532	4.642	4.820	7.077	5.300	8.999	9.306	10.356
1.620	4.689	4.830	7.148	5.328	9.030	9.446	10.378
1.706	4.726	4.838	7.215	5.358	9.062	9.586	10.400
1.796	4.768	4.846	7.287	5.388	9.090	9.730	10.420
1.902	4.817	4.854	7.364	5.432	9.128	9.914	10.446
2.018	4.869	4.862	7.449	5.480	9.166	10.082	10.467
2.120	4.914	4.870	7.542	5.518	9.200	10.242	10.489
2.224	4.959	4.878	7.631	5.568	9.237	10.422	10.512
2.426	5.045	4.888	7.744	5.618	9.273	10.616	10.533
2.540	5.093	4.892	7.794	5.686	9.319	10.780	10.551
2.668	5.148	4.898	7.860	5.752	9.357	10.952	10.573
2.754	5.184	4.904	7.919	5.820	9.396	11.116	10.589
2.846	5.221	4.910	7.965	5.880	9.428	11.396	10.618
2.958	5.268	4.914	7.999	5.984	9.478	11.618	10.639
3.064	5.314	4.918	8.033	6.058	9.511	12.116	10.680
3.174	5.361	4.922	8.062	6.138	9.546	12.474	10.707
3.286	5.411	4.926	8.092	6.232	9.587	13.012	10.746
3.404	5.465	4.930	8.117	6.316	9.622	13.714	10.792
3.520	5.520	4.936	8.155	6.402	9.654	14.256	10.824
3.640	5.581	4.940	8.178	6.530	9.702	14.678	10.847
3.752	5.639	4.946	8.210	6.640	9.739	15.448	10.880
3.850	5.693	4.950	8.236	6.752	9.776	15.890	10.894
3.948	5.752	4.956	8.263	6.862	9.811	16.222	10.907
4.060	5.824	4.982	8.373	6.984	9.846		
4.166	5.899	4.992	8.416	7.112	9.887		
4.290	6.001	5.002	8.450	7.242	9.922		
4.392	6.098	5.012	8.482	7.360	9.956		
4.498	6.220	5.022	8.513	7.470	9.984		

$pK_{a1} = 4.981$, $pK_{a2} = 9.808$

Table AD93. Potentiometric Titration Data for the pK_a Values of Oxine in 0.0010 m NaCl at 25°C. Initial Volume = 10.0 mL, 0.0122 mmol Oxine, 0.010 mmol Excess HCl, Titrant = 0.0020 M NaOH, pcH = pHr - 0.215.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	3.925	4.778	6.439	5.258	8.757	7.852	10.080
0.150	3.983	4.804	6.489	5.278	8.796	7.974	10.104
0.272	4.033	4.842	6.572	5.300	8.835	8.174	10.150
0.392	4.083	4.870	6.646	5.324	8.874	8.326	10.188
0.530	4.145	4.904	6.747	5.350	8.913	8.486	10.217
0.670	4.212	4.928	6.837	5.374	8.948	8.638	10.249
0.814	4.283	4.938	6.884	5.404	8.985	8.802	10.278
0.966	4.360	4.948	6.933	5.440	9.072	8.966	10.314
1.128	4.443	4.956	6.976	5.478	9.124	9.114	10.336
1.290	4.527	4.966	7.033	5.530	9.167	9.258	10.362
1.444	4.605	4.978	7.110	5.630	9.211	9.506	10.401
1.596	4.679	4.988	7.190	5.684	9.252	9.878	10.459
1.740	4.748	4.998	7.272	5.762	9.307	10.232	10.505
1.878	4.811	5.006	7.346	5.828	9.353	10.696	10.565
2.040	4.883	5.014	7.435	5.898	9.393	11.024	10.602
2.182	4.944	5.024	7.546	5.988	9.442	11.424	10.644
2.340	5.012	5.030	7.626	6.060	9.481	11.740	10.665
2.490	5.073	5.038	7.714	6.122	9.515	12.080	10.699
2.618	5.130	5.048	7.824	6.182	9.542	12.456	10.730
2.768	5.183	5.052	7.885	6.232	9.567	13.056	10.775
2.890	5.233	5.060	7.964	6.302	9.593	13.864	10.808
3.020	5.281	5.070	8.046	6.374	9.626	13.890	10.881
3.160	5.339	5.078	8.108	6.444	9.652	15.650	10.918
3.320	5.406	5.086	8.162	6.522	9.683		
3.452	5.462	5.094	8.215	6.604	9.713		
3.576	5.517	5.102	8.260	6.678	9.735		
3.708	5.579	5.110	8.303	6.764	9.768		
3.828	5.638	5.120	8.353	6.868	9.806		
3.974	5.715	5.128	8.387	6.992	9.843		
4.104	5.791	5.138	8.428	7.102	9.877		
4.216	5.861	5.148	8.467	7.226	9.908		
4.350	5.957	5.160	8.506	7.354	9.949		
4.486	6.070	5.194	8.610	7.490	9.988		
4.620	6.208	5.212	8.656	7.608	10.023		
4.720	6.342	5.234	8.708	7.728	10.054		

$pK_{a1} = 4.995$, $pK_{a2} = 9.814$

Table AD94. Potentiometric Titration Data for the pK_a Values of Oxine in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.028.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.011	4.508	3.995	5.042	7.487	5.482	10.071
0.264	2.042	4.528	4.069	5.048	7.806	5.506	10.118
0.504	2.076	4.550	4.149	5.050	7.917	5.526	10.160
0.708	2.107	4.570	4.222	5.052	8.004	5.554	10.208
0.932	2.141	4.614	4.380	5.056	8.094	5.578	10.251
1.162	2.176	4.634	4.448	5.060	8.193	5.602	10.289
1.398	2.215	4.658	4.534	5.066	8.323	5.630	10.330
1.608	2.252	4.692	4.642	5.070	8.397	5.666	10.378
1.832	2.294	4.716	4.720	5.074	8.460	5.692	10.414
2.078	2.343	4.740	4.796	5.078	8.516	5.710	10.436
2.298	2.391	4.766	4.880	5.082	8.567	5.728	10.460
2.478	2.433	4.792	4.965	5.086	8.610	5.754	10.489
2.706	2.491	4.812	5.029	5.092	8.665	5.798	10.533
2.906	2.550	4.830	5.092	5.096	8.707	5.838	10.572
3.120	2.618	4.850	5.162	5.100	8.744	5.880	10.610
3.318	2.691	4.868	5.229	5.104	8.777	5.924	10.646
3.546	2.789	4.890	5.314	5.110	8.841	5.968	10.681
3.654	2.844	4.912	5.409	5.114	8.868	6.020	10.718
3.742	2.893	4.956	5.637	5.124	8.925	6.074	10.754
3.826	2.946	4.978	5.794	5.176	9.175	6.120	10.782
3.922	3.014	4.996	5.958	5.222	9.354	6.200	10.826
4.014	3.089	5.012	6.165	5.268	9.516	6.288	10.870
4.106	3.178	5.016	6.249	5.274	9.535	6.378	10.911
4.220	3.317	5.018	6.298	5.296	9.600	6.454	10.944
4.266	3.386	5.022	6.389	5.324	9.689	6.530	10.974
4.310	3.464	5.026	6.499	5.350	9.757	6.586	10.994
4.364	3.572	5.028	6.579	5.376	9.825		
4.412	3.689	5.030	6.685	5.400	9.884		
4.460	3.834	5.034	6.859	5.428	9.951		
4.484	3.911	5.038	7.156	5.454	10.010		

$pK_{a1} = 4.873$, $pK_{a2} = 9.603$

Table AD95. Potentiometric Titration Data for the pK_a Values of Oxine in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.042.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.017	4.176	3.454	4.602	4.886	4.876	8.268
0.134	2.033	4.198	3.497	4.614	4.927	4.878	8.309
0.224	2.046	4.224	3.552	4.624	4.963	4.880	8.360
0.338	2.061	4.246	3.603	4.634	5.001	4.882	8.389
0.458	2.078	4.264	3.650	4.640	5.022	4.886	8.450
0.588	2.097	4.290	3.721	4.648	5.051	4.890	8.505
0.730	2.117	4.316	3.803	4.662	5.105	4.894	8.556
0.866	2.138	4.322	3.822	4.676	5.159	4.898	8.607
1.008	2.161	4.326	3.836	4.688	5.208	4.902	8.648
1.142	2.182	4.332	3.856	4.696	5.240	4.906	8.693
1.266	2.203	4.348	3.913	4.710	5.301	4.908	8.715
1.396	2.226	4.370	3.994	4.722	5.357	4.912	8.756
1.538	2.252	4.376	4.017	4.738	5.435	4.918	8.801
1.682	2.278	4.382	4.042	4.750	5.500	4.922	8.825
1.856	2.313	4.394	4.091	4.758	5.546	4.924	8.838
2.000	2.344	4.402	4.125	4.770	5.620	4.928	8.864
2.148	2.376	4.408	4.147	4.778	5.675	4.934	8.904
2.294	2.410	4.412	4.165	4.786	5.736	4.940	8.946
2.446	2.447	4.418	4.190	4.796	5.824	4.946	8.987
2.600	2.488	4.424	4.213	4.804	5.902	4.954	9.030
2.758	2.533	4.428	4.231	4.810	5.968	4.958	9.056
2.882	2.572	4.434	4.254	4.816	6.044	4.964	9.088
3.020	2.618	4.438	4.271	4.820	6.106	4.972	9.131
3.136	2.666	4.448	4.311	4.822	6.141	4.978	9.158
3.246	2.703	4.456	4.343	4.824	6.179	4.986	9.196
3.338	2.745	4.466	4.384	4.828	6.249	4.994	9.231
3.442	2.791	4.480	4.439	4.832	6.341	5.002	9.266
3.546	2.847	4.490	4.477	4.834	6.400	5.008	9.293
3.620	2.889	4.496	4.502	4.838	6.514	5.016	9.324
3.694	2.936	4.504	4.532	4.840	6.600	5.022	9.347
3.766	2.986	4.518	4.584	4.844	6.768	5.030	9.379
3.838	3.042	4.526	4.614	4.846	6.900	5.038	9.405
3.910	3.105	4.536	4.650	4.848	7.080	5.046	9.431
3.950	3.144	4.542	4.672	4.852	7.422	5.052	9.454
4.000	3.198	4.548	4.695	4.856	7.676	5.060	9.481
4.040	3.246	4.558	4.731	4.860	7.802	5.068	9.509
4.070	3.284	4.568	4.766	4.862	7.857	5.074	9.528
4.094	3.318	4.576	4.794	4.864	7.915	5.084	9.560
4.122	3.361	4.586	4.829	4.868	8.080	5.090	9.579
4.148	3.403	4.596	4.865	4.872	8.169	5.098	9.604

Table AD95. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.108	9.636	5.726	10.662
5.116	9.660	5.780	10.705
5.120	9.671	5.824	10.735
5.130	9.701	5.864	10.758
5.138	9.723	5.912	10.792
5.146	9.747	5.970	10.827
5.176	9.824	6.022	10.855
5.202	9.894	6.066	10.877
5.228	9.956	6.114	10.902
5.254	10.015	6.166	10.925
5.280	10.074	6.216	10.947
5.312	10.141		
5.376	10.256		
5.432	10.342		
5.474	10.402		
5.518	10.459		
5.560	10.507		
5.602	10.551		
5.644	10.593		
5.686	10.629		

$pK_{a1} = 4.947$, $pK_{a2} = 9.641$

Table AD96. Potentiometric Titration Data for the pK_a Values of Oxine in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.039.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.017	4.326	3.724	4.700	5.121	4.922	8.418
0.190	2.042	4.334	3.748	4.708	5.153	4.924	8.445
0.342	2.063	4.348	3.791	4.716	5.186	4.926	8.474
0.530	2.090	4.362	3.838	4.724	5.217	4.928	8.503
0.712	2.116	4.370	3.864	4.730	5.240	4.932	8.552
0.894	2.144	4.380	3.899	4.738	5.274	4.934	8.574
1.058	2.170	4.392	3.944	4.744	5.301	4.938	8.622
1.228	2.199	4.404	3.989	4.752	5.336	4.946	8.704
1.380	2.224	4.418	4.043	4.760	5.373	4.954	8.779
1.522	2.250	4.430	4.090	4.768	5.413	4.962	8.843
1.668	2.277	4.438	4.124	4.776	5.451	4.970	8.903
1.824	2.307	4.448	4.164	4.782	5.481	4.978	8.958
1.970	2.338	4.456	4.198	4.792	5.534	4.986	9.009
2.122	2.370	4.464	4.230	4.800	5.574	4.994	9.055
2.274	2.404	4.472	4.263	4.806	5.609	5.002	9.100
2.416	2.438	4.480	4.295	4.812	5.645	5.010	9.145
2.560	2.476	4.490	4.336	4.820	5.697	5.018	9.184
2.678	2.508	4.498	4.369	4.828	5.754	5.026	9.220
2.820	2.548	4.510	4.415	4.836	5.821	5.032	9.248
2.938	2.586	4.518	4.450	4.842	5.875	5.038	9.276
3.090	2.638	4.528	4.487	4.848	5.939	5.046	9.310
3.238	2.694	4.538	4.525	4.854	6.013	5.054	9.343
3.350	2.741	4.546	4.557	4.862	6.124	5.062	9.375
3.488	2.806	4.562	4.622	4.870	6.268	5.070	9.403
3.586	2.856	4.570	4.648	4.872	6.332	5.078	9.434
3.690	2.918	4.578	4.675	4.876	6.418	5.084	9.454
3.770	2.971	4.586	4.704	4.880	6.538	5.092	9.483
3.838	3.022	4.592	4.727	4.884	6.711	5.100	9.510
3.904	3.076	4.604	4.771	4.888	6.898	5.108	9.539
3.964	3.130	4.614	4.806	4.892	7.189	5.116	9.566
4.026	3.193	4.624	4.842	4.896	7.518	5.122	9.585
4.090	3.270	4.632	4.872	4.898	7.654	5.130	9.609
4.156	3.362	4.640	4.900	4.900	7.808	5.138	9.635
4.192	3.422	4.646	4.921	4.904	7.956	5.146	9.657
4.216	3.465	4.654	4.950	4.906	8.042	5.152	9.674
4.244	3.521	4.662	4.980	4.908	8.109	5.160	9.701
4.274	3.587	4.668	5.002	4.912	8.209	5.168	9.722
4.300	3.650	4.676	5.031	4.914	8.272	5.176	9.746
4.308	3.672	4.684	5.060	4.916	8.317	5.184	9.768
4.316	3.693	4.692	5.091	4.920	8.384	5.194	9.794

Table AD96. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.204	9.824	5.598	10.533
5.212	9.846	5.630	10.567
5.220	9.870	5.662	10.601
5.228	9.889	5.708	10.643
5.238	9.921	5.746	10.676
5.246	9.938	5.784	10.706
5.254	9.957	5.832	10.743
5.262	9.976	5.866	10.767
5.270	9.994	5.902	10.792
5.278	10.013	5.934	10.812
5.286	10.033	5.966	10.830
5.318	10.102	5.998	10.849
5.348	10.163	6.036	10.871
5.382	10.226	6.070	10.887
5.416	10.285	6.102	10.904
5.444	10.331	6.140	10.921
5.476	10.379	6.172	10.937
5.508	10.424		
5.540	10.465		
5.570	10.502		

$pK_{a1} = 4.939$, $pK_{a2} = 9.686$

Table AD97. Potentiometric Titration Data for the pK_a Values of Oxine in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.105.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.942	3.894	2.968	4.426	3.936	4.770	5.141
0.082	1.953	3.966	3.031	4.432	3.958	4.776	5.163
0.184	1.966	3.998	3.052	4.440	3.987	4.786	5.202
0.282	1.979	4.004	3.069	4.446	4.010	4.802	5.268
0.372	1.991	4.010	3.075	4.452	4.034	4.812	5.312
0.464	2.003	4.016	3.082	4.458	4.055	4.824	5.366
0.562	2.018	4.022	3.089	4.464	4.078	4.834	5.415
0.662	2.031	4.052	3.122	4.470	4.101	4.846	5.476
0.756	2.045	4.074	3.148	4.478	4.132	4.858	5.548
0.852	2.058	4.098	3.179	4.484	4.154	4.872	5.644
0.980	2.079	4.118	3.204	4.490	4.177	4.878	5.689
1.064	2.092	4.142	3.240	4.498	4.206	4.882	5.719
1.154	2.106	4.162	3.269	4.504	4.230	4.888	5.770
1.246	2.121	4.188	3.310	4.510	4.252	4.892	5.805
1.338	2.137	4.194	3.320	4.514	4.267	4.898	5.865
1.438	2.154	4.214	3.355	4.520	4.288	4.906	5.956
1.536	2.171	4.236	3.398	4.526	4.310	4.910	6.010
1.628	2.187	4.258	3.440	4.532	4.332	4.914	6.069
1.724	2.206	4.278	3.485	4.536	4.345	4.920	6.173
1.804	2.221	4.282	3.495	4.546	4.381	4.924	6.250
1.906	2.241	4.288	3.509	4.558	4.424	4.928	6.353
1.988	2.257	4.294	3.523	4.568	4.456	4.934	6.575
2.090	2.275	4.300	3.539	4.576	4.486	4.936	6.658
2.192	2.301	4.306	3.554	4.586	4.521	4.940	6.855
2.294	2.324	4.312	3.569	4.592	4.541	4.942	7.017
2.392	2.347	4.316	3.580	4.598	4.561	4.946	7.340
2.482	2.369	4.322	3.597	4.604	4.581	4.948	7.474
2.562	2.389	4.328	3.613	4.610	4.600	4.950	7.599
2.642	2.411	4.336	3.635	4.616	4.620	4.954	7.786
2.726	2.434	4.342	3.652	4.624	4.647	4.956	7.880
2.844	2.469	4.348	3.670	4.630	4.666	4.958	7.955
2.928	2.495	4.352	3.682	4.642	4.705	4.960	8.014
3.034	2.529	4.356	3.695	4.660	4.764	4.962	8.069
3.114	2.558	4.362	3.715	4.664	4.777	4.964	8.119
3.200	2.589	4.368	3.732	4.672	4.803	4.968	8.199
3.282	2.622	4.374	3.752	4.682	4.836	4.972	8.270
3.358	2.654	4.382	3.779	4.696	4.881	4.976	8.336
3.440	2.691	4.388	3.800	4.708	4.921	4.980	8.392
3.516	2.727	4.392	3.814	4.720	4.962	4.984	8.446
3.594	2.769	4.400	3.841	4.734	5.010	4.988	8.498
3.670	2.812	4.406	3.863	4.746	5.054	4.992	8.540
3.744	2.858	4.412	3.884	4.754	5.081	4.996	8.583
3.814	2.906	4.420	3.913	4.762	5.111	4.998	8.606

Table AD97. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.000	8.624	5.194	9.537	5.464	10.146	6.140	10.709
5.004	8.662	5.200	9.556	5.478	10.168	6.172	10.725
5.008	8.693	5.208	9.580	5.490	10.185	6.202	10.739
5.012	8.725	5.214	9.598	5.504	10.206	6.246	10.758
5.032	8.856	5.222	9.622	5.520	10.227	6.290	10.775
5.042	8.916	5.230	9.645	5.536	10.249	6.330	10.791
5.050	8.961	5.238	9.668	5.552	10.269	6.368	10.805
5.058	9.003	5.246	9.689	5.560	10.279	6.410	10.820
5.066	9.045	5.254	9.711	5.564	10.293	6.450	10.834
5.072	9.074	5.262	9.732	5.602	10.329	6.496	10.849
5.080	9.112	5.272	9.759	5.632	10.360	6.546	10.865
5.088	9.149	5.280	9.779	5.662	10.390	6.592	10.880
5.094	9.175	5.288	9.798	5.704	10.430	6.640	10.895
5.100	9.202	5.296	9.818	5.736	10.459	6.688	10.906
5.112	9.249	5.304	9.837	5.770	10.485	6.734	10.920
5.120	9.280	5.322	9.879	5.804	10.512	6.774	10.931
5.128	9.310	5.342	9.923	5.854	10.548	6.836	10.950
5.136	9.340	5.356	9.953	5.884	10.569		
5.144	9.369	5.368	9.977	5.912	10.587		
5.152	9.397	5.382	10.004	5.938	10.603		
5.160	9.424	5.392	10.024	5.968	10.621		
5.166	9.443	5.406	10.049	6.012	10.645		
5.172	9.463	5.422	10.077	6.044	10.663		
5.180	9.492	5.434	10.098	6.078	10.681		
5.186	9.512	5.446	10.117	6.110	10.697		

$pK_{a1} = 4.905$, $pK_{a2} = 9.548$

Table AD98. Potentiometric Titration Data for the pK_a Values of Oxine in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.093.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.962	3.996	3.128	4.530	4.488	4.916	7.028
0.062	1.971	4.026	3.162	4.542	4.529	4.918	7.189
0.150	1.982	4.054	3.197	4.550	4.555	4.920	7.348
0.236	1.994	4.080	3.231	4.560	4.588	4.922	7.469
0.320	2.006	4.110	3.274	4.580	4.650	4.924	7.597
0.418	2.018	4.152	3.340	4.588	4.677	4.928	7.763
0.508	2.031	4.160	3.356	4.598	4.708	4.930	7.854
0.608	2.046	4.168	3.367	4.606	4.733	4.934	7.973
0.710	2.061	4.174	3.381	4.618	4.770	4.936	8.041
0.818	2.077	4.182	3.395	4.626	4.795	4.940	8.127
0.922	2.092	4.190	3.413	4.636	4.827	4.942	8.172
1.026	2.110	4.200	3.433	4.650	4.870	4.944	8.215
1.134	2.126	4.208	3.449	4.664	4.916	4.946	8.254
1.234	2.142	4.218	3.470	4.678	4.959	4.948	8.286
1.336	2.159	4.224	3.483	4.688	4.991	4.952	8.344
1.442	2.178	4.230	3.497	4.696	5.018	4.954	8.379
1.542	2.196	4.236	3.511	4.706	5.051	4.958	8.423
1.646	2.215	4.248	3.539	4.718	5.093	4.962	8.471
1.748	2.234	4.280	3.619	4.726	5.120	4.964	8.496
1.850	2.254	4.302	3.680	4.734	5.149	4.966	8.519
1.962	2.278	4.336	3.785	4.744	5.185	4.970	8.555
2.066	2.299	4.342	3.806	4.752	5.215	4.972	8.580
2.180	2.326	4.348	3.827	4.762	5.252	4.978	8.628
2.296	2.355	4.356	3.855	4.770	5.283	4.980	8.648
2.406	2.385	4.364	3.884	4.780	5.324	4.984	8.680
2.508	2.410	4.372	3.912	4.790	5.369	4.988	8.711
2.610	2.438	4.388	3.969	4.798	5.405	4.990	8.729
2.714	2.467	4.396	4.001	4.808	5.450	4.992	8.748
2.812	2.496	4.404	4.032	4.818	5.503	4.994	8.760
2.902	2.524	4.416	4.075	4.830	5.566	4.996	8.781
3.000	2.556	4.422	4.098	4.840	5.626	4.998	8.796
3.098	2.590	4.428	4.121	4.850	5.693	5.002	8.822
3.204	2.630	4.436	4.150	4.860	5.769	5.006	8.847
3.304	2.670	4.444	4.180	4.870	5.862	5.014	8.891
3.400	2.714	4.452	4.209	4.878	5.946	5.022	8.936
3.486	2.756	4.460	4.239	4.888	6.073	5.028	8.970
3.606	2.820	4.468	4.269	4.896	6.203	5.036	9.010
3.704	2.881	4.476	4.299	4.900	6.296	5.046	9.056
3.778	2.933	4.484	4.325	4.904	6.401	5.052	9.085
3.824	2.968	4.496	4.368	4.906	6.476	5.058	9.113
3.870	3.006	4.504	4.399	4.908	6.559	5.064	9.139
3.918	3.049	4.512	4.427	4.910	6.651	5.072	9.172
3.966	3.096	4.522	4.461	4.914	6.872	5.078	9.197

Table AD98. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.086	9.226	5.218	9.649	5.658	10.403	6.184	10.749
5.094	9.256	5.224	9.666	5.682	10.426	6.212	10.760
5.100	9.277	5.258	9.752	5.706	10.448	6.240	10.772
5.108	9.305	5.286	9.819	5.730	10.469	6.268	10.783
5.114	9.329	5.294	9.839	5.756	10.490	6.300	10.797
5.120	9.349	5.302	9.858	5.782	10.512	6.330	10.808
5.126	9.369	5.318	9.895	5.806	10.528	6.360	10.820
5.134	9.396	5.338	9.937	5.834	10.550	6.384	10.829
5.140	9.415	5.360	9.982	5.866	10.572	6.412	10.839
5.146	9.434	5.388	10.035	5.894	10.590	6.440	10.848
5.152	9.453	5.414	10.082	5.920	10.608	6.470	10.859
5.158	9.472	5.436	10.119	5.944	10.622	6.500	10.869
5.166	9.497	5.458	10.154	5.970	10.639	6.526	10.878
5.174	9.522	5.486	10.195	5.994	10.651	6.556	10.887
5.180	9.540	5.514	10.234	6.018	10.667	6.582	10.894
5.188	9.564	5.540	10.268	6.042	10.680	6.612	10.903
5.196	9.588	5.564	10.300	6.070	10.693	6.640	10.911
5.200	9.600	5.584	10.323	6.098	10.708	6.666	10.919
5.206	9.618	5.612	10.355	6.126	10.721	6.690	10.926
5.212	9.634	5.634	10.378	6.156	10.735		

$pK_{a1} = 4.924$, $pK_{a2} = 9.578$

Table AD99. Potentiometric Titration Data for the pK_a Values of Oxine in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.117.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.937	4.318	3.536	4.716	4.947	4.942	7.383
0.092	1.947	4.328	3.561	4.722	4.966	4.944	7.515
0.204	1.962	4.336	3.582	4.730	4.996	4.948	7.716
0.320	1.977	4.346	3.611	4.738	5.025	4.950	7.833
0.460	1.997	4.356	3.640	4.748	5.066	4.954	7.964
0.586	2.014	4.366	3.670	4.756	5.091	4.956	8.017
0.724	2.034	4.376	3.702	4.764	5.120	4.958	8.072
0.866	2.055	4.384	3.728	4.772	5.150	4.962	8.155
1.002	2.075	4.394	3.762	4.780	5.182	4.964	8.199
1.146	2.097	4.404	3.796	4.788	5.216	4.966	8.240
1.300	2.123	4.414	3.831	4.796	5.250	4.968	8.275
1.458	2.150	4.426	3.876	4.804	5.284	4.970	8.310
1.598	2.175	4.434	3.906	4.812	5.320	4.974	8.365
1.750	2.202	4.444	3.946	4.820	5.359	4.976	8.396
1.886	2.228	4.454	3.983	4.828	5.399	4.978	8.422
2.026	2.257	4.462	4.016	4.838	5.450	4.980	8.445
2.160	2.286	4.472	4.056	4.846	5.496	4.984	8.492
2.308	2.318	4.482	4.095	4.852	5.531	4.986	8.514
2.452	2.352	4.493	4.135	4.860	5.581	4.988	8.537
2.586	2.386	4.502	4.176	4.868	5.636	4.992	8.576
2.720	2.423	4.510	4.207	4.876	5.698	4.996	8.613
2.838	2.456	4.518	4.238	4.882	5.743	4.998	8.630
2.950	2.490	4.528	4.279	4.890	5.820	5.000	8.647
3.070	2.529	4.538	4.315	4.892	5.841	5.002	8.664
3.194	2.574	4.546	4.346	4.894	5.863	5.012	8.739
3.330	2.627	4.552	4.370	4.896	5.886	5.018	8.781
3.414	2.663	4.562	4.407	4.900	5.932	5.024	8.820
3.498	2.703	4.570	4.436	4.902	5.959	5.030	8.859
3.578	2.743	4.578	4.466	4.906	6.012	5.038	8.904
3.656	2.786	4.588	4.503	4.910	6.073	5.044	8.936
3.732	2.831	4.596	4.531	4.912	6.108	5.052	8.978
3.802	2.878	4.604	4.559	4.916	6.179	5.062	9.028
3.880	2.935	4.616	4.602	4.918	6.221	5.068	9.050
3.958	3.001	4.624	4.631	4.922	6.314	5.074	9.083
4.040	3.080	4.634	4.665	4.924	6.373	5.078	9.101
4.116	3.169	4.644	4.699	4.926	6.435	5.084	9.124
4.174	3.250	4.652	4.727	4.928	6.508	5.092	9.158
4.208	3.305	4.662	4.761	4.930	6.590	5.098	9.183
4.242	3.366	4.672	4.794	4.932	6.679	5.104	9.206
4.272	3.427	4.680	4.821	4.934	6.792	5.110	9.230
4.282	3.450	4.690	4.856	4.936	6.926	5.116	9.248
4.292	3.472	4.700	4.890	4.938	7.091	5.124	9.278
4.308	3.510	4.708	4.919	4.940	7.254	5.132	9.305

Table AD99. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.138	9.326	5.402	9.995	5.954	10.578
5.146	9.353	5.414	10.017	6.000	10.607
5.154	9.378	5.428	10.041	6.040	10.629
5.162	9.406	5.456	10.088	6.086	10.653
5.168	9.425	5.488	10.138	6.128	10.675
5.190	9.491	5.520	10.182	6.172	10.696
5.208	9.543	5.544	10.216	6.216	10.714
5.222	9.582	5.566	10.242	6.250	10.730
5.236	9.620	5.592	10.272	6.294	10.749
5.250	9.657	5.616	10.302	6.336	10.764
5.260	9.683	5.646	10.334	6.378	10.781
5.270	9.709	5.676	10.365	6.410	10.793
5.284	9.742	5.706	10.393	6.458	10.811
5.296	9.772	5.734	10.419	6.514	10.828
5.316	9.818	5.762	10.442	6.580	10.851
5.332	9.854	5.790	10.466	6.636	10.867
5.344	9.880	5.814	10.483	6.698	10.885
5.358	9.909	5.842	10.505	6.760	10.902
5.370	9.933	5.868	10.523	6.820	10.918
5.384	9.961	5.916	10.554	6.888	10.935

$pK_{a1} = 4.940$, $pK_{a2} = 9.567$

Table AD100. Potentiometric Titration Data for the pK_a Values of Oxine in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.145.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.898	4.724	4.702	5.068	8.307	5.928	10.436
0.232	1.924	4.730	4.726	5.072	8.356	5.984	10.479
0.428	1.950	4.742	4.766	5.074	8.390	6.042	10.517
0.604	1.973	4.754	4.807	5.078	8.423	6.092	10.551
0.798	2.001	4.768	4.853	5.082	8.463	6.132	10.573
0.998	2.031	4.780	4.894	5.088	8.517	6.206	10.613
1.206	2.063	4.796	4.950	5.094	8.568	6.280	10.651
1.392	2.094	4.808	4.994	5.120	8.713	6.370	10.691
1.602	2.131	4.820	5.041	5.142	8.851	6.462	10.728
1.824	2.171	4.834	5.089	5.166	8.959	6.564	10.767
2.148	2.236	4.850	5.172	5.184	9.038	6.682	10.807
2.450	2.305	4.904	5.370	5.190	9.066	6.796	10.842
2.760	2.385	4.920	5.456	5.196	9.092	6.980	10.892
3.062	2.476	4.940	5.563	5.210	9.147	7.154	10.935
3.336	2.576	4.958	5.682	5.226	9.205	7.274	10.963
3.552	2.672	4.970	5.776	5.236	9.242	7.386	10.984
3.738	2.773	4.982	5.890	5.260	9.315	7.494	11.008
3.928	2.901	4.994	6.028	5.284	9.389		
4.134	3.097	5.000	6.120	5.312	9.471		
4.364	3.473	5.006	6.229	5.336	9.537		
4.388	3.535	5.012	6.387	5.364	9.610		
4.410	3.596	5.018	6.542	5.388	9.671		
4.440	3.688	5.026	6.931	5.410	9.723		
4.464	3.775	5.028	7.081	5.440	9.790		
4.490	3.862	5.030	7.235	5.466	9.846		
4.516	3.958	5.032	7.367	5.490	9.895		
4.540	4.049	5.036	7.574	5.516	9.944		
4.566	4.146	5.038	7.666	5.544	9.993		
4.592	4.241	5.042	7.804	5.568	10.034		
4.622	4.350	5.046	7.915	5.626	10.120		
4.642	4.419	5.050	8.008	5.674	10.183		
4.664	4.492	5.054	8.088	5.726	10.245		
4.688	4.576	5.058	8.159	5.776	10.298		
4.712	4.657	5.062	8.224	5.824	10.348		
4.716	4.673	5.064	8.250	5.876	10.394		

$pK_{a1} = 4.927$, $pK_{a2} = 9.542$

Table AD101. Potentiometric Titration Data for the pK_a Values of Oxine in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.159.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.885	4.688	4.726	4.990	7.761	5.290	9.591
0.150	1.903	4.696	4.753	4.992	7.847	5.304	9.628
0.308	1.924	4.702	4.774	4.994	7.917	5.314	9.656
0.496	1.949	4.708	4.794	4.998	8.013	5.332	9.699
0.710	1.980	4.718	4.827	5.000	8.066	5.344	9.726
0.870	2.004	4.730	4.867	5.004	8.143	5.358	9.760
1.038	2.029	4.742	4.909	5.010	8.242	5.372	9.791
1.186	2.052	4.752	4.943	5.012	8.278	5.392	9.834
1.360	2.083	4.760	4.972	5.014	8.311	5.414	9.880
1.542	2.115	4.772	5.013	5.018	8.362	5.434	9.920
1.712	2.143	4.786	5.064	5.022	8.409	5.452	9.953
1.874	2.176	4.794	5.096	5.026	8.455	5.472	9.990
2.032	2.208	4.806	5.141	5.030	8.495	5.498	10.035
2.196	2.243	4.816	5.181	5.032	8.522	5.522	10.073
2.368	2.282	4.828	5.230	5.036	8.565	5.590	10.172
2.530	2.321	4.838	5.274	5.042	8.608	5.626	10.219
2.696	2.366	4.846	5.308	5.048	8.652	5.684	10.286
2.838	2.404	4.852	5.337	5.052	8.680	5.742	10.345
2.982	2.450	4.860	5.376	5.058	8.721	5.798	10.398
3.156	2.510	4.872	5.436	5.066	8.772	5.884	10.467
3.292	2.561	4.882	5.490	5.072	8.808	5.956	10.518
3.466	2.637	4.888	5.526	5.078	8.843	6.008	10.551
3.608	2.707	4.896	5.574	5.086	8.884	6.060	10.584
3.746	2.788	4.906	5.642	5.090	8.906	6.102	10.607
3.888	2.888	4.914	5.703	5.096	8.936	6.148	10.632
4.028	3.012	4.924	5.785	5.104	8.973	6.198	10.657
4.190	3.213	4.936	5.906	5.110	9.001	6.290	10.699
4.342	3.514	4.942	5.977	5.118	9.034	6.358	10.728
4.500	4.049	4.944	6.011	5.124	9.061	6.420	10.753
4.554	4.254	4.946	6.042	5.132	9.093	6.488	10.778
4.606	4.440	4.950	6.103	5.144	9.139	6.568	10.807
4.612	4.462	4.954	6.171	5.150	9.161	6.674	10.839
4.618	4.483	4.958	6.241	5.158	9.191	6.754	10.861
4.624	4.505	4.960	6.293	5.168	9.227	6.876	10.897
4.630	4.528	4.964	6.398	5.176	9.255	6.982	10.924
4.636	4.547	4.966	6.449	5.186	9.289	7.136	10.959
4.640	4.563	4.970	6.610	5.200	9.334	7.252	10.985
4.646	4.584	4.972	6.709	5.208	9.359	7.408	11.015
4.650	4.597	4.976	6.928	5.216	9.383	7.536	11.040
4.658	4.623	4.980	7.216	5.224	9.408	7.618	11.053
4.664	4.647	4.982	7.369	5.232	9.432	7.836	11.091
4.668	4.659	4.984	7.505	5.242	9.460	8.036	11.119
4.678	4.693	4.988	7.690	5.268	9.532	8.252	11.149

$pK_{a1} = 4.952$, $pK_{a2} = 9.569$

Table AD102. Potentiometric Titration Data for the pK_a Values of Oxine in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.0181.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.864	4.454	3.846	4.894	5.546	5.092	8.924
0.154	1.881	4.468	3.900	4.904	5.613	5.100	8.962
0.318	1.904	4.478	3.938	4.912	5.671	5.106	8.991
0.480	1.926	4.486	3.968	4.920	5.738	5.114	9.027
0.642	1.949	4.498	4.015	4.928	5.809	5.120	9.052
0.796	1.972	4.504	4.038	4.938	5.918	5.126	9.077
0.944	1.993	4.520	4.100	4.944	5.996	5.132	9.101
1.184	2.031	4.532	4.145	4.950	6.083	5.140	9.132
1.356	2.060	4.548	4.206	4.954	6.166	5.146	9.156
1.506	2.087	4.564	4.265	4.956	6.208	5.154	9.192
1.668	2.115	4.574	4.303	4.958	6.252	5.164	9.220
1.838	2.148	4.590	4.361	4.962	6.349	5.170	9.241
1.996	2.178	4.596	4.382	4.964	6.413	5.178	9.269
2.148	2.212	4.606	4.417	4.968	6.551	5.184	9.287
2.300	2.245	4.618	4.460	4.970	6.654	5.190	9.309
2.460	2.283	4.630	4.503	4.974	6.877	5.196	9.332
2.610	2.321	4.638	4.531	4.976	7.023	5.204	9.356
2.758	2.361	4.654	4.584	4.980	7.310	5.212	9.380
2.908	2.406	4.670	4.640	4.982	7.455	5.218	9.398
3.058	2.455	4.678	4.667	4.986	7.656	5.226	9.423
3.208	2.508	4.690	4.708	4.990	7.830	5.236	9.453
3.362	2.569	4.702	4.748	4.994	7.937	5.244	9.475
3.520	2.641	4.714	4.788	4.996	8.000	5.252	9.495
3.662	2.717	4.728	4.837	4.998	8.055	5.262	9.525
3.786	2.794	4.738	4.871	5.000	8.101	5.270	9.548
3.880	2.860	4.748	4.907	5.004	8.176	5.276	9.563
3.976	2.940	4.758	4.944	5.008	8.240	5.288	9.595
4.074	3.039	4.770	4.986	5.012	8.302	5.294	9.611
4.174	3.165	4.778	5.015	5.014	8.333	5.300	9.626
4.268	3.321	4.786	5.044	5.020	8.403	5.308	9.647
4.332	3.461	4.798	5.088	5.024	8.449	5.320	9.677
4.364	3.544	4.806	5.119	5.028	8.492	5.332	9.706
4.372	3.569	4.812	5.142	5.032	8.532	5.342	9.733
4.380	3.592	4.820	5.176	5.034	8.551	5.350	9.749
4.388	3.618	4.828	5.211	5.036	8.569	5.364	9.781
4.396	3.642	4.836	5.243	5.042	8.617	5.378	9.811
4.404	3.667	4.844	5.280	5.048	8.662	5.388	9.834
4.410	3.688	4.852	5.316	5.054	8.704	5.396	9.850
4.416	3.709	4.858	5.346	5.060	8.745	5.410	9.878
4.424	3.737	4.866	5.386	5.066	8.783	5.424	9.905
4.432	3.765	4.874	5.429	5.072	8.817	5.432	9.921
4.438	3.786	4.880	5.462	5.078	8.851	5.446	9.948
4.444	3.809	4.886	5.497	5.084	8.883	5.458	9.970

Table AD102. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.466	9.984	6.324	10.703	9.012	11.216
5.478	10.006	6.414	10.738	9.162	11.230
5.514	10.063	6.508	10.772	9.316	11.246
5.550	10.119	6.594	10.801	9.492	11.262
5.586	10.167	6.692	10.831	9.666	11.275
5.626	10.218	6.796	10.861		
5.680	10.280	6.978	10.908		
5.720	10.320	7.088	10.934		
5.774	10.372	7.206	10.957		
5.806	10.399	7.322	10.983		
5.838	10.426	7.442	11.006		
5.874	10.454	7.562	11.030		
5.910	10.479	7.726	11.055		
5.944	10.503	7.848	11.075		
5.978	10.526	7.982	11.094		
6.040	10.565	8.124	11.114		
6.072	10.582	8.276	11.133		
6.136	10.615	8.426	11.152		
6.190	10.643	8.598	11.172		
6.262	10.676	8.838	11.198		

$pK_{a1} = 4.943$, $pK_{a2} = 9.578$

Table AD103. Potentiometric Titration Data for the pK_a Values of Oxine in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.295.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.725	4.832	3.989	5.016	8.630	5.790	10.525
0.140	1.742	4.840	4.041	5.020	8.714	5.848	10.556
0.262	1.756	4.846	4.082	5.022	8.760	5.900	10.582
0.378	1.774	4.850	4.112	5.026	8.831	5.958	10.610
0.580	1.797	4.854	4.141	5.030	8.897	6.012	10.634
0.704	1.815	4.860	4.184	5.032	8.930	6.070	10.658
0.860	1.835	4.866	4.229	5.036	8.983	6.122	10.678
1.054	1.864	4.872	4.274	5.038	9.013	6.164	10.695
1.260	1.893	4.878	4.319	5.042	9.060	6.208	10.711
1.592	1.946	4.882	4.352	5.046	9.106	6.268	10.732
1.868	1.992	4.886	4.385	5.052	9.168	6.338	10.755
2.146	2.044	4.892	4.433	5.056	9.208	6.406	10.775
2.422	2.098	4.896	4.469	5.060	9.248	6.478	10.796
2.726	2.166	4.902	4.519	5.064	9.284	6.552	10.817
2.938	2.217	4.906	4.556	5.068	9.313	6.630	10.837
3.208	2.292	4.912	4.610	5.072	9.347	6.696	10.854
3.530	2.399	4.918	4.668	5.076	9.376	6.766	10.871
3.776	2.498	4.922	4.709	5.080	9.402	6.832	10.887
3.894	2.553	4.928	4.770	5.082	9.420	6.906	10.903
3.994	2.605	4.934	4.839	5.090	9.466	6.974	10.917
4.112	2.675	4.940	4.909	5.096	9.502	7.048	10.931
4.162	2.708	4.944	4.963	5.100	9.525	7.148	10.950
4.224	2.753	4.950	5.049	5.126	9.639	7.254	10.970
4.286	2.802	4.956	5.141	5.132	9.667		
4.338	2.847	4.960	5.216	5.160	9.762		
4.410	2.918	4.964	5.299	5.190	9.848		
4.460	2.974	4.970	5.432	5.220	9.927		
4.520	3.052	4.976	5.618	5.254	9.993		
4.564	3.118	4.980	5.791	5.286	10.051		
4.608	3.195	4.984	6.023	5.312	10.101		
4.662	3.310	4.990	6.650	5.346	10.145		
4.684	3.364	4.992	7.154	5.372	10.180		
4.718	3.462	4.994	7.554	5.398	10.212		
4.722	3.476	4.998	7.918	5.422	10.240		
4.726	3.490	5.000	8.065	5.450	10.270		
4.756	3.598	5.002	8.169	5.494	10.314		
4.782	3.712	5.004	8.267	5.544	10.358		
4.812	3.865	5.008	8.413	5.626	10.422		
4.820	3.913	5.010	8.479	5.676	10.456		
4.826	3.951	5.014	8.578	5.734	10.492		

$pK_{a1} = 4.74$, $pK_{a2} = 9.5$

Table AD104. Potentiometric Titration Data for the pK_a Values of Oxine in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.326.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.721	3.298	2.406	4.514	3.989	4.764	4.885
0.034	1.725	3.366	2.435	4.520	4.012	4.768	4.898
0.096	1.734	3.442	2.468	4.526	4.035	4.774	4.919
0.152	1.741	3.516	2.504	4.532	4.057	4.780	4.940
0.210	1.750	3.586	2.539	4.538	4.081	4.786	4.962
0.265	1.757	3.668	2.586	4.544	4.102	4.792	4.985
0.322	1.764	3.760	2.642	4.550	4.126	4.798	5.007
0.380	1.773	3.844	2.700	4.556	4.149	4.804	5.029
0.432	1.779	3.946	2.781	4.562	4.172	4.810	5.051
0.486	1.787	3.998	2.828	4.568	4.193	4.816	5.075
0.542	1.794	4.046	2.877	4.574	4.213	4.822	5.098
0.614	1.805	4.102	2.940	4.580	4.237	4.828	5.122
0.690	1.816	4.142	2.992	4.588	4.267	4.834	5.147
0.758	1.826	4.150	3.003	4.592	4.281	4.840	5.172
0.834	1.839	4.156	3.012	4.598	4.305	4.846	5.199
0.920	1.851	4.162	3.021	4.604	4.325	4.852	5.225
1.016	1.866	4.168	3.029	4.610	4.345	4.858	5.252
1.116	1.881	4.174	3.038	4.616	4.366	4.864	5.279
1.204	1.896	4.180	3.048	4.622	4.388	4.870	5.309
1.290	1.911	4.186	3.057	4.628	4.410	4.876	5.337
1.384	1.927	4.204	3.086	4.634	4.432	4.882	5.366
1.494	1.945	4.252	3.168	4.638	4.447	4.888	5.397
1.566	1.959	4.280	3.224	4.644	4.468	4.892	5.419
1.646	1.973	4.310	3.291	4.650	4.489	4.898	5.454
1.738	1.990	4.336	3.355	4.656	4.509	4.902	5.477
1.816	2.005	4.362	3.426	4.662	4.530	4.906	5.502
1.898	2.021	4.390	3.512	4.666	4.544	4.910	5.528
1.978	2.037	4.416	3.600	4.672	4.563	4.916	5.566
2.054	2.054	4.422	3.623	4.680	4.592	4.922	5.608
2.128	2.069	4.428	3.646	4.684	4.606	4.928	5.652
2.228	2.092	4.434	3.669	4.690	4.626	4.932	5.686
2.312	2.110	4.440	3.692	4.696	4.647	4.936	5.720
2.392	2.129	4.446	3.716	4.702	4.667	4.938	5.739
2.478	2.151	4.454	3.746	4.708	4.688	4.940	5.758
2.570	2.174	4.460	3.771	4.714	4.709	4.942	5.778
2.646	2.193	4.464	3.788	4.720	4.729	4.944	5.790
2.736	2.218	4.470	3.812	4.724	4.743	4.946	5.821
2.812	2.240	4.476	3.836	4.730	4.764	4.948	5.841
2.892	2.264	4.482	3.860	4.736	4.785	4.952	5.889
2.974	2.290	4.490	3.893	4.740	4.799	4.954	5.913
3.050	2.315	4.496	3.916	4.746	4.820	4.956	5.933
3.130	2.343	4.502	3.941	4.752	4.841	4.960	5.993
3.220	2.376	4.508	3.966	4.758	4.865	4.962	6.021

Table AD104. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
4.964	6.053	5.082	8.641	5.258	9.365	5.440	9.814
4.966	6.092	5.086	8.665	5.262	9.376	5.444	9.822
4.968	6.130	5.092	8.701	5.267	9.388	5.448	9.829
4.970	6.165	5.096	8.723	5.270	9.400	5.474	9.878
4.972	6.211	5.102	8.755	5.274	9.413	5.500	9.925
4.974	6.256	5.106	8.777	5.278	9.423	5.522	9.961
4.976	6.308	5.110	8.798	5.282	9.436	5.544	9.998
4.978	6.364	5.114	8.819	5.286	9.446	5.568	10.033
4.980	6.426	5.116	8.830	5.290	9.456	5.586	10.060
4.982	6.497	5.122	8.856	5.294	9.468	5.616	10.101
4.986	6.650	5.126	8.875	5.300	9.483	5.642	10.133
4.988	6.765	5.130	8.893	5.304	9.496	5.666	10.162
4.990	6.881	5.134	8.912	5.310	9.512	5.690	10.190
4.992	7.007	5.140	8.937	5.314	9.523	5.710	10.212
4.994	7.147	5.144	8.954	5.318	9.533	5.734	10.237
4.996	7.243	5.148	8.971	5.322	9.543	5.758	10.261
5.000	7.436	5.152	8.987	5.326	9.553	5.782	10.284
5.002	7.539	5.158	9.011	5.330	9.564	5.802	10.302
5.004	7.615	5.164	9.033	5.334	9.574	5.826	10.323
5.006	7.675	5.168	9.048	5.338	9.585	5.844	10.339
5.008	7.723	5.170	9.059	5.342	9.594	5.864	10.355
5.012	7.809	5.172	9.066	5.346	9.604	5.886	10.371
5.014	7.865	5.174	9.074	5.350	9.615	5.914	10.392
5.016	7.909	5.176	9.082	5.354	9.625	5.936	10.408
5.018	7.949	5.178	9.089	5.358	9.635	5.958	10.424
5.022	8.025	5.180	9.097	5.362	9.644	5.982	10.440
5.024	8.076	5.182	9.105	5.366	9.654	6.002	10.456
5.026	8.118	5.186	9.121	5.370	9.662	6.028	10.470
5.030	8.170	5.190	9.135	5.376	9.676	6.048	10.482
5.032	8.210	5.196	9.160	5.380	9.685	6.072	10.496
5.034	8.241	5.200	9.176	5.384	9.695	6.100	10.511
5.036	8.266	5.206	9.200	5.390	9.708	6.116	10.521
5.038	8.288	5.210	9.213	5.396	9.721	6.142	10.534
5.042	8.328	5.214	9.227	5.400	9.730	6.164	10.546
5.044	8.350	5.220	9.246	5.404	9.739	6.186	10.557
5.046	8.371	5.224	9.259	5.408	9.748	6.206	10.567
5.048	8.390	5.228	9.272	5.412	9.755	6.228	10.578
5.054	8.439	5.232	9.285	5.418	9.768	6.252	10.589
5.058	8.473	5.236	9.298	5.422	9.777	6.280	10.601
5.062	8.504	5.240	9.310	5.426	9.785	6.304	10.612
5.066	8.531	5.242	9.317	5.430	9.793	6.326	10.622
5.072	8.573	5.248	9.334	5.434	9.802	6.346	10.630
5.078	8.614	5.252	9.347	5.436	9.806	6.370	10.640

Table AD104. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
6.394	10.650	7.154	10.874
6.422	10.661	7.190	10.882
6.450	10.672	7.230	10.890
6.478	10.683	7.272	10.899
6.506	10.692	7.314	10.908
6.534	10.702	7.352	10.915
6.566	10.713	7.392	10.924
6.614	10.729		
6.662	10.744		
6.710	10.759		
6.760	10.775		
6.800	10.785		
6.840	10.797		
6.878	10.807		
6.914	10.816		
6.954	10.827		
7.000	10.837		
7.038	10.846		
7.078	10.857		
7.116	10.866		

$pK_{a1} = 5.014$, $pK_{a2} = 9.652$

Table AD105. Potentiometric Titration Data for the pK_a Values of Oxine in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.307.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.743	2.708	2.234	4.208	3.143	4.400	3.634
0.068	1.751	2.766	2.252	4.218	3.163	4.404	3.649
0.140	1.761	2.812	2.266	4.228	3.179	4.408	3.664
0.192	1.767	2.858	2.279	4.230	3.183	4.412	3.679
0.266	1.778	2.908	2.294	4.234	3.193	4.416	3.690
0.328	1.789	2.958	2.311	4.238	3.199	4.420	3.710
0.392	1.795	3.004	2.326	4.242	3.209	4.424	3.727
0.448	1.802	3.054	2.344	4.244	3.212	4.428	3.742
0.508	1.811	3.102	2.360	4.248	3.221	4.432	3.758
0.580	1.822	3.154	2.379	4.252	3.228	4.436	3.775
0.662	1.834	3.204	2.399	4.256	3.236	4.440	3.789
0.726	1.843	3.258	2.420	4.260	3.244	4.444	3.805
0.782	1.852	3.310	2.441	4.262	3.249	4.448	3.823
0.852	1.862	3.362	2.463	4.270	3.264	4.452	3.836
0.908	1.871	3.416	2.487	4.274	3.273	4.459	3.861
0.988	1.884	3.474	2.514	4.278	3.281	4.462	3.878
1.060	1.894	3.510	2.531	4.282	3.292	4.466	3.892
1.150	1.910	3.556	2.556	4.286	3.300	4.470	3.909
1.208	1.919	3.618	2.589	4.290	3.310	4.474	3.925
1.266	1.929	3.674	2.621	4.296	3.324	4.478	3.939
1.324	1.938	3.732	2.657	4.302	3.338	4.482	3.955
1.382	1.949	3.790	2.696	4.304	3.344	4.486	3.970
1.438	1.958	3.838	2.731	4.308	3.354	4.490	3.985
1.502	1.970	3.890	2.772	4.312	3.364	4.494	4.001
1.558	1.981	3.920	2.797	4.314	3.370	4.498	4.016
1.608	1.989	3.950	2.823	4.318	3.381	4.502	4.031
1.672	2.002	3.978	2.849	4.326	3.400	4.506	4.046
1.732	2.012	4.006	2.877	4.330	3.412	4.510	4.062
1.792	2.024	4.030	2.902	4.334	3.423	4.514	4.077
1.846	2.035	4.060	2.935	4.336	3.429	4.520	4.099
1.908	2.047	4.064	2.940	4.338	3.435	4.524	4.114
1.960	2.058	4.068	2.945	4.346	3.457	4.528	4.129
2.030	2.072	4.094	2.975	4.352	3.475	4.530	4.138
2.094	2.085	4.112	2.999	4.356	3.488	4.538	4.167
2.164	2.100	4.122	3.011	4.360	3.500	4.544	4.188
2.224	2.115	4.128	3.020	4.364	3.512	4.548	4.204
2.290	2.129	4.134	3.028	4.368	3.524	4.556	4.235
2.352	2.144	4.140	3.036	4.372	3.538	4.562	4.256
2.402	2.156	4.146	3.045	4.378	3.557	4.566	4.272
2.458	2.169	4.168	3.078	4.382	3.571	4.570	4.284
2.508	2.181	4.182	3.099	4.386	3.585	4.574	4.299
2.566	2.197	4.192	3.117	4.390	3.598	4.580	4.322
2.654	2.221	4.200	3.129	4.396	3.619	4.586	4.344

Table AD105. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
4.590	4.358	4.794	5.075	4.954	6.348	5.062	8.647
4.594	4.373	4.798	5.095	4.958	6.467	5.068	8.686
4.598	4.388	4.802	5.106	4.960	6.572	5.074	8.713
4.602	4.402	4.806	5.125	4.962	6.661	5.080	8.745
4.606	4.416	4.810	5.140	4.964	6.774	5.086	8.774
4.608	4.424	4.812	5.149	4.966	6.886	5.092	8.804
4.610	4.432	4.820	5.180	4.968	7.035	5.098	8.831
4.620	4.465	4.822	5.189	4.970	7.168	5.104	8.859
4.626	4.485	4.828	5.215	4.974	7.348	5.110	8.884
4.630	4.499	4.832	5.232	4.976	7.481	5.118	8.918
4.634	4.514	4.836	5.250	4.978	7.556	5.126	8.951
4.638	4.528	4.840	5.269	4.982	7.679	5.134	8.983
4.642	4.542	4.844	5.288	4.986	7.771	5.142	9.013
4.648	4.563	4.848	5.308	4.988	7.841	5.150	9.043
4.652	4.576	4.854	5.337	4.990	7.887	5.156	9.064
4.660	4.601	4.860	5.367	4.992	7.930	5.162	9.087
4.664	4.617	4.866	5.399	4.994	7.970	5.170	9.114
4.670	4.640	4.870	5.419	4.996	8.004	5.178	9.140
4.674	4.652	4.874	5.444	5.000	8.064	5.184	9.161
4.678	4.668	4.880	5.480	5.004	8.118	5.190	9.180
4.682	4.681	4.886	5.519	5.008	8.169	5.194	9.195
4.688	4.700	4.888	5.535	5.010	8.196	5.202	9.221
4.694	4.719	4.892	5.556	5.012	8.223	5.208	9.239
4.700	4.741	4.894	5.579	5.014	8.250	5.214	9.259
4.704	4.755	4.898	5.603	5.016	8.272	5.218	9.270
4.710	4.774	4.902	5.634	5.018	8.297	5.226	9.294
4.716	4.794	4.906	5.665	5.022	8.334	5.234	9.317
4.720	4.809	4.908	5.679	5.024	8.354	5.242	9.340
4.724	4.822	4.912	5.713	5.026	8.375	5.250	9.363
4.728	4.836	4.916	5.749	5.028	8.396	5.256	9.380
4.734	4.855	4.918	5.771	5.030	8.413	5.264	9.402
4.738	4.870	4.922	5.810	5.034	8.442	5.272	9.425
4.742	4.885	4.924	5.834	5.036	8.464	5.278	9.442
4.746	4.899	4.928	5.881	5.040	8.495	5.286	9.463
4.750	4.912	4.932	5.928	5.042	8.512	5.294	9.484
4.754	4.927	4.936	5.982	5.044	8.528	5.302	9.506
4.758	4.940	4.938	6.017	5.046	8.543	5.310	9.525
4.762	4.955	4.940	6.048	5.048	8.557	5.316	9.541
4.766	4.970	4.942	6.087	5.050	8.574	5.324	9.560
4.770	4.984	4.944	6.129	5.052	8.584	5.330	9.578
4.774	4.998	4.946	6.167	5.054	8.599	5.338	9.598
4.778	5.015	4.948	6.209	5.056	8.613	5.344	9.612
4.782	5.027	4.950	6.261	5.058	8.626	5.350	9.626

Table AD105. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.356	9.640	5.528	9.966	5.944	10.388	6.628	10.700
5.362	9.654	5.536	9.979	5.998	10.423	6.660	10.711
5.370	9.672	5.544	9.991	6.024	10.440	6.686	10.719
5.378	9.690	5.552	10.003	6.054	10.457	6.718	10.728
5.386	9.706	5.560	10.014	6.084	10.474	6.764	10.741
5.392	9.720	5.574	10.033	6.116	10.492	6.830	10.760
5.400	9.738	5.586	10.048	6.146	10.508	6.860	10.768
5.408	9.753	5.596	10.063	6.176	10.525	6.896	10.778
5.416	9.770	5.604	10.073	6.210	10.540	6.968	10.795
5.422	9.782	5.616	10.088	6.260	10.563	7.070	10.819
5.430	9.798	5.634	10.110	6.300	10.579	7.124	10.832
5.436	9.810	5.660	10.140	6.332	10.593	7.168	10.841
5.442	9.820	5.688	10.171	6.360	10.605	7.210	10.850
5.448	9.833	5.728	10.212	6.390	10.617	7.256	10.861
5.456	9.846	5.756	10.238	6.422	10.630	7.306	10.872
5.468	9.867	5.782	10.262	6.452	10.641	7.398	10.889
5.478	9.884	5.806	10.283	6.480	10.651	7.476	10.904
5.486	9.898	5.846	10.316	6.514	10.663	7.528	10.912
5.500	9.922	5.876	10.339	6.552	10.676	7.580	10.923
5.516	9.947	5.914	10.367	6.582	10.686		

$pK_{a1} = 5.032$, $pK_{a2} = 9.574$

Table AD106. Potentiometric Titration Data for the pK_a Values of Oxine in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.287.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.755	3.102	2.350	4.430	3.630	4.712	4.678
0.050	1.760	3.170	2.374	4.436	3.650	4.716	4.691
0.100	1.767	3.240	2.401	4.442	3.672	4.724	4.718
0.146	1.771	3.304	2.425	4.448	3.698	4.730	4.738
0.214	1.780	3.370	2.454	4.452	3.717	4.736	4.758
0.266	1.787	3.450	2.486	4.458	3.741	4.744	4.785
0.316	1.794	3.520	2.521	4.466	3.774	4.750	4.807
0.364	1.799	3.599	2.560	4.472	3.798	4.756	4.828
0.462	1.812	3.680	2.605	4.480	3.829	4.762	4.848
0.546	1.825	3.746	2.645	4.486	3.853	4.768	4.868
0.618	1.834	3.812	2.688	4.492	3.877	4.774	4.890
0.686	1.844	3.890	2.745	4.498	3.901	4.780	4.910
0.750	1.854	3.964	2.805	4.506	3.933	4.786	4.931
0.828	1.864	4.038	2.875	4.512	3.956	4.792	4.953
0.902	1.875	4.098	2.940	4.518	3.980	4.798	4.975
0.966	1.886	4.176	3.042	4.524	4.003	4.804	4.995
1.036	1.896	4.204	3.083	4.530	4.027	4.810	5.017
1.114	1.908	4.228	3.122	4.536	4.047	4.818	5.048
1.188	1.919	4.256	3.171	4.544	4.080	4.824	5.070
1.250	1.929	4.262	3.182	4.550	4.102	4.830	5.092
1.320	1.942	4.270	3.198	4.554	4.118	4.836	5.117
1.398	1.954	4.278	3.213	4.562	4.149	4.842	5.140
1.476	1.967	4.286	3.228	4.570	4.178	4.850	5.172
1.554	1.981	4.294	3.246	4.576	4.200	4.856	5.198
1.626	1.994	4.304	3.267	4.582	4.222	4.862	5.223
1.702	2.008	4.310	3.280	4.588	4.245	4.870	5.257
1.784	2.023	4.318	3.302	4.594	4.266	4.878	5.293
1.864	2.039	4.324	3.314	4.600	4.288	4.886	5.329
1.934	2.053	4.330	3.327	4.608	4.317	4.892	5.360
2.012	2.068	4.336	3.341	4.616	4.345	4.898	5.390
2.086	2.083	4.342	3.356	4.622	4.367	4.906	5.432
2.164	2.100	4.350	3.378	4.628	4.389	4.912	5.466
2.244	2.118	4.356	3.396	4.634	4.410	4.918	5.502
2.314	2.133	4.364	3.416	4.640	4.432	4.926	5.553
2.394	2.151	4.370	3.433	4.646	4.452	4.932	5.593
2.472	2.171	4.378	3.457	4.654	4.480	4.938	5.627
2.552	2.190	4.384	3.475	4.660	4.499	4.946	5.690
2.628	2.209	4.390	3.493	4.666	4.521	4.954	5.780
2.712	2.232	4.396	3.513	4.674	4.549	4.960	5.832
2.782	2.252	4.404	3.540	4.682	4.576	4.966	5.898
2.854	2.272	4.412	3.568	4.688	4.596	4.974	6.000
2.928	2.295	4.418	3.586	4.698	4.630	4.980	6.100
3.008	2.310	4.424	3.609	4.706	4.658	4.994	6.421

Table AD106. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
4.998	6.549	5.108	8.732	5.380	9.657	5.906	10.382
5.000	6.657	5.112	8.752	5.388	9.675	5.934	10.404
5.004	6.854	5.116	8.774	5.398	9.698	5.962	10.424
5.006	6.972	5.118	8.786	5.406	9.716	5.990	10.444
5.008	7.119	5.122	8.806	5.414	9.734	6.020	10.462
5.012	7.320	5.126	8.826	5.422	9.752	6.052	10.481
5.014	7.438	5.132	8.853	5.432	9.773	6.082	10.499
5.016	7.538	5.136	8.872	5.440	9.790	6.114	10.517
5.018	7.625	5.138	8.884	5.450	9.809	6.150	10.537
5.020	7.695	5.142	8.900	5.458	9.825	6.180	10.553
5.022	7.760	5.144	8.910	5.468	9.845	6.216	10.570
5.024	7.817	5.146	8.920	5.478	9.863	6.268	10.595
5.028	7.906	5.152	8.945	5.486	9.878	6.322	10.618
5.030	7.951	5.158	8.971	5.494	9.892	6.364	10.636
5.032	7.991	5.164	8.995	5.502	9.907	6.396	10.649
5.036	8.065	5.168	9.011	5.510	9.921	6.440	10.667
5.038	8.110	5.172	9.027	5.520	9.937	6.490	10.685
5.040	8.140	5.176	9.043	5.530	9.955	6.534	10.701
5.042	8.168	5.180	9.060	5.538	9.968	6.582	10.717
5.044	8.195	5.188	9.089	5.546	9.982	6.632	10.734
5.046	8.222	5.194	9.111	5.554	9.995	6.670	10.746
5.048	8.246	5.202	9.140	5.560	10.004	6.722	10.762
5.052	8.292	5.210	9.168	5.568	10.017	6.798	10.785
5.056	8.334	5.218	9.195	5.584	10.040	6.836	10.795
5.058	8.356	5.226	9.222	5.598	10.060	6.892	10.810
5.060	8.376	5.234	9.248	5.614	10.082	6.924	10.819
5.062	8.390	5.240	9.267	5.634	10.109	6.958	10.828
5.066	8.434	5.246	9.287	5.650	10.130	7.012	10.841
5.068	8.452	5.256	9.316	5.668	10.151	7.050	10.851
5.070	8.470	5.266	9.346	5.678	10.164	7.096	10.862
5.072	8.488	5.274	9.372	5.686	10.173	7.144	10.872
5.076	8.520	5.280	9.390	5.698	10.187	7.180	10.881
5.078	8.536	5.288	9.412	5.724	10.215	7.226	10.891
5.080	8.550	5.302	9.453	5.746	10.239	7.262	10.898
5.082	8.566	5.310	9.476	5.764	10.256	7.294	10.905
5.084	8.581	5.318	9.498	5.776	10.269	7.332	10.913
5.086	8.595	5.326	9.520	5.788	10.280	7.362	10.919
5.090	8.622	5.334	9.541	5.798	10.290	7.414	10.929
5.094	8.647	5.342	9.562	5.806	10.298		
5.096	8.659	5.348	9.577	5.818	10.310		
5.098	8.672	5.354	9.593	5.826	10.318		
5.100	8.685	5.364	9.619	5.852	10.339		
5.104	8.709	5.372	9.638	5.878	10.360		

$pK_{a1} = 5.016$, $pK_{a2} = 9.609$

Table AD107. Potentiometric Titration Data for the pK_a Values of Oxine in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.298.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.749	3.238	2.423	4.378	3.707	4.636	4.633
0.068	1.759	3.314	2.457	4.384	3.729	4.642	4.651
0.160	1.771	3.388	2.491	4.390	3.752	4.648	4.670
0.242	1.782	3.472	2.531	4.394	3.767	4.654	4.688
0.318	1.792	3.554	2.574	4.400	3.792	4.660	4.706
0.390	1.802	3.618	2.611	4.404	3.807	4.666	4.726
0.458	1.811	3.680	2.649	4.410	3.830	4.670	4.738
0.534	1.822	3.746	2.694	4.416	3.854	4.676	4.757
0.610	1.834	3.822	2.750	4.420	3.869	4.682	4.777
0.688	1.844	3.914	2.826	4.424	3.885	4.688	4.795
0.820	1.858	3.982	2.893	4.430	3.910	4.696	4.820
0.858	1.871	4.054	2.975	4.434	3.925	4.702	4.840
0.930	1.882	4.102	3.038	4.440	3.949	4.708	4.859
1.004	1.894	4.154	3.118	4.446	3.972	4.714	4.879
1.074	1.904	4.182	3.166	4.452	3.996	4.724	4.911
1.156	1.918	4.214	3.228	4.458	4.018	4.732	4.937
1.242	1.933	4.220	3.242	4.464	4.040	4.738	4.956
1.314	1.945	4.226	3.254	4.472	4.071	4.752	5.002
1.384	1.956	4.232	3.269	4.478	4.094	4.758	5.024
1.446	1.968	4.238	3.283	4.484	4.116	4.764	5.045
1.510	1.978	4.244	3.297	4.490	4.136	4.770	5.065
1.588	1.997	4.250	3.311	4.496	4.158	4.776	5.086
1.660	2.006	4.254	3.322	4.500	4.173	4.782	5.109
1.724	2.018	4.260	3.336	4.508	4.203	4.788	5.129
1.794	2.032	4.266	3.352	4.512	4.216	4.794	5.151
1.870	2.047	4.272	3.367	4.518	4.237	4.800	5.172
1.948	2.063	4.278	3.383	4.526	4.266	4.808	5.201
2.028	2.080	4.284	3.400	4.532	4.287	4.814	5.222
2.112	2.098	4.288	3.412	4.538	4.307	4.820	5.242
2.196	2.117	4.294	3.428	4.544	4.328	4.826	5.265
2.272	2.134	4.300	3.445	4.550	4.350	4.834	5.300
2.338	2.149	4.306	3.462	4.556	4.370	4.840	5.326
2.410	2.167	4.312	3.481	4.562	4.390	4.846	5.354
2.484	2.184	4.318	3.500	4.570	4.417	4.852	5.383
2.556	2.203	4.324	3.518	4.576	4.437	4.858	5.418
2.626	2.223	4.328	3.531	4.582	4.457	4.864	5.454
2.702	2.245	4.334	3.551	4.588	4.477	4.870	5.492
2.784	2.267	4.340	3.571	4.596	4.504	4.874	5.518
2.858	2.291	4.346	3.591	4.602	4.522	4.880	5.565
2.940	2.316	4.352	3.613	4.608	4.542	4.884	5.591
3.022	2.343	4.358	3.633	4.618	4.575	4.890	5.641
3.094	2.369	4.364	3.654	4.622	4.586	4.898	5.715
3.160	2.393	4.372	3.685	4.630	4.613	4.904	5.783

Table AD107. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
4.910	5.855	5.050	8.793	5.288	9.752	5.886	10.463
4.918	5.966	5.054	8.819	5.294	9.768	5.912	10.479
4.924	6.072	5.056	8.833	5.298	9.777	5.936	10.492
4.932	6.249	5.058	8.847	5.304	9.792	5.960	10.506
4.934	6.313	5.060	8.861	5.310	9.805	5.984	10.518
4.936	6.384	5.062	8.873	5.316	9.819	6.008	10.531
4.938	6.464	5.066	8.900	5.324	9.835	6.032	10.542
4.942	6.643	5.068	8.913	5.330	9.848	6.054	10.553
4.946	6.881	5.074	8.947	5.336	9.862	6.080	10.565
4.950	7.190	5.080	8.981	5.342	9.875	6.104	10.575
4.952	7.325	5.086	9.014	5.350	9.890	6.136	10.589
4.954	7.445	5.092	9.046	5.358	9.906	6.162	10.601
4.956	7.561	5.098	9.078	5.366	9.921	6.188	10.612
4.960	7.669	5.106	9.114	5.372	9.932	6.210	10.621
4.962	7.770	5.112	9.143	5.378	9.943	6.232	10.629
4.966	7.878	5.118	9.171	5.386	9.958	6.254	10.638
4.968	7.935	5.124	9.197	5.392	9.968	6.276	10.645
4.970	7.984	5.130	9.225	5.398	9.979	6.302	10.654
4.972	8.026	5.136	9.251	5.404	9.989	6.328	10.665
4.974	8.068	5.142	9.277	5.410	9.999	6.350	10.671
4.976	8.106	5.148	9.303	5.416	10.010	6.378	10.680
4.978	8.141	5.154	9.329	5.424	10.022	6.396	10.687
4.980	8.175	5.160	9.352	5.430	10.031	6.420	10.696
4.982	8.208	5.166	9.376	5.436	10.041	6.444	10.701
4.984	8.240	5.170	9.392	5.462	10.079	6.484	10.714
4.986	8.267	5.174	9.408	5.484	10.109	6.506	10.720
4.988	8.298	5.180	9.431	5.510	10.142	6.528	10.729
4.990	8.323	5.184	9.445	5.540	10.179	6.556	10.736
4.994	8.372	5.190	9.464	5.566	10.208	6.582	10.743
4.998	8.416	5.196	9.486	5.572	10.214	6.620	10.754
5.002	8.450	5.202	9.507	5.590	10.233	6.656	10.765
5.006	8.462	5.210	9.533	5.622	10.265	6.700	10.777
5.008	8.475	5.216	9.551	5.642	10.285	6.736	10.784
5.010	8.493	5.222	9.570	5.662	10.302	6.776	10.794
5.012	8.508	5.228	9.589	5.684	10.321	6.814	10.803
5.016	8.541	5.234	9.608	5.706	10.345	6.854	10.812
5.018	8.559	5.240	9.624	5.708	10.357	6.904	10.825
5.022	8.592	5.248	9.648	5.748	10.372	6.954	10.836
5.026	8.624	5.254	9.663	5.772	10.389	6.996	10.846
5.028	8.638	5.260	9.680	5.796	10.406	7.036	10.852
5.030	8.654	5.268	9.703	5.818	10.421	7.068	10.862
5.040	8.726	5.274	9.729	5.842	10.437	7.120	10.871
5.048	8.779	5.280	9.744	5.864	10.450	7.156	10.877

$pK_{a1} = 5.029$, $pK_{a2} = 9.5$

Table AD108. Potentiometric Titration Data for the pK_a Values of Oxine in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.501.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.551	4.454	3.905	4.920	6.473	5.244	9.398
0.176	1.574	4.466	3.963	4.924	6.623	5.258	9.435
0.338	1.597	4.478	4.020	4.926	6.723	5.266	9.457
0.500	1.619	4.490	4.076	4.928	6.843	5.278	9.489
0.656	1.642	4.502	4.130	4.932	7.045	5.292	9.523
0.842	1.669	4.514	4.184	4.936	7.264	5.306	9.558
1.038	1.700	4.526	4.235	4.938	7.382	5.316	9.585
1.214	1.728	4.538	4.285	4.942	7.539	5.328	9.613
1.382	1.757	4.550	4.335	4.944	7.619	5.342	9.640
1.546	1.787	4.564	4.391	4.948	7.732	5.352	9.668
1.688	1.813	4.576	4.437	4.952	7.832	5.366	9.698
1.854	1.845	4.586	4.477	4.956	7.923	5.384	9.736
2.018	1.879	4.598	4.522	4.958	7.966	5.392	9.753
2.180	1.915	4.610	4.567	4.964	8.057	5.402	9.773
2.336	1.951	4.622	4.612	4.968	8.111	5.412	9.793
2.504	1.992	4.634	4.657	4.972	8.164	5.424	9.816
2.666	2.023	4.646	4.700	4.976	8.215	5.434	9.834
2.834	2.086	4.658	4.741	4.980	8.250	5.450	9.863
3.056	2.158	4.670	4.784	4.984	8.297	5.486	9.923
3.240	2.227	4.682	4.828	4.988	8.339	5.522	9.979
3.426	2.309	4.702	4.898	4.992	8.373	5.566	10.039
3.604	2.402	4.722	4.973	5.000	8.433	5.645	10.128
3.776	2.511	4.734	5.018	5.010	8.504	5.710	10.199
3.952	2.658	4.746	5.064	5.020	8.563	5.786	10.266
4.014	2.723	4.756	5.104	5.030	8.622	5.856	10.322
4.094	2.823	4.778	5.193	5.040	8.674	5.926	10.368
4.164	2.932	4.792	5.254	5.050	8.725	5.996	10.413
4.200	3.000	4.806	5.318	5.060	8.772	6.066	10.453
4.238	3.080	4.818	5.378	5.068	8.808	6.146	10.494
4.250	3.109	4.830	5.444	5.078	8.851	6.234	10.535
4.268	3.154	4.846	5.537	5.092	8.906	6.332	10.576
4.280	3.188	4.858	5.619	5.102	8.946	6.446	10.618
4.290	3.217	4.875	5.711	5.112	8.983	6.570	10.661
4.310	3.280	4.882	5.821	5.130	9.046	6.710	10.702
4.326	3.333	4.886	5.862	5.144	9.094	6.862	10.744
4.346	3.407	4.890	5.908	5.156	9.134	7.006	10.779
4.364	3.479	4.894	5.957	5.164	9.159	7.140	10.809
4.380	3.549	4.896	5.987	5.172	9.187	7.298	10.842
4.394	3.613	4.900	6.044	5.180	9.212	7.550	10.887
4.410	3.689	4.904	6.107	5.190	9.242	7.760	10.922
4.424	3.757	4.908	6.179	5.198	9.266	7.934	10.949
4.432	3.797	4.912	6.263	5.216	9.319	8.128	10.975
4.444	3.856	4.916	6.358	5.230	9.359	8.364	11.006

$pK_{a1} = 5.282$, $pK_{a2} = 9.670$

Table AD109. Potentiometric Titration Data for the pK_a Values of Oxine in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.510.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.563	4.470	3.994	4.922	6.459	5.150	9.060
0.190	1.588	4.482	4.050	4.924	6.540	5.160	9.092
0.372	1.615	4.494	4.103	4.926	6.624	5.170	9.125
0.550	1.640	4.506	4.156	4.928	6.699	5.180	9.156
0.714	1.661	4.518	4.209	4.930	6.781	5.190	9.189
0.878	1.687	4.528	4.251	4.934	6.996	5.200	9.216
1.026	1.710	4.540	4.299	4.936	7.093	5.210	9.242
1.214	1.740	4.552	4.349	4.938	7.213	5.220	9.274
1.390	1.770	4.564	4.398	4.940	7.322	5.230	9.303
1.570	1.803	4.576	4.444	4.942	7.411	5.240	9.330
1.752	1.837	4.590	4.497	4.946	7.547	5.252	9.362
1.944	1.874	4.600	4.534	4.950	7.669	5.262	9.389
2.126	1.914	4.614	4.586	4.952	7.739	5.272	9.416
2.286	1.950	4.624	4.623	4.956	7.826	5.282	9.442
2.472	1.995	4.636	4.666	4.958	7.881	5.294	9.473
2.640	2.039	4.646	4.701	4.960	7.922	5.304	9.498
2.810	2.088	4.660	4.751	4.964	7.982	5.312	9.519
3.018	2.154	4.672	4.793	4.966	8.014	5.320	9.538
3.146	2.200	4.684	4.837	4.968	8.048	5.330	9.562
3.314	2.267	4.696	4.880	4.972	8.097	5.338	9.581
3.484	2.345	4.708	4.924	4.976	8.145	5.346	9.600
3.646	2.434	4.718	4.961	4.984	8.226	5.354	9.617
3.800	2.539	4.730	5.005	4.988	8.268	5.382	9.678
3.968	2.683	4.742	5.050	4.990	8.289	5.410	9.734
4.068	2.797	4.754	5.097	5.000	8.370	5.442	9.797
4.138	2.898	4.766	5.144	5.008	8.426	5.468	9.843
4.188	2.984	4.778	5.193	5.016	8.482	5.496	9.888
4.218	3.046	4.788	5.236	5.024	8.532	5.526	9.936
4.250	3.119	4.800	5.290	5.032	8.579	5.556	9.979
4.284	3.210	4.812	5.345	5.040	8.622	5.586	10.018
4.312	3.297	4.822	5.397	5.050	8.670	5.620	10.061
4.338	3.388	4.832	5.452	5.058	8.710	5.670	10.118
4.360	3.475	4.844	5.518	5.068	8.750	5.720	10.168
4.386	3.590	4.854	5.583	5.078	8.798	5.768	10.212
4.400	3.654	4.866	5.669	5.088	8.838	5.818	10.255
4.414	3.722	4.878	5.765	5.098	8.878	5.870	10.294
4.426	3.779	4.892	5.901	5.106	8.909	5.930	10.335
4.438	3.840	4.902	6.023	5.114	8.938	6.024	10.393
4.450	3.899	4.916	6.284	5.124	8.974	6.102	10.436
4.460	3.946	4.918	6.333	5.134	9.008	6.186	10.478

Table AD109. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
6.256	10.509	9.438	11.084
6.342	10.545		
6.448	10.585		
6.556	10.623		
6.676	10.659		
6.810	10.696		
6.934	10.729		
7.078	10.763		
7.254	10.800		
7.404	10.829		
7.564	10.857		
7.716	10.884		
7.876	10.908		
8.050	10.932		
8.240	10.958		
8.390	10.977		
8.630	11.004		
8.870	11.030		
9.092	11.052		
9.268	11.068		

$pK_{a1} = 5.284$, $pK_{a2} = 9.645$

Table AD110. Potentiometric Titration Data for the pK_a Values of Oxine in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.509.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.540	4.724	4.753	5.036	8.063	5.768	10.107
0.112	1.553	4.736	4.795	5.042	8.126	5.802	10.142
0.326	1.581	4.752	4.851	5.048	8.183	5.850	10.186
0.678	1.631	4.770	4.914	5.056	8.251	5.888	10.219
0.888	1.662	4.788	4.981	5.064	8.314	5.930	10.253
1.058	1.689	4.806	5.050	5.068	8.344	5.986	10.294
1.360	1.738	4.826	5.125	5.080	8.420	6.042	10.332
1.676	1.794	4.842	5.192	5.090	8.480	6.098	10.368
2.106	1.861	4.862	5.280	5.102	8.545	6.150	10.398
2.236	1.909	4.874	5.338	5.110	8.587	6.210	10.431
2.450	1.958	4.888	5.412	5.120	8.637	6.296	10.473
2.664	2.014	4.902	5.489	5.128	8.673	6.376	10.508
2.846	2.066	4.914	5.568	5.136	8.708	6.452	10.540
3.030	2.124	4.928	5.669	5.146	8.753	6.530	10.570
3.242	2.201	4.942	5.787	5.158	8.801	6.618	10.601
3.468	2.297	4.948	5.854	5.166	8.836	6.770	10.648
3.662	2.397	4.954	5.925	5.182	8.892	6.906	10.687
3.854	2.524	4.960	6.005	5.194	8.937	7.122	10.740
4.044	2.694	4.968	6.134	5.216	9.008	7.270	10.774
4.222	2.936	4.972	6.211	5.242	9.088		
4.410	3.444	4.976	6.317	5.260	9.145		
4.438	3.567	4.982	6.480	5.280	9.202		
4.466	3.698	4.990	6.757	5.290	9.237		
4.528	3.980	4.998	7.090	5.312	9.297		
4.554	4.100	5.002	7.345	5.368	9.433		
4.582	4.218	5.006	7.468	5.408	9.528		
4.610	4.328	5.008	7.548	5.448	9.617		
4.638	4.434	5.010	7.622	5.480	9.684		
4.650	4.483	5.012	7.674	5.514	9.750		
4.658	4.515	5.016	7.762	5.552	9.819		
4.666	4.546	5.018	7.802	5.582	9.869		
4.674	4.576	5.022	7.841	5.610	9.912		
4.686	4.618	5.026	7.934	5.644	9.959		
4.700	4.668	5.028	7.969	5.674	10.001		
4.710	4.703	5.030	7.998	5.736	10.071		

pK_{a1} = 5.286, pK_{a2} = 9.637

Table AD111. Potentiometric Titration Data for the pK_a Values of Oxine in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.686.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.361	4.576	4.069	5.034	7.615	5.816	10.036
0.158	1.382	4.596	4.156	5.044	7.773	5.866	10.084
0.326	1.405	4.612	4.226	5.050	7.870	5.918	10.129
0.450	1.422	4.630	4.302	5.058	7.962	5.964	10.166
0.564	1.437	4.646	4.365	5.066	8.044	6.040	10.218
0.800	1.471	4.662	4.429	5.076	8.132	6.124	10.269
1.122	1.519	4.680	4.496	5.086	8.209	6.212	10.317
1.338	1.555	4.696	4.554	5.094	8.267	6.296	10.362
1.674	1.613	4.714	4.617	5.102	8.316	6.390	10.402
1.958	1.667	4.734	4.691	5.112	8.379	6.474	10.439
2.238	1.726	4.752	4.756	5.122	8.433	6.586	10.480
2.500	1.787	4.766	4.807	5.128	8.469	6.696	10.519
2.752	1.854	4.784	4.873	5.148	8.558	6.798	10.550
3.050	1.944	4.800	4.929	5.164	8.629	6.952	10.592
3.340	2.050	4.818	4.999	5.182	8.704	7.144	10.639
3.592	2.167	4.834	5.061	5.200	8.773	7.426	10.700
3.770	2.268	4.850	5.123	5.216	8.832	7.604	10.734
3.906	2.368	4.866	5.194	5.232	8.888	7.880	10.779
4.098	2.550	4.882	5.264	5.248	8.943	8.132	10.818
4.222	2.704	4.902	5.361	5.302	9.100	8.402	10.855
4.294	2.863	4.922	5.475	5.356	9.245	8.874	10.909
4.416	3.242	4.938	5.587	5.400	9.361		
4.442	3.365	4.954	5.699	5.428	9.432		
4.458	3.449	4.970	5.878	5.452	9.491		
4.476	3.547	4.986	6.070	5.508	9.607		
4.496	3.659	4.994	6.241	5.554	9.693		
4.512	3.745	5.004	6.526	5.606	9.777		
4.524	3.812	5.014	6.999	5.660	9.855		
4.542	3.905	5.022	7.326	5.710	9.919		
4.560	3.994	5.028	7.475	5.762	9.980		

$pK_{a1} = 5.418$, $pK_{a2} = 9.702$

Table AD112. Potentiometric Titration Data for the pK_a Values of Oxine in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.692.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.352	4.448	3.663	4.908	5.836	5.080	8.655
0.126	1.368	4.460	3.731	4.912	5.883	5.088	8.692
0.296	1.390	4.470	3.788	4.916	5.936	5.096	8.726
0.464	1.413	4.482	3.855	4.918	5.961	5.108	8.776
0.632	1.438	4.494	3.917	4.920	5.993	5.116	8.810
0.798	1.462	4.506	3.979	4.926	6.089	5.124	8.841
0.972	1.489	4.518	4.039	4.930	6.159	5.134	8.878
1.150	1.518	4.528	4.087	4.934	6.249	5.168	8.993
1.334	1.548	4.540	4.141	4.936	6.304	5.198	9.087
1.524	1.581	4.552	4.194	4.940	6.413	5.210	9.126
1.788	1.629	4.564	4.248	4.944	6.545	5.220	9.157
1.968	1.666	4.576	4.300	4.948	6.719	5.240	9.218
2.182	1.711	4.586	4.341	4.950	6.831	5.260	9.273
2.350	1.750	4.598	4.389	4.954	7.033	5.284	9.339
2.518	1.792	4.610	4.437	4.956	7.166	5.298	9.377
2.696	1.840	4.622	4.486	4.960	7.339	5.312	9.414
2.868	1.890	4.634	4.530	4.964	7.472	5.330	9.461
3.038	1.945	4.646	4.574	4.966	7.532	5.342	9.492
3.200	2.003	4.658	4.620	4.968	7.595	5.354	9.520
3.376	2.076	4.670	4.665	4.970	7.653	5.374	9.567
3.514	2.141	4.682	4.707	4.972	7.706	5.392	9.607
3.616	2.196	4.694	4.750	4.974	7.737	5.408	9.641
3.718	2.258	4.708	4.803	4.976	7.802	5.426	9.678
3.814	2.324	4.724	4.861	4.978	7.841	5.440	9.706
3.904	2.395	4.736	4.906	4.982	7.899	5.460	9.742
3.998	2.483	4.750	4.958	4.984	7.930	5.478	9.776
4.068	2.563	4.764	5.013	4.986	7.961	5.496	9.806
4.122	2.634	4.776	5.060	4.988	7.995	5.516	9.840
4.172	2.712	4.788	5.109	4.990	8.026	5.536	9.870
4.228	2.817	4.802	5.168	4.992	8.054	5.556	9.900
4.258	2.884	4.814	5.221	5.006	8.185	5.576	9.928
4.286	2.956	4.824	5.269	5.012	8.242	5.614	9.977
4.312	3.032	4.838	5.337	5.018	8.292	5.652	10.021
4.340	3.129	4.850	5.400	5.026	8.350	5.724	10.096
4.366	3.234	4.860	5.459	5.034	8.404	5.778	10.146
4.390	3.345	4.868	5.509	5.042	8.455	5.830	10.188
4.408	3.437	4.876	5.564	5.048	8.491	5.902	10.241
4.416	3.483	4.886	5.634	5.056	8.535	5.968	10.285
4.426	3.539	4.896	5.718	5.064	8.576	6.022	10.319
4.431	3.596	4.906	5.813	5.074	8.626	6.084	10.353

Table AD112. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
6.146	10.383	9.414	11.005
6.214	10.417	9.684	11.028
6.282	10.447	9.864	11.042
6.364	10.481		
6.406	10.496		
6.456	10.515		
6.528	10.534		
6.632	10.573		
6.810	10.612		
7.076	10.687		
7.242	10.723		
7.414	10.757		
7.634	10.794		
7.896	10.835		
8.174	10.873		
8.356	10.896		
8.562	10.919		
8.786	10.944		
8.986	10.965		
9.156	10.982		

$pK_{a1} = 5.432$, $pK_{a2} = 9.722$

Table AD113. Potentiometric Titration Data for the pK_a Values of Oxine in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.709.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.340	4.470	3.756	4.912	5.820	5.088	8.654
0.224	1.369	4.478	3.800	4.920	5.908	5.098	8.698
0.478	1.404	4.486	3.840	4.926	5.994	5.108	8.742
0.662	1.428	4.494	3.885	4.928	6.027	5.118	8.782
0.924	1.467	4.504	3.938	4.932	6.091	5.128	8.821
1.212	1.513	4.514	3.988	4.938	6.203	5.138	8.859
1.508	1.563	4.522	4.028	4.942	6.299	5.146	8.888
1.664	1.592	4.530	4.066	4.944	6.359	5.158	8.930
1.978	1.653	4.538	4.107	4.946	6.425	5.168	8.965
2.226	1.707	4.550	4.159	4.948	6.497	5.176	8.993
2.500	1.772	4.560	4.204	4.950	6.576	5.186	9.025
2.738	1.836	4.570	4.247	4.954	6.750	5.194	9.052
3.026	1.925	4.578	4.281	4.956	6.881	5.206	9.090
3.188	1.984	4.584	4.307	4.958	6.978	5.214	9.116
3.322	2.038	4.594	4.349	4.960	7.087	5.224	9.146
3.466	2.102	4.602	4.382	4.962	7.187	5.232	9.170
3.622	2.184	4.610	4.414	4.964	7.276	5.248	9.216
3.768	2.275	4.624	4.469	4.966	7.356	5.262	9.256
3.876	2.355	4.632	4.501	4.968	7.430	5.274	9.289
3.972	2.441	4.640	4.532	4.972	7.548	5.284	9.316
4.036	2.508	4.652	4.575	4.974	7.608	5.296	9.348
4.096	2.580	4.664	4.621	4.976	7.661	5.306	9.375
4.148	2.655	4.674	4.659	4.978	7.711	5.314	9.396
4.200	2.743	4.684	4.695	4.982	7.794	5.322	9.418
4.238	2.818	4.692	4.725	4.984	7.837	5.332	9.441
4.274	2.902	4.704	4.766	4.988	7.901	5.342	9.466
4.304	2.984	4.716	4.814	4.990	7.934	5.358	9.506
4.332	3.074	4.732	4.868	4.992	7.962	5.372	9.538
4.364	3.197	4.750	4.937	4.996	8.014	5.382	9.561
4.374	3.240	4.766	4.998	5.000	8.061	5.392	9.583
4.384	3.286	4.786	5.077	5.004	8.105	5.412	9.626
4.392	3.327	4.804	5.153	5.008	8.147	5.432	9.666
4.402	3.377	4.822	5.231	5.010	8.167	5.448	9.698
4.410	3.417	4.840	5.317	5.014	8.205	5.464	9.728
4.418	3.462	4.864	5.448	5.030	8.320	5.484	9.764
4.426	3.508	4.872	5.500	5.040	8.393	5.502	9.793
4.434	3.553	4.882	5.568	5.050	8.454	5.522	9.828
4.442	3.598	4.890	5.623	5.060	8.512	5.562	9.888
4.450	3.642	4.898	5.686	5.068	8.556	5.596	9.934
4.458	3.687	4.904	5.740	5.078	8.605	5.628	9.975

Table AD113. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.662	10.014	8.078	10.851
5.730	10.085	8.256	10.875
5.786	10.136	8.430	10.897
5.844	10.184	8.640	10.921
5.922	10.240	8.820	10.940
5.988	10.284	9.026	10.961
6.060	10.326	9.246	10.983
6.152	10.374	9.414	10.997
6.256	10.422	9.598	11.013
6.358	10.465	9.854	11.032
6.462	10.505		
6.598	10.549		
6.732	10.590		
6.858	10.625		
7.002	10.660		
7.158	10.696		
7.318	10.728		
7.486	10.759		
7.690	10.795		
7.898	10.826		

$pK_{a1} = 5.464$, $pK_{a2} = 9.742$

Table AD114. Potentiometric Titration Data for the pK_a Values of Oxine in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.117.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.929	4.460	3.582	4.952	7.325	5.516	9.789
0.238	0.960	4.466	3.626	4.956	7.452	5.540	9.828
0.488	0.994	4.478	3.709	4.958	7.502	5.568	9.872
0.734	1.028	4.486	3.759	4.960	7.553	5.598	9.916
1.002	1.070	4.496	3.821	4.964	7.626	5.628	9.955
1.274	1.113	4.502	3.856	4.968	7.696	5.654	9.986
1.554	1.161	4.506	3.881	4.970	7.735	5.680	10.017
1.826	1.212	4.516	3.937	4.972	7.768	5.712	10.051
2.092	1.268	4.526	3.991	4.976	7.825	5.782	10.116
2.426	1.344	4.538	4.055	4.978	7.857	5.834	10.162
2.734	1.426	4.548	4.107	4.982	7.903	5.886	10.200
2.994	1.506	4.558	4.157	4.984	7.929	5.936	10.235
3.218	1.585	4.568	4.206	4.986	7.953	5.986	10.268
3.362	1.646	4.574	4.233	4.996	8.046	6.034	10.298
3.544	1.734	4.580	4.257	5.004	8.113	6.120	10.344
3.648	1.791	4.590	4.298	5.014	8.187	6.222	10.393
3.760	1.863	4.614	4.393	5.020	8.232	6.380	10.458
3.872	1.947	4.636	4.479	5.030	8.295	6.494	10.500
3.998	2.065	4.662	4.582	5.040	8.356	6.598	10.534
4.130	2.230	4.688	4.706	5.048	8.400	6.702	10.566
4.208	2.366	4.716	4.819	5.058	8.451	6.804	10.595
4.258	2.481	4.744	4.929	5.068	8.502	6.908	10.622
4.290	2.571	4.756	4.979	5.078	8.549	7.004	10.645
4.318	2.668	4.768	5.031	5.086	8.587	7.106	10.668
4.324	2.693	4.778	5.074	5.094	8.619	7.202	10.684
4.330	2.717	4.794	5.146	5.102	8.652	7.310	10.709
4.338	2.753	4.806	5.202	5.110	8.686	7.446	10.734
4.346	2.789	4.814	5.241	5.120	8.723	7.580	10.758
4.352	2.819	4.824	5.294	5.128	8.752	7.724	10.784
4.362	2.870	4.838	5.369	5.138	8.776	7.872	10.804
4.366	2.891	4.852	5.453	5.146	8.803	8.118	10.839
4.372	2.926	4.860	5.506	5.182	8.937	8.448	10.880
4.380	2.976	4.870	5.578	5.206	9.016	8.736	10.911
4.386	3.014	4.882	5.676	5.234	9.103	9.022	10.940
4.390	3.041	4.892	5.770	5.256	9.166	9.406	10.974
4.396	3.082	4.904	5.906	5.288	9.253		
4.404	3.141	4.914	6.060	5.316	9.331		
4.410	3.186	4.920	6.164	5.340	9.403		
4.416	3.232	4.926	6.254	5.372	9.477		
4.422	3.281	4.934	6.527	5.402	9.562		
4.436	3.394	4.942	6.911	5.432	9.625		
4.442	3.444	4.944	7.043	5.458	9.683		
4.454	3.537	4.948	7.195	5.488	9.738		

pK_{a1} = 5.798, pK_{a2} = 10.002

Table AD115. Potentiometric Titration Data for the pK_a Values of Oxine in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.107.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.946	4.512	3.847	4.912	5.892	5.100	8.610
0.104	0.960	4.520	3.893	4.914	5.922	5.112	8.662
0.222	0.975	4.530	3.949	4.920	6.001	5.126	8.718
0.360	0.994	4.540	4.004	4.922	6.087	5.142	8.777
0.510	1.014	4.550	4.057	4.932	6.229	5.154	8.823
0.704	1.042	4.560	4.109	4.934	6.285	5.166	8.867
0.866	1.066	4.568	4.149	4.938	6.399	5.182	8.921
1.012	1.089	4.578	4.199	4.942	6.540	5.196	8.968
1.126	1.107	4.588	4.246	4.944	6.640	5.210	9.015
1.278	1.132	4.598	4.292	4.948	6.798	5.226	9.069
1.416	1.155	4.608	4.337	4.952	6.980	5.240	9.111
1.550	1.178	4.618	4.382	4.956	7.155	5.254	9.154
1.700	1.207	4.630	4.433	4.958	7.238	5.264	9.185
1.862	1.238	4.638	4.469	4.960	7.311	5.276	9.221
2.192	1.306	4.652	4.526	4.962	7.377	5.292	9.268
2.486	1.375	4.662	4.567	4.964	7.434	5.308	9.314
2.828	1.468	4.674	4.615	4.966	7.487	5.320	9.348
3.092	1.554	4.686	4.663	4.970	7.570	5.336	9.390
3.366	1.660	4.698	4.711	4.972	7.616	5.350	9.428
3.516	1.730	4.712	4.765	4.974	7.661	5.366	9.469
3.666	1.812	4.722	4.805	4.976	7.695	5.376	9.494
3.806	1.903	4.734	4.853	4.978	7.735	5.392	9.534
3.940	2.010	4.746	4.901	4.980	7.772	5.408	9.571
4.050	2.121	4.756	4.941	4.982	7.801	5.426	9.611
4.122	2.214	4.768	4.989	4.986	7.853	5.442	9.645
4.184	2.309	4.788	5.073	4.990	7.901	5.458	9.678
4.230	2.397	4.802	5.137	4.994	7.947	5.476	9.713
4.282	2.524	4.822	5.228	4.996	7.970	5.494	9.746
4.342	2.713	4.834	5.289	5.000	8.010	5.512	9.777
4.372	2.848	4.844	5.345	5.004	8.048	5.532	9.811
4.376	2.871	4.864	5.461	5.010	8.098	5.548	9.836
4.400	3.012	4.876	5.545	5.016	8.147	5.568	9.866
4.410	3.082	4.878	5.563	5.020	8.180	5.588	9.895
4.416	3.128	4.884	5.607	5.032	8.257	5.626	9.945
4.428	3.219	4.888	5.640	5.044	8.331	5.672	9.999
4.460	3.481	4.894	5.690	5.054	8.391	5.726	10.054
4.470	3.558	4.895	5.699	5.060	8.423	5.766	10.093
4.480	3.634	4.902	5.772	5.066	8.455	5.848	10.161
4.490	3.705	4.906	5.816	5.072	8.487	5.928	10.216
4.500	3.772	4.908	5.844	5.086	8.550	6.020	10.277

Table AD115. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
6.086	10.314	9.210	10.939
6.158	10.351	9.576	10.970
6.236	10.388		
6.310	10.420		
6.376	10.447		
6.456	10.477		
6.560	10.512		
6.620	10.531		
6.820	10.587		
7.020	10.635		
7.160	10.666		
7.322	10.696		
7.452	10.719		
7.592	10.743		
7.802	10.778		
7.998	10.805		
8.296	10.845		
8.510	10.870		
8.750	10.895		
9.000	10.920		

$pK_{a1} = 5.828$, $pK_{a2} = 10.000$

Table AD116. Potentiometric Titration Data for the pK_a Values of Oxine in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.015 mmol Oxine, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.114.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.940	4.534	4.048	4.936	6.701	5.306	9.331
0.168	0.965	4.542	4.089	4.940	6.886	5.322	9.373
0.438	1.001	4.556	4.162	4.942	6.966	5.340	9.422
0.788	1.051	4.570	4.229	4.944	7.052	5.360	9.474
1.116	1.103	4.578	4.267	4.946	7.137	5.374	9.510
1.420	1.153	4.588	4.314	4.948	7.210	5.388	9.546
1.720	1.208	4.598	4.357	4.950	7.286	5.406	9.589
2.006	1.265	4.606	4.393	4.952	7.350	5.434	9.649
2.296	1.329	4.614	4.428	4.954	7.415	5.458	9.698
2.620	1.410	4.624	4.469	4.956	7.470	5.472	9.727
2.918	1.497	4.634	4.511	4.960	7.547	5.484	9.750
3.184	1.589	4.644	4.536	4.962	7.590	5.498	9.777
3.346	1.655	4.658	4.597	4.966	7.661	5.514	9.805
3.518	1.736	4.678	4.684	4.968	7.696	5.550	9.862
3.696	1.837	4.704	4.763	4.974	7.786	5.590	9.922
3.858	1.952	4.726	4.852	4.980	7.872	5.646	9.993
3.948	2.029	4.754	4.978	4.986	7.939	5.688	10.041
4.042	2.128	4.764	5.020	4.994	8.019	5.722	10.077
4.134	2.248	4.774	5.075	5.002	8.093	5.788	10.139
4.270	2.520	4.786	5.119	5.010	8.159	5.882	10.214
4.312	2.656	4.796	5.171	5.016	8.208	5.980	10.280
4.346	2.794	4.808	5.226	5.024	8.264	6.190	10.392
4.354	2.834	4.818	5.276	5.030	8.287	6.354	10.464
4.362	2.876	4.828	5.328	5.038	8.333	6.526	10.527
4.372	2.933	4.836	5.373	5.060	8.433	6.696	10.579
4.382	2.994	4.844	5.418	5.070	8.492	6.854	10.625
4.390	3.049	4.854	5.479	5.086	8.570	7.026	10.667
4.398	3.105	4.862	5.532	5.098	8.609	7.206	10.706
4.406	3.165	4.872	5.603	5.112	8.674	7.374	10.740
4.414	3.225	4.882	5.684	5.124	8.731	7.512	10.766
4.422	3.291	4.890	5.762	5.134	8.758	7.754	10.806
4.430	3.357	4.898	5.846	5.148	8.813	8.014	10.844
4.440	3.439	4.902	5.898	5.166	8.876	8.274	10.879
4.448	3.501	4.906	5.951	5.178	8.923	8.566	10.914
4.456	3.565	4.910	6.010	5.188	8.950	8.788	10.939
4.462	3.608	4.912	6.046	5.200	8.997	9.036	10.964
4.470	3.667	4.916	6.112	5.214	9.052	9.300	10.989
4.478	3.720	4.920	6.192	5.224	9.082		
4.486	3.771	4.922	6.241	5.236	9.121		
4.494	3.820	4.924	6.290	5.250	9.160		
4.504	3.881	4.928	6.394	5.262	9.201		
4.512	3.926	4.930	6.460	5.278	9.248		
4.522	3.982	4.934	6.609	5.292	9.289		

$pK_{a1} = 5.844$, $pK_{a2} = 10.009$

Table AD117. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.0020 m NaCl at 25°C. Initial Volume = 10.0 mL, 0.0010 mmol 1,10-Phenanthroline, 0.001 mmol Excess HCl, Titrant = 0.0020 M NaOH, pcH= pHr - 0.183.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	4.374	1.198	4.819	3.072	5.423	5.366	9.589
0.038	4.384	1.230	4.830	3.194	5.476	5.404	9.660
0.076	4.400	1.266	4.842	3.324	5.515	5.442	9.723
0.108	4.413	1.296	4.852	3.470	5.570	5.482	9.779
0.144	4.428	1.326	4.861	3.602	5.624	5.526	9.836
0.180	4.441	1.345	4.870	3.752	5.688	5.562	9.876
0.220	4.460	1.382	4.879	3.904	5.759	5.606	9.921
0.254	4.474	1.410	4.888	4.062	5.839	5.664	9.974
0.262	4.476	1.444	4.900	4.228	5.933	5.732	10.029
0.268	4.478	1.478	4.911	4.382	6.036	5.808	10.081
0.300	4.491	1.508	4.920	4.508	6.132	5.890	10.133
0.330	4.502	1.536	4.929	4.636	6.251	6.002	10.194
0.358	4.513	1.564	4.938	4.784	6.428	6.126	10.252
0.388	4.526	1.626	4.957	4.884	6.596	6.250	10.303
0.416	4.537	1.656	4.966	4.918	6.671	6.374	10.348
0.446	4.549	1.686	4.975	4.948	6.746	6.500	10.388
0.476	4.560	1.714	4.984	4.982	6.843	6.634	10.428
0.506	4.573	1.746	4.994	5.014	6.960	6.764	10.461
0.536	4.583	1.782	5.006	5.036	7.054	6.884	10.489
0.568	4.596	1.818	5.017	5.064	7.207	6.992	10.512
0.596	4.607	1.848	5.026	5.070	7.251	7.140	10.544
0.626	4.617	1.880	5.036	5.076	7.296	7.270	10.569
0.652	4.626	1.912	5.045	5.084	7.362	7.416	10.595
0.682	4.637	1.942	5.056	5.120	7.832	7.576	10.622
0.710	4.648	1.974	5.065	5.154	8.489	7.744	10.647
0.742	4.660	2.002	5.074	5.160	8.593	7.986	10.681
0.774	4.671	2.032	5.083	5.168	8.703	8.138	10.699
0.808	4.683	2.062	5.092	5.174	8.778	8.296	10.719
0.836	4.694	2.090	5.101	5.182	8.851	8.484	10.740
0.866	4.705	2.122	5.111	5.190	8.919	8.678	10.759
0.892	4.714	2.152	5.120	5.196	8.966	8.928	10.785
0.922	4.724	2.200	5.135	5.204	9.021	9.190	10.808
0.952	4.735	2.248	5.151	5.210	9.059		
0.982	4.745	2.296	5.166	5.218	9.107		
1.010	4.755	2.350	5.183	5.226	9.149		
1.046	4.768	2.442	5.212	5.234	9.191		
1.076	4.778	2.540	5.244	5.242	9.227		
1.104	4.787	2.668	5.284	5.250	9.257		
1.134	4.797	2.828	5.339	5.258	9.291		
1.168	4.809	2.958	5.386	5.334	9.514		

$pK_{a1} = 4.935$

Table AD118. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.002 m NaCl at 25°C. Initial Volume = 10.0 mL, 0.010 mmol 1,10-Phenanthroline, 0.010 mmol Excess HCl, Titrant = 0.0020 M NaOH, pcH= pHr - 0.132.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	4.335	1.846	4.907	3.930	5.472	5.846	6.578
0.038	4.345	1.898	4.921	3.974	5.485	5.854	6.594
0.068	4.355	1.946	4.934	4.024	5.501	5.866	6.619
0.106	4.368	2.000	4.949	4.070	5.515	5.882	6.649
0.144	4.382	2.056	4.963	4.124	5.532	5.892	6.670
0.178	4.394	2.102	4.976	4.174	5.547	5.900	6.689
0.208	4.404	2.156	4.991	4.226	5.564	5.908	6.707
0.248	4.417	2.198	5.001	4.274	5.580	5.918	6.730
0.280	4.427	2.246	5.015	4.324	5.596	5.926	6.750
0.308	4.436	2.298	5.029	4.366	5.611	5.934	6.772
0.340	4.447	2.354	5.043	4.410	5.626	5.942	6.795
0.374	4.457	2.408	5.057	4.448	5.641	5.954	6.830
0.404	4.468	2.458	5.069	4.494	5.657	5.962	6.854
0.436	4.479	2.510	5.084	4.544	5.674	5.972	6.888
0.474	4.492	2.558	5.096	4.600	5.697	5.982	6.923
0.504	4.503	2.610	5.109	4.652	5.716	5.992	6.960
0.532	4.510	2.662	5.121	4.700	5.735	6.000	6.994
0.568	4.522	2.716	5.136	4.750	5.756	6.010	7.035
0.644	4.547	2.766	5.150	4.794	5.773	6.018	7.072
0.690	4.562	2.816	5.163	4.840	5.793	6.026	7.114
0.752	4.582	2.866	5.177	4.888	5.813	6.034	7.159
0.796	4.597	2.916	5.189	4.934	5.835	6.042	7.207
0.840	4.611	2.966	5.202	4.978	5.856	6.044	7.220
0.892	4.627	3.006	5.213	5.020	5.877	6.050	7.260
0.942	4.643	3.052	5.225	5.068	5.901	6.054	7.292
0.988	4.657	3.108	5.240	5.124	5.930	6.060	7.338
1.034	4.671	3.158	5.253	5.172	5.957	6.064	7.374
1.080	4.684	3.206	5.266	5.220	5.982	6.072	7.444
1.126	4.700	3.248	5.277	5.266	6.012	6.076	7.493
1.178	4.716	3.294	5.287	5.312	6.040	6.080	7.530
1.224	4.731	3.340	5.302	5.354	6.068	6.084	7.587
1.270	4.744	3.382	5.314	5.400	6.099	6.088	7.638
1.314	4.757	3.422	5.325	5.450	6.136	6.090	7.674
1.356	4.770	3.472	5.338	5.490	6.168	6.094	7.722
1.398	4.783	3.518	5.351	5.534	6.204	6.098	7.792
1.452	4.799	3.562	5.363	5.580	6.245	6.102	7.865
1.500	4.811	3.610	5.377	5.624	6.288	6.106	7.938
1.544	4.824	3.654	5.390	5.668	6.333	6.108	7.978
1.590	4.839	3.698	5.404	5.696	6.367	6.112	8.042
1.642	4.851	3.742	5.416	5.724	6.401	6.114	8.084
1.686	4.863	3.790	5.430	5.750	6.434	6.116	8.122
1.744	4.879	3.834	5.443	5.784	6.482	6.120	8.183
1.796	4.893	3.880	5.456	5.816	6.528	6.124	8.246

Table AD118. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
6.126	8.283	6.246	9.114	6.802	9.921	8.778	10.515
6.128	8.310	6.262	9.171	6.858	9.958	8.962	10.542
6.130	8.337	6.274	9.210	6.906	9.988	9.094	10.560
6.134	8.389	6.288	9.252	6.958	10.017	9.252	10.580
6.138	8.444	6.300	9.284	7.010	10.044	9.396	10.598
6.142	8.493	6.312	9.314	7.058	10.069	9.550	10.616
6.144	8.514	6.344	9.387	7.110	10.093	9.756	10.639
6.150	8.575	6.374	9.445	7.164	10.116	9.886	10.652
6.156	8.636	6.400	9.493	7.264	10.158	10.240	10.687
6.160	8.674	6.432	9.547	7.410	10.210	10.614	10.720
6.164	8.708	6.464	9.594	7.484	10.236		
6.170	8.753	6.496	9.638	7.600	10.272		
6.176	8.797	6.524	9.669	7.714	10.303		
6.182	8.837	6.554	9.706	7.834	10.336		
6.186	8.864	6.586	9.740	7.944	10.361		
6.192	8.883	6.620	9.774	7.998	10.372		
6.198	8.901	6.650	9.801	8.086	10.392		
6.206	8.938	6.682	9.830	8.230	10.422		
6.220	9.002	6.716	9.858	8.360	10.446		
6.232	9.058	6.750	9.885	8.570	10.482		

$pK_{a1} = 4.986$

Table AD119. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.002 m NaCl at 25°C. Initial Volume = 10.0 mL, 0.010 mmol 1,10-Phenanthroline, 0.010 mmol Excess HCl, Titrant = 0.0020 M NaOH, pcH= pHr – 0.144.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	4.381	3.396	5.383	6.048	7.424	6.256	9.256
0.060	4.403	3.494	5.412	6.050	7.444	6.264	9.280
0.110	4.420	3.600	5.442	6.054	7.481	6.274	9.311
0.166	4.440	3.690	5.468	6.058	7.521	6.284	9.336
0.222	4.457	3.780	5.495	6.062	7.560	6.318	9.410
0.272	4.476	3.868	5.520	6.064	7.587	6.366	9.507
0.320	4.493	3.956	5.546	6.066	7.606	6.394	9.556
0.372	4.510	4.036	5.573	6.070	7.647	6.424	9.607
0.432	4.531	4.124	5.598	6.074	7.694	6.448	9.640
0.498	4.553	4.200	5.624	6.076	7.729	6.480	9.682
0.560	4.575	4.288	5.654	6.080	7.784	6.510	9.719
0.616	4.593	4.376	5.683	6.084	7.843	6.538	9.751
0.672	4.612	4.460	5.713	6.088	7.902	6.564	9.779
0.724	4.628	4.544	5.745	6.092	7.950	6.592	9.807
0.782	4.646	4.668	5.793	6.096	8.006	6.622	9.834
0.842	4.666	4.798	5.847	6.100	8.075	6.656	9.864
0.894	4.682	4.858	5.873	6.104	8.147	6.688	9.890
0.948	4.698	4.932	5.907	6.106	8.202	6.718	9.913
1.002	4.715	5.010	5.944	6.108	8.239	6.748	9.936
1.048	4.730	5.092	5.986	6.112	8.293	6.776	9.955
1.100	4.747	5.178	6.032	6.116	8.352	6.828	9.990
1.170	4.769	5.270	6.089	6.120	8.409	6.880	10.022
1.242	4.790	5.360	6.148	6.124	8.459	6.938	10.055
1.310	4.810	5.442	6.206	6.128	8.513	7.026	10.100
1.422	4.842	5.526	6.283	6.130	8.548	7.124	10.146
1.526	4.872	5.604	6.353	6.134	8.587	7.214	10.183
1.608	4.896	5.664	6.413	6.136	8.617	7.302	10.217
1.698	4.920	5.716	6.474	6.140	8.659	7.388	10.249
1.772	4.941	5.776	6.549	6.144	8.686	7.472	10.277
1.854	4.965	5.826	6.632	6.148	8.728	7.554	10.302
1.932	4.985	5.876	6.725	6.152	8.759	7.638	10.325
2.010	5.006	5.922	6.826	6.156	8.796	7.756	10.357
2.082	5.026	5.968	6.969	6.160	8.821	7.880	10.390
2.198	5.059	6.004	7.108	6.164	8.851	8.002	10.416
2.344	5.097	6.016	7.177	6.168	8.874	8.134	10.445
2.460	5.129	6.018	7.197	6.172	8.898	8.240	10.465
2.560	5.156	6.022	7.231	6.182	8.957	8.360	10.488
2.644	5.178	6.026	7.255	6.196	9.028	8.470	10.507
2.712	5.196	6.028	7.271	6.206	9.073	8.606	10.529
2.876	5.240	6.032	7.297	6.216	9.116	8.752	10.551
3.110	5.303	6.036	7.333	6.226	9.153	8.898	10.573
3.200	5.329	6.040	7.353	6.238	9.200	9.080	10.599
3.300	5.357	6.044	7.392	6.246	9.224	9.248	10.618

pK_{a1} = 4.536

Table AD120. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH= pHr + 0.021.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.033	4.392	3.939	4.968	5.793	5.120	9.701
0.124	2.047	4.406	3.985	4.978	5.860	5.124	9.731
0.384	2.082	4.420	4.030	4.986	5.917	5.146	9.866
0.678	2.125	4.434	4.076	4.992	5.965	5.156	9.920
0.926	2.163	4.452	4.134	4.998	6.020	5.166	9.968
1.178	2.203	4.470	4.193	5.006	6.098	5.178	10.018
1.448	2.249	4.488	4.251	5.016	6.215	5.194	10.079
1.682	2.292	4.500	4.288	5.018	6.248	5.216	10.150
1.948	2.345	4.516	4.339	5.024	6.337	5.230	10.189
2.218	2.404	4.524	4.364	5.028	6.414	5.252	10.248
2.462	2.462	4.532	4.387	5.032	6.504	5.272	10.298
2.730	2.535	4.540	4.412	5.036	6.613	5.294	10.339
2.956	2.605	4.558	4.466	5.040	6.749	5.322	10.399
3.214	2.698	4.574	4.511	5.044	6.936	5.346	10.433
3.356	2.758	4.592	4.563	5.048	7.236	5.380	10.483
3.488	2.821	4.612	4.618	5.052	7.819	5.412	10.528
3.582	2.871	4.628	4.663	5.054	8.112	5.444	10.569
3.658	2.915	4.640	4.694	5.056	8.318	5.466	10.592
3.738	2.966	4.660	4.748	5.060	8.560	5.490	10.617
3.822	3.027	4.674	4.785	5.064	8.797	5.516	10.644
3.896	3.086	4.692	4.833	5.066	8.876	5.540	10.669
3.978	3.163	4.724	4.918	5.068	8.953	5.582	10.703
4.052	3.244	4.742	4.965	5.072	9.062	5.636	10.747
4.092	3.294	4.772	5.047	5.074	9.117	5.700	10.793
4.130	3.347	4.810	5.156	5.076	9.167	5.757	10.828
4.164	3.400	4.864	5.326	5.078	9.209	5.814	10.863
4.202	3.465	4.866	5.334	5.082	9.279	5.868	10.891
4.236	3.530	4.878	5.376	5.088	9.369	5.924	10.922
4.268	3.598	4.894	5.435	5.092	9.425	5.974	10.949
4.310	3.699	4.908	5.490	5.096	9.474	6.036	10.973
4.336	3.770	4.922	5.550	5.100	9.521	6.090	10.999
4.342	3.787	4.934	5.605	5.104	9.559		
4.348	3.806	4.938	5.627	5.108	9.600		
4.358	3.835	4.952	5.699	5.112	9.637		
4.374	3.884	4.960	5.745	5.118	9.685		

$pK_{a1} = 4.889$

Table AD121. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH= pHr + 0.041.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.020	4.504	4.269	5.024	6.181	5.216	10.131
0.082	2.042	4.516	4.308	5.026	6.208	5.272	10.281
0.250	2.065	4.528	4.344	5.028	6.235	5.302	10.345
0.412	2.086	4.538	4.376	5.032	6.289	5.324	10.387
0.550	2.106	4.548	4.406	5.036	6.357	5.350	10.434
0.884	2.156	4.558	4.433	5.038	6.395	5.378	10.477
1.192	2.205	4.566	4.458	5.042	6.475	5.408	10.518
1.472	2.252	4.580	4.498	5.046	6.569	5.440	10.559
1.638	2.283	4.598	4.549	5.048	6.622	5.504	10.630
1.964	2.347	4.610	4.584	5.052	6.785	5.566	10.690
2.112	2.379	4.624	4.622	5.054	6.850	5.632	10.746
2.412	2.448	4.642	4.671	5.058	7.083	5.702	10.796
2.754	2.540	4.658	4.714	5.062	7.497	5.772	10.842
3.052	2.635	4.674	4.757	5.064	7.847	5.864	10.895
3.234	2.703	4.690	4.799	5.066	8.131	5.936	10.933
3.404	2.776	4.706	4.842	5.070	8.513	6.022	10.973
3.582	2.886	4.722	4.885	5.072	8.646	6.092	11.004
3.748	2.967	4.738	4.929	5.074	8.739		
3.840	3.034	4.758	4.983	5.076	8.830		
3.936	3.114	4.782	5.049	5.078	8.910		
4.036	3.215	4.798	5.094	5.082	9.034		
4.118	3.364	4.814	5.140	5.086	9.141		
4.188	3.424	4.824	5.170	5.088	9.187		
4.228	3.497	4.842	5.226	5.090	9.231		
4.262	3.564	4.856	5.270	5.092	9.268		
4.294	3.636	4.866	5.304	5.100	9.394		
4.304	3.661	4.876	5.339	5.108	9.497		
4.312	3.681	4.888	5.380	5.116	9.587		
4.330	3.726	4.900	5.424	5.124	9.658		
4.356	3.800	4.918	5.494	5.132	9.725		
4.386	3.888	4.936	5.569	5.138	9.768		
4.394	3.913	4.946	5.616	5.144	9.809		
4.404	3.945	4.956	5.666	5.152	9.858		
4.412	3.977	4.966	5.719	5.160	9.902		
4.424	4.009	4.976	5.777	5.168	9.944		
4.436	4.048	4.986	5.841	5.176	9.980		
4.452	4.100	4.994	5.899	5.184	10.014		
4.470	4.159	5.004	5.976	5.192	10.047		
4.484	4.205	5.014	6.067	5.202	10.084		
4.494	4.237	5.022	6.156	5.210	10.111		

pK_{a1} = 4.913

Table AD122. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH= pHr + 0.023.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.043	4.472	4.235	4.936	5.664	5.106	9.661
0.238	2.075	4.490	4.292	4.944	5.707	5.126	9.798
0.670	2.134	4.498	4.316	4.960	5.799	5.136	9.860
0.926	2.175	4.508	4.349	4.970	5.864	5.144	9.903
1.186	2.216	4.520	4.385	4.980	5.937	5.154	9.951
1.484	2.268	4.532	4.421	4.992	6.040	5.166	10.001
1.768	2.320	4.544	4.456	4.998	6.101	5.178	10.049
1.928	2.352	4.556	4.492	5.004	6.170	5.192	10.096
2.218	2.417	4.568	4.526	5.010	6.249	5.204	10.135
2.656	2.526	4.578	4.554	5.016	6.344	5.230	10.208
2.928	2.608	4.590	4.589	5.018	6.383	5.258	10.274
3.140	2.682	4.602	4.622	5.024	6.507	5.270	10.301
3.304	2.749	4.610	4.643	5.026	6.565	5.290	10.343
3.432	2.806	4.622	4.676	5.028	6.623	5.306	10.373
3.562	2.874	4.640	4.725	5.032	6.759	5.326	10.407
3.678	2.941	4.658	4.774	5.036	6.948	5.346	10.440
3.804	3.028	4.672	4.812	5.040	7.263	5.366	10.469
3.940	3.143	4.690	4.860	5.042	7.520	5.386	10.498
4.016	3.222	4.702	4.892	5.046	8.112	5.402	10.520
4.078	3.296	4.712	4.918	5.048	8.339	5.420	10.544
4.144	3.388	4.724	4.950	5.050	8.513	5.438	10.565
4.168	3.428	4.734	4.978	5.054	8.713	5.454	10.581
4.196	3.477	4.742	4.999	5.058	8.865	5.494	10.622
4.222	3.526	4.752	5.028	5.060	8.953	5.546	10.672
4.248	3.580	4.764	5.061	5.064	9.069	5.598	10.715
4.280	3.654	4.782	5.112	5.068	9.162	5.638	10.747
4.314	3.741	4.798	5.159	5.070	9.208	5.682	10.776
4.342	3.819	4.814	5.205	5.072	9.248	5.744	10.818
4.374	3.915	4.822	5.230	5.076	9.316	5.794	10.853
4.380	3.935	4.836	5.274	5.080	9.373	5.842	10.878
4.396	3.987	4.848	5.313	5.084	9.450	5.900	10.905
4.412	4.039	4.860	5.353	5.092	9.526	5.954	10.930
4.428	4.093	4.882	5.431	5.096	9.567	6.010	10.959
4.442	4.138	4.906	5.527	5.100	9.606	6.072	10.986
4.460	4.197	4.922	5.596	5.104	9.643	6.128	11.008

$pK_{a1} = 4.908$

Table AD123. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH= pHr + 0.112.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.931	4.408	3.862	4.892	5.344	5.090	9.341
0.334	1.975	4.420	3.902	4.904	5.391	5.096	9.415
0.486	1.997	4.432	3.944	4.914	5.431	5.098	9.443
0.822	2.045	4.444	3.981	4.926	5.480	5.104	9.504
1.158	2.098	4.456	4.023	4.940	5.545	5.108	9.542
1.454	2.148	4.466	4.057	4.950	5.595	5.122	9.650
1.700	2.193	4.476	4.091	4.962	5.659	5.134	9.726
1.862	2.225	4.486	4.125	4.972	5.718	5.146	9.791
2.146	2.284	4.498	4.164	4.984	5.799	5.156	9.839
2.448	2.358	4.506	4.192	4.996	5.891	5.168	9.890
2.608	2.398	4.518	4.231	5.006	5.984	5.180	9.935
2.760	2.441	4.532	4.275	5.010	6.024	5.192	9.977
2.922	2.490	4.544	4.312	5.014	6.068	5.222	10.064
3.106	2.553	4.556	4.349	5.016	6.094	5.250	10.134
3.246	2.607	4.568	4.386	5.020	6.145	5.278	10.194
3.388	2.668	4.580	4.422	5.024	6.202	5.308	10.249
3.534	2.738	4.596	4.469	5.026	6.236	5.338	10.299
3.678	2.821	4.620	4.537	5.030	6.303	5.368	10.344
3.804	2.904	4.638	4.590	5.034	6.384	5.396	10.381
3.936	3.011	4.650	4.622	5.038	6.479	5.430	10.422
4.020	3.096	4.662	4.656	5.042	6.599	5.500	10.495
4.070	3.153	4.674	4.690	5.046	6.750	5.568	10.557
4.116	3.213	4.688	4.727	5.050	6.975	5.644	10.616
4.148	3.258	4.702	4.766	5.054	7.430	5.714	10.664
4.178	3.305	4.716	4.805	5.056	7.780	5.786	10.709
4.206	3.353	4.730	4.843	5.060	8.324	5.890	10.765
4.238	3.413	4.748	4.894	5.064	8.624	6.000	10.817
4.268	3.476	4.760	4.928	5.068	8.826	6.130	10.870
4.282	3.506	4.772	4.962	5.070	8.907	6.234	10.909
4.296	3.541	4.786	5.002	5.074	9.025	6.306	10.934
4.308	3.571	4.798	5.038	5.076	9.083	6.374	10.955
4.320	3.602	4.830	5.133	5.080	9.169	6.474	10.985
4.330	3.628	4.856	5.216	5.082	9.210		
4.358	3.707	4.866	5.250	5.084	9.248		
4.386	3.792	4.880	5.301	5.086	9.283		

$pK_{a1} = 4.936$

Table AD124. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH= pHr + 0.098.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.952	4.466	4.116	4.958	5.724	5.092	9.511
0.268	1.987	4.478	4.156	4.968	5.788	5.096	9.545
0.616	2.035	4.490	4.195	4.980	5.876	5.108	9.636
0.972	2.089	4.502	4.235	4.990	5.964	5.116	9.686
1.144	2.116	4.512	4.267	4.996	6.024	5.142	9.822
1.444	2.166	4.524	4.306	4.998	6.047	5.168	9.930
1.606	2.197	4.538	4.349	5.004	6.116	5.194	10.015
1.956	2.265	4.550	4.385	5.008	6.168	5.214	10.069
2.242	2.328	4.564	4.428	5.014	6.259	5.238	10.128
2.422	2.370	4.586	4.493	5.018	6.339	5.262	10.180
2.740	2.456	4.600	4.534	5.024	6.465	5.302	10.256
3.002	2.537	4.614	4.572	5.028	6.576	5.350	10.330
3.256	2.632	4.630	4.618	5.032	6.811	5.406	10.404
3.398	2.693	4.640	4.647	5.034	6.955	5.456	10.460
3.592	2.792	4.650	4.675	5.038	7.344	5.492	10.496
3.772	2.905	4.678	4.753	5.040	7.763	5.532	10.533
3.860	2.971	4.704	4.823	5.044	8.275	5.574	10.567
3.954	3.057	4.730	4.893	5.048	8.564	5.658	10.632
4.042	3.151	4.754	4.962	5.052	8.745	5.742	10.686
4.138	3.278	4.776	5.023	5.054	8.870	5.822	10.731
4.244	3.467	4.792	5.071	5.056	8.940	5.916	10.778
4.338	3.700	4.814	5.137	5.060	9.043	6.008	10.820
4.366	3.784	4.834	5.200	5.066	9.166	6.102	10.858
4.380	3.829	4.854	5.266	5.068	9.211	6.184	10.888
4.392	3.869	4.880	5.359	5.072	9.272	6.272	10.919
4.404	3.909	4.890	5.397	5.076	9.330	6.360	10.947
4.416	3.949	4.900	5.438	5.078	9.364	6.470	10.979
4.432	4.002	4.916	5.507	5.080	9.391		
4.444	4.043	4.928	5.562	5.084	9.434		
4.456	4.083	4.944	5.643	5.088	9.476		

$pK_{a1} = 4.953$

Table AD125. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH= pHr + 0.105.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.947	4.434	4.001	4.862	5.286	5.156	9.850
0.346	1.993	4.466	4.107	4.876	5.336	5.166	9.894
0.628	2.032	4.500	4.217	4.888	5.380	5.176	9.935
0.940	2.079	4.508	4.244	4.900	5.427	5.196	10.003
1.242	2.128	4.518	4.277	4.914	5.485	5.206	10.034
1.550	2.180	4.536	4.334	4.924	5.531	5.250	10.147
1.832	2.235	4.550	4.377	4.932	5.570	5.294	10.238
2.138	2.299	4.560	4.408	4.942	5.620	5.344	10.323
2.294	2.335	4.570	4.439	4.950	5.662	5.378	10.372
2.604	2.413	4.580	4.468	4.960	5.719	5.442	10.452
2.890	2.497	4.592	4.503	4.968	5.770	5.478	10.492
3.162	2.590	4.602	4.532	4.978	5.838	5.520	10.533
3.314	2.652	4.612	4.561	4.988	5.917	5.584	10.588
3.462	2.719	4.636	4.627	4.998	6.008	5.640	10.632
3.620	2.804	4.654	4.678	5.004	6.072	5.676	10.657
3.784	2.910	4.668	4.718	5.014	6.201	5.720	10.687
3.878	2.984	4.678	4.745	5.022	6.330	5.770	10.718
3.938	3.039	4.690	4.779	5.032	6.552	5.826	10.751
4.004	3.105	4.700	4.806	5.040	6.877	5.944	10.811
4.078	3.191	4.710	4.832	5.048	7.721	6.058	10.861
4.152	3.296	4.720	4.860	5.058	8.564	6.266	10.940
4.226	3.425	4.730	4.888	5.066	8.892	6.530	11.019
4.258	3.492	4.744	4.927	5.074	9.097		
4.270	3.520	4.756	4.961	5.084	9.278		
4.288	3.563	4.766	4.989	5.094	9.423		
4.298	3.589	4.780	5.029	5.104	9.520		
4.326	3.663	4.798	5.081	5.114	9.603		
4.354	3.744	4.820	5.149	5.124	9.674		
4.378	3.819	4.832	5.187	5.134	9.738		
4.404	3.902	4.844	5.227	5.144	9.793		

pK_{a1} = 4.954

Table AD126. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH= pHr + 0.175.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.887	4.654	4.664	5.032	6.605	5.214	10.026
0.302	1.929	4.666	4.696	5.036	6.769	5.242	10.096
0.594	1.970	4.692	4.769	5.040	7.013	5.284	10.183
0.890	2.015	4.702	4.797	5.044	7.459	5.326	10.256
1.236	2.071	4.712	4.826	5.046	7.829	5.364	10.312
1.528	2.122	4.724	4.860	5.048	8.130	5.406	10.367
1.822	2.179	4.736	4.894	5.050	8.332	5.450	10.417
2.100	2.236	4.748	4.928	5.054	8.586	5.494	10.463
2.416	2.310	4.758	4.957	5.058	8.762	5.550	10.513
2.702	2.388	4.770	4.991	5.060	8.843	5.604	10.557
3.020	2.487	4.782	5.026	5.062	8.911	5.664	10.600
3.178	2.546	4.798	5.074	5.066	9.014	5.724	10.638
3.376	2.629	4.816	5.129	5.068	9.066	5.796	10.683
3.530	2.705	4.838	5.199	5.072	9.145	5.850	10.712
3.686	2.797	4.850	5.240	5.074	9.183	5.920	10.746
3.836	2.904	4.862	5.282	5.076	9.218	5.998	10.785
3.990	3.045	4.876	5.333	5.082	9.303	6.078	10.820
4.142	3.240	4.888	5.378	5.088	9.377	6.152	10.848
4.298	3.554	4.902	5.433	5.096	9.459	6.232	10.877
4.466	4.078	4.918	5.501	5.100	9.497	6.368	10.922
4.534	4.304	4.930	5.556	5.104	9.532	6.530	10.967
4.546	4.341	4.944	5.626	5.112	9.593		
4.558	4.380	4.954	5.683	5.120	9.649		
4.568	4.411	4.966	5.757	5.124	9.675		
4.580	4.448	4.978	5.841	5.130	9.708		
4.592	4.484	4.988	5.922	5.136	9.740		
4.604	4.520	4.998	6.017	5.140	9.761		
4.616	4.554	5.010	6.156	5.146	9.790		
4.630	4.595	5.020	6.310	5.198	9.979		
4.642	4.630	5.030	6.535	5.206	10.002		

$pK_{a1} = 5.013$

Table AD127. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH= pHr + 0.126.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.907	4.544	4.355	4.946	5.637	5.176	9.866
0.240	1.957	4.554	4.387	4.960	5.715	5.188	9.909
0.508	1.994	4.566	4.423	4.974	5.806	5.230	10.027
0.860	2.046	4.580	4.466	4.986	5.897	5.272	10.122
1.176	2.096	4.596	4.512	4.996	5.987	5.312	10.194
1.362	2.126	4.610	4.553	5.008	6.118	5.348	10.251
1.728	2.194	4.624	4.592	5.022	6.332	5.406	10.329
2.004	2.250	4.650	4.665	5.036	6.706	5.448	10.376
2.302	2.315	4.662	4.699	5.050	8.115	5.490	10.419
2.570	2.382	4.672	4.725	5.064	8.785	5.540	10.468
2.736	2.429	4.688	4.769	5.068	8.944	5.598	10.514
3.016	2.517	4.706	4.819	5.072	9.035	5.686	10.578
3.138	2.560	4.722	4.863	5.076	9.121	5.764	10.627
3.302	2.626	4.736	4.902	5.078	9.161	5.856	10.677
3.556	2.747	4.748	4.935	5.080	9.196	5.968	10.732
3.798	2.899	4.768	4.992	5.088	9.306	6.058	10.769
4.022	3.101	4.786	5.045	5.092	9.352	6.258	10.844
4.100	3.198	4.808	5.109	5.096	9.395	6.372	10.881
4.262	3.482	4.830	5.176	5.098	9.417	6.516	10.923
4.314	3.612	4.850	5.241	5.102	9.454	6.642	10.958
4.364	3.758	4.868	5.304	5.106	9.490		
4.418	3.937	4.886	5.369	5.120	9.592		
4.466	4.100	4.908	5.456	5.132	9.667		
4.520	4.278	4.922	5.518	5.144	9.727		
4.532	4.317	4.934	5.576	5.158	9.795		

pK_{a1} = 4.975

Table AD128. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH= pHr + 0.111.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.948	4.640	4.641	5.052	7.794	5.560	10.486
0.308	1.989	4.674	4.734	5.054	8.076	5.612	10.529
0.664	2.039	4.700	4.805	5.058	8.388	5.680	10.577
0.818	2.062	4.728	4.883	5.060	8.512	5.734	10.615
1.102	2.105	4.746	4.933	5.064	8.689	5.788	10.648
1.372	2.151	4.762	4.978	5.068	8.841	5.846	10.679
1.662	2.203	4.778	5.024	5.072	8.949	5.956	10.734
1.964	2.261	4.794	5.073	5.074	9.007	6.108	10.798
2.326	2.341	4.810	5.121	5.076	9.051	6.220	10.839
2.656	2.425	4.826	5.169	5.080	9.129	6.334	10.878
2.924	2.504	4.842	5.220	5.082	9.163	6.450	10.913
3.068	2.553	4.858	5.273	5.086	9.226	6.584	10.949
3.376	2.675	4.876	5.334	5.090	9.278	6.720	10.983
3.572	2.771	4.896	5.408	5.092	9.306		
3.744	2.876	4.922	5.515	5.106	9.449		
3.908	3.003	4.940	5.597	5.122	9.574		
4.008	3.101	4.956	5.682	5.132	9.638		
4.102	3.216	4.970	5.763	5.140	9.687		
4.178	3.331	4.982	5.846	5.152	9.750		
4.252	3.473	4.996	5.956	5.166	9.812		
4.342	3.700	5.010	6.095	5.180	9.866		
4.374	3.799	5.014	6.147	5.192	9.909		
4.396	3.871	5.018	6.203	5.206	9.953		
4.402	3.892	5.022	6.264	5.230	10.020		
4.410	3.919	5.030	6.411	5.242	10.048		
4.448	4.049	5.032	6.465	5.296	10.159		
4.516	4.273	5.036	6.578	5.344	10.239		
4.558	4.404	5.040	6.717	5.394	10.312		
4.596	4.516	5.044	6.911	5.448	10.375		
4.614	4.567	5.048	7.198	5.502	10.432		

$pK_{a1} = 4.968$

Table AD129. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH= pHr + 0.294.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.766	4.522	4.232	5.016	6.271	5.174	9.749
0.268	1.802	4.534	4.272	5.018	6.317	5.188	9.795
0.566	1.843	4.564	4.367	5.020	6.363	5.200	9.832
0.892	1.892	4.584	4.428	5.024	6.462	5.214	9.872
1.260	1.951	4.600	4.476	5.028	6.592	5.230	9.912
1.552	2.003	4.612	4.511	5.030	6.678	5.244	9.945
1.888	2.067	4.624	4.549	5.032	6.777	5.274	10.008
2.204	2.134	4.634	4.585	5.036	7.035	5.308	10.069
2.552	2.219	4.644	4.608	5.040	7.465	5.342	10.122
2.882	2.314	4.656	4.643	5.044	7.933	5.398	10.197
3.208	2.430	4.668	4.678	5.046	8.180	5.450	10.257
3.530	2.576	4.694	4.750	5.050	8.421	5.504	10.310
3.682	2.665	4.716	4.811	5.054	8.593	5.568	10.366
3.822	2.764	4.744	4.890	5.056	8.677	5.638	10.420
3.908	2.837	4.756	4.923	5.058	8.742	5.718	10.473
3.992	2.921	4.788	5.018	5.062	8.846	5.802	10.523
4.076	3.024	4.808	5.079	5.066	8.931	5.894	10.571
4.166	3.161	4.826	5.137	5.068	8.976	5.980	10.611
4.248	3.328	4.844	5.196	5.070	9.013	6.088	10.657
4.332	3.560	4.864	5.263	5.076	9.104	6.170	10.688
4.360	3.652	4.894	5.378	5.080	9.156	6.238	10.712
4.386	3.743	4.910	5.448	5.086	9.225	6.318	10.738
4.396	3.781	4.924	5.513	5.090	9.269	6.434	10.774
4.408	3.826	4.936	5.575	5.096	9.326	6.580	10.813
4.432	3.916	4.948	5.633	5.104	9.390	6.772	10.860
4.444	3.960	4.962	5.718	5.112	9.449	6.954	10.899
4.460	4.019	4.974	5.801	5.120	9.502	7.190	10.946
4.480	4.089	4.990	5.935	5.132	9.568	7.390	10.980
4.500	4.147	5.002	6.060	5.146	9.637		
4.512	4.198	5.012	6.197	5.160	9.697		

pK_{a1} = 5.090

Table AD130. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH= pHr + 0.285.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.778	4.478	4.165	4.960	5.868	5.108	9.556
0.298	1.818	4.502	4.247	4.972	5.976	5.114	9.589
0.646	1.867	4.526	4.325	4.984	6.108	5.126	9.647
0.906	1.906	4.544	4.382	4.998	6.316	5.150	9.746
1.212	1.957	4.564	4.443	5.006	6.491	5.162	9.789
1.508	2.008	4.584	4.504	5.008	6.572	5.172	9.822
1.814	2.066	4.602	4.556	5.012	6.716	5.192	9.880
2.094	2.125	4.618	4.604	5.014	6.819	5.214	9.937
2.360	2.186	4.632	4.643	5.016	6.948	5.248	10.009
2.622	2.255	4.642	4.672	5.018	7.131	5.280	10.071
2.796	2.306	4.650	4.695	5.020	7.353	5.314	10.127
3.102	2.409	4.656	4.713	5.024	7.888	5.360	10.192
3.368	2.518	4.664	4.737	5.028	8.217	5.430	10.275
3.536	2.604	4.680	4.779	5.032	8.457	5.506	10.348
3.732	2.726	4.702	4.842	5.034	8.568	5.580	10.410
3.932	2.892	4.726	4.910	5.036	8.647	5.650	10.462
4.022	2.992	4.748	4.972	5.040	8.768	5.734	10.514
4.102	3.101	4.772	5.044	5.044	8.870	5.834	10.570
4.174	3.223	4.780	5.067	5.046	8.920	5.944	10.623
4.224	3.329	4.802	5.137	5.050	8.999	6.070	10.676
4.280	3.473	4.810	5.164	5.052	9.035	6.228	10.733
4.334	3.641	4.830	5.232	5.056	9.096	6.402	10.789
4.342	3.668	4.842	5.273	5.064	9.201	6.562	10.832
4.348	3.690	4.862	5.348	5.068	9.248	6.722	10.873
4.368	3.762	4.884	5.434	5.074	9.307	6.910	10.914
4.388	3.837	4.892	5.472	5.078	9.345	7.130	10.957
4.406	3.904	4.910	5.556	5.084	9.395	7.288	10.986
4.428	3.985	4.928	5.651	5.088	9.426		
4.444	4.044	4.936	5.701	5.094	9.467		
4.456	4.088	4.942	5.741	5.102	9.521		

pK_{a1} = 5.099

Table AD131. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH= pHr + 0.343.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.727	4.414	3.968	4.920	5.709	5.082	9.560
0.280	1.764	4.438	4.057	4.936	5.818	5.096	9.654
0.622	1.813	4.444	4.080	4.950	5.917	5.108	9.723
0.964	1.867	4.456	4.124	4.966	6.067	5.122	9.795
1.296	1.923	4.476	4.194	4.980	6.236	5.148	9.901
1.612	1.982	4.498	4.268	4.984	6.306	5.178	9.999
1.942	2.048	4.524	4.355	4.986	6.352	5.210	10.084
2.278	2.125	4.550	4.438	4.990	6.439	5.264	10.198
2.634	2.220	4.576	4.519	4.994	6.532	5.314	10.285
2.992	2.335	4.602	4.598	4.998	6.645	5.372	10.366
3.354	2.482	4.630	4.679	5.002	6.812	5.440	10.446
3.722	2.697	4.656	4.757	5.006	6.995	5.612	10.594
3.814	2.768	4.680	4.827	5.010	7.358	5.772	10.697
3.908	2.854	4.708	4.907	5.014	7.846	5.912	10.771
4.000	2.955	4.734	4.982	5.016	8.093	6.098	10.852
4.070	3.048	4.760	5.063	5.020	8.384	6.244	10.904
4.128	3.141	4.788	5.152	5.024	8.593	6.392	10.953
4.162	3.204	4.800	5.194	5.028	8.742	6.546	10.997
4.240	3.380	4.820	5.261	5.030	8.820		
4.276	3.480	4.838	5.327	5.034	8.938		
4.302	3.561	4.852	5.380	5.038	9.033		
4.314	3.602	4.866	5.439	5.042	9.113		
4.340	3.691	4.878	5.492	5.046	9.180		
4.364	3.779	4.893	5.557	5.060	9.359		
4.388	3.867	4.906	5.628	5.070	9.460		

$pK_{a1} = 5.166$

Table AD132. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH= pHr + 0.483.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.579	4.468	4.055	4.996	6.231	5.302	10.033
0.272	1.617	4.480	4.102	4.998	6.272	5.338	10.087
0.586	1.661	4.492	4.146	5.006	6.423	5.372	10.132
0.910	1.710	4.512	4.218	5.012	6.597	5.404	10.170
1.232	1.761	4.526	4.267	5.016	6.751	5.438	10.206
1.568	1.821	4.552	4.353	5.018	6.896	5.516	10.279
1.872	1.879	4.572	4.416	5.022	7.169	5.612	10.354
2.164	1.942	4.600	4.503	5.024	7.468	5.706	10.415
2.462	2.014	4.624	4.575	5.026	7.807	5.784	10.460
2.740	2.090	4.644	4.636	5.030	8.172	5.864	10.501
3.020	2.179	4.658	4.677	5.034	8.424	5.938	10.537
3.320	2.297	4.672	4.716	5.038	8.610	6.058	10.587
3.458	2.364	4.684	4.750	5.040	8.689	6.176	10.631
3.604	2.446	4.696	4.786	5.042	8.760	6.304	10.674
3.744	2.537	4.718	4.850	5.044	8.818	6.460	10.719
3.892	2.659	4.730	4.886	5.046	8.870	6.628	10.763
3.972	2.739	4.748	4.938	5.048	8.914	6.862	10.816
4.052	2.837	4.768	4.998	5.052	8.986	7.024	10.849
4.088	2.889	4.780	5.036	5.054	9.024	7.188	10.880
4.148	2.987	4.806	5.118	5.058	9.082	7.362	10.910
4.182	3.056	4.836	5.219	5.060	9.111	7.538	10.937
4.206	3.109	4.856	5.292	5.062	9.138	7.692	10.960
4.236	3.183	4.872	5.356	5.066	9.185	7.882	10.986
4.262	3.254	4.892	5.439	5.072	9.248		
4.292	3.347	4.910	5.526	5.076	9.286		
4.302	3.382	4.922	5.585	5.080	9.322		
4.314	3.425	4.934	5.651	5.082	9.339		
4.326	3.471	4.946	5.728	5.084	9.355		
4.336	3.509	4.956	5.800	5.094	9.426		
4.350	3.566	4.966	5.880	5.122	9.573		
4.372	3.657	4.976	5.971	5.150	9.684		
4.396	3.758	4.980	6.013	5.178	9.772		
4.414	3.835	4.982	6.043	5.204	9.837		
4.424	3.878	4.990	6.152	5.236	9.916		
4.444	3.960	4.994	6.209	5.270	9.980		

pK_{a1} = 5.272

Table AD133. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH= pHr + 0.544.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.526	4.384	3.735	4.848	5.322	5.068	9.365
0.242	1.559	4.394	3.779	4.862	5.378	5.074	9.422
0.562	1.604	4.406	3.831	4.890	5.495	5.078	9.455
0.904	1.657	4.418	3.882	4.916	5.618	5.086	9.520
1.226	1.709	4.430	3.932	4.926	5.683	5.096	9.588
1.524	1.763	4.442	3.982	4.938	5.762	5.108	9.659
1.812	1.820	4.456	4.038	4.948	5.830	5.118	9.708
1.978	1.856	4.474	4.106	4.962	5.943	5.130	9.760
2.308	1.931	4.484	4.148	4.974	6.065	5.140	9.803
2.604	2.009	4.492	4.179	4.986	6.208	5.150	9.839
2.934	2.112	4.500	4.210	4.988	6.245	5.194	9.970
3.126	2.182	4.516	4.265	4.990	6.284	5.224	10.042
3.366	2.286	4.538	4.340	4.996	6.394	5.252	10.101
3.604	2.414	4.554	4.395	5.002	6.525	5.300	10.186
3.736	2.504	4.568	4.441	5.006	6.648	5.372	10.286
3.850	2.595	4.586	4.497	5.014	7.026	5.422	10.346
3.928	2.670	4.598	4.535	5.016	7.248	5.480	10.405
4.002	2.755	4.612	4.577	5.018	7.519	5.626	10.523
4.088	2.875	4.632	4.635	5.020	7.813	5.762	10.609
4.140	2.964	4.662	4.724	5.024	8.198	5.900	10.682
4.194	3.075	4.698	4.833	5.028	8.453	6.024	10.738
4.226	3.155	4.710	4.870	5.032	8.648	6.150	10.788
4.256	3.240	4.718	4.896	5.036	8.789	6.270	10.830
4.284	3.328	4.734	4.945	5.038	8.865	6.384	10.866
4.318	3.452	4.748	4.987	5.042	8.967	6.518	10.904
4.326	3.486	4.766	5.042	5.046	9.052	6.640	10.938
4.340	3.545	4.778	5.082	5.050	9.130	6.810	10.977
4.350	3.588	4.794	5.132	5.052	9.162	6.952	11.008
4.368	3.666	4.816	5.204	5.056	9.225		
4.376	3.697	4.832	5.263	5.062	9.301		

pK_{a1} = 5.338

Table AD134. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH= pHr + 0.486.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.576	4.516	4.216	4.988	6.039	5.294	10.009
0.326	1.621	4.526	4.250	5.000	6.188	5.326	10.060
0.696	1.673	4.536	4.286	5.005	6.235	5.406	10.165
0.994	1.719	4.550	4.333	5.006	6.304	5.484	10.247
1.316	1.773	4.564	4.378	5.008	6.347	5.558	10.312
1.644	1.832	4.578	4.424	5.010	6.392	5.638	10.373
1.946	1.892	4.590	4.463	5.016	6.539	5.722	10.428
2.262	1.961	4.602	4.499	5.020	6.673	5.808	10.479
2.610	2.049	4.612	4.530	5.024	6.851	5.986	10.563
2.942	2.151	4.622	4.560	5.028	7.148	6.170	10.634
3.122	2.216	4.634	4.597	5.032	7.565	6.334	10.690
3.284	2.281	4.646	4.631	5.034	7.855	6.572	10.755
3.450	2.358	4.658	4.667	5.036	8.040	6.728	10.795
3.590	2.434	4.674	4.714	5.038	8.183	6.912	10.835
3.724	2.520	4.686	4.749	5.042	8.384	7.074	10.869
3.882	2.646	4.698	4.784	5.046	8.549	7.248	10.899
4.044	2.821	4.720	4.848	5.050	8.685	7.610	10.956
4.146	2.976	4.748	4.932	5.052	8.751		
4.196	3.074	4.760	4.967	5.056	8.846		
4.230	3.154	4.770	4.999	5.060	8.926		
4.258	3.227	4.782	5.036	5.062	8.968		
4.292	3.328	4.812	5.130	5.070	9.082		
4.326	3.447	4.830	5.193	5.074	9.136		
4.336	3.486	4.840	5.226	5.076	9.166		
4.360	3.582	4.852	5.267	5.078	9.187		
4.370	3.624	4.862	5.306	5.082	9.232		
4.380	3.667	4.876	5.359	5.086	9.269		
4.390	3.709	4.890	5.417	5.090	9.305		
4.418	3.829	4.902	5.470	5.094	9.340		
4.432	3.889	4.912	5.516	5.128	9.540		
4.452	3.972	4.922	5.566	5.154	9.656		
4.462	4.012	4.948	5.710	5.180	9.747		
4.474	4.060	4.958	5.778	5.210	9.832		
4.488	4.113	4.968	5.853	5.238	9.899		
4.502	4.165	4.978	5.930	5.266	9.958		

pK_{a1} = 5.278

Table AD135. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH= pHr + 0.714.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.346	4.472	3.874	5.008	5.987	5.166	9.625
0.346	1.392	4.484	3.928	5.014	6.057	5.176	9.665
0.730	1.446	4.496	3.979	5.020	6.140	5.196	9.734
1.058	1.497	4.508	4.031	5.028	6.268	5.220	9.804
1.346	1.545	4.522	4.086	5.034	6.393	5.248	9.872
1.642	1.597	4.532	4.126	5.042	6.618	5.278	9.935
1.980	1.665	4.544	4.171	5.048	6.927	5.308	9.990
2.318	1.740	4.556	4.215	5.050	7.121	5.338	10.039
2.644	1.823	4.566	4.250	5.054	7.623	5.402	10.127
2.964	1.922	4.578	4.292	5.056	7.835	5.446	10.178
3.260	2.031	4.588	4.326	5.058	8.058	5.472	10.206
3.560	2.175	4.598	4.360	5.060	8.233	5.502	10.237
3.860	2.379	4.610	4.399	5.062	8.370	5.530	10.264
4.162	2.746	4.634	4.476	5.064	8.473	5.612	10.331
4.254	2.950	4.660	4.556	5.066	8.569	5.726	10.409
4.266	2.985	4.690	4.646	5.070	8.711	5.844	10.475
4.278	3.020	4.714	4.718	5.074	8.811	5.956	10.529
4.290	3.047	4.740	4.796	5.078	8.898	6.066	10.577
4.304	3.105	4.764	4.867	5.082	8.977	6.190	10.624
4.340	3.242	4.788	4.941	5.086	9.043	6.326	10.670
4.354	3.302	4.816	5.028	5.090	9.099	6.462	10.710
4.366	3.358	4.844	5.120	5.094	9.150	6.586	10.745
4.376	3.405	4.870	5.213	5.096	9.177	6.820	10.800
4.390	3.473	4.898	5.320	5.100	9.221	6.980	10.835
4.404	3.543	4.926	5.439	5.104	9.259	7.116	10.862
4.416	3.604	4.954	5.579	5.108	9.297	7.442	10.916
4.428	3.663	4.982	5.752	5.112	9.332	7.688	10.954
4.440	3.718	4.986	5.787	5.120	9.391	7.818	10.972
4.450	3.763	4.994	5.856	5.126	9.430		
4.462	3.827	5.000	5.907	5.132	9.466		

pK_{a1} = 5.451

Table AD136. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH= pHr + 0.722.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.344	4.490	4.061	4.944	5.660	5.136	9.582
0.280	1.387	4.502	4.108	4.956	5.739	5.144	9.619
0.546	1.424	4.514	4.154	4.978	5.899	5.154	9.658
0.844	1.469	4.524	4.192	4.988	6.002	5.168	9.702
1.024	1.498	4.536	4.237	4.998	6.133	5.176	9.735
1.394	1.561	4.546	4.272	5.010	6.297	5.212	9.832
1.726	1.623	4.554	4.301	5.020	6.534	5.244	9.906
2.026	1.685	4.564	4.336	5.022	6.636	5.278	9.972
2.342	1.758	4.576	4.376	5.026	6.809	5.316	10.037
2.646	1.839	4.586	4.408	5.028	6.971	5.372	10.116
2.954	1.934	4.600	4.454	5.032	7.349	5.442	10.194
3.280	2.058	4.612	4.492	5.036	7.779	5.530	10.279
3.588	2.231	4.624	4.528	5.038	8.065	5.616	10.347
3.896	2.441	4.634	4.560	5.042	8.328	5.722	10.418
3.992	2.542	4.658	4.634	5.044	8.442	5.838	10.483
4.072	2.645	4.682	4.705	5.048	8.607	5.964	10.543
4.136	2.750	4.714	4.799	5.052	8.721	6.088	10.594
4.184	2.845	4.738	4.871	5.056	8.829	6.246	10.651
4.216	2.921	4.750	4.907	5.060	8.919	6.438	10.710
4.248	3.008	4.764	4.952	5.064	8.990	6.692	10.775
4.280	3.110	4.776	4.990	5.068	9.057	6.876	10.817
4.312	3.231	4.796	5.052	5.072	9.113	7.052	10.853
4.348	3.389	4.810	5.096	5.074	9.145	7.382	10.911
4.382	3.556	4.822	5.137	5.076	9.171	7.674	10.956
4.420	3.745	4.848	5.225	5.084	9.250	7.840	10.980
4.428	3.785	4.866	5.294	5.090	9.304		
4.444	3.861	4.882	5.359	5.098	9.367		
4.454	3.908	4.896	5.415	5.106	9.421		
4.466	3.960	4.908	5.467	5.112	9.458		
4.478	4.010	4.922	5.534	5.126	9.533		

pK_{a1} = 5.484

Table AD137. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH= pHr + 1.094.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.964	4.442	3.613	4.904	5.337	5.128	9.370
0.310	1.006	4.448	3.647	4.914	5.380	5.132	9.393
0.606	1.048	4.454	3.682	4.928	5.444	5.140	9.436
0.920	1.093	4.460	3.717	4.942	5.512	5.150	9.484
1.074	1.116	4.466	3.753	4.954	5.578	5.162	9.536
1.218	1.140	4.474	3.796	4.964	5.635	5.168	9.561
1.372	1.166	4.504	3.933	4.978	5.729	5.180	9.605
1.522	1.193	4.534	4.052	4.998	5.886	5.192	9.645
1.780	1.242	4.562	4.165	5.012	6.031	5.204	9.681
2.066	1.300	4.570	4.205	5.018	6.120	5.212	9.706
2.322	1.357	4.578	4.237	5.022	6.193	5.218	9.722
2.630	1.436	4.590	4.384	5.024	6.235	5.254	9.806
2.772	1.477	4.598	4.307	5.026	6.276	5.290	9.878
3.048	1.565	4.606	4.337	5.028	6.325	5.316	9.921
3.326	1.674	4.614	4.364	5.030	6.377	5.346	9.967
3.628	1.827	4.624	4.396	5.034	6.467	5.376	10.010
3.912	2.036	4.632	4.425	4.036	6.539	5.412	10.055
4.048	2.185	4.638	4.444	5.038	6.614	5.484	10.130
4.120	2.287	4.646	4.471	5.040	6.694	5.550	10.191
4.182	2.399	4.654	4.496	5.044	6.905	5.594	10.227
4.190	2.419	4.662	4.522	5.048	7.222	5.660	10.274
4.262	2.598	4.672	4.554	5.052	7.625	5.722	10.315
4.312	2.778	4.680	4.578	5.054	7.877	5.788	10.354
4.320	2.816	4.688	4.605	5.058	8.158	5.842	10.384
4.326	2.846	4.696	4.628	5.060	8.281	5.900	10.414
4.332	2.884	4.704	4.662	5.062	8.386	5.938	10.432
4.338	2.916	4.714	4.686	5.064	8.476	6.008	10.463
4.344	2.950	4.722	4.712	5.068	8.594	6.064	10.487
4.350	2.984	4.730	4.737	5.072	8.702	6.140	10.516
4.356	3.021	4.738	4.763	5.076	8.789	6.212	10.542
4.362	3.057	4.748	4.793	5.080	8.867	6.282	10.566
4.370	3.110	4.762	4.837	5.084	8.935	6.348	10.586
4.376	3.150	4.776	4.882	5.086	8.972	6.418	10.608
4.382	3.193	4.790	4.927	5.090	9.026	6.468	10.623
4.388	3.238	4.804	4.972	5.092	9.054	6.536	10.642
4.394	3.280	4.814	5.006	5.094	9.085	6.612	10.662
4.400	3.320	4.826	5.046	5.098	9.128	6.666	10.675
4.406	3.367	4.840	5.093	5.104	9.185	6.854	10.717
4.412	3.409	4.856	5.149	5.108	9.223	7.142	10.773
4.418	3.453	4.864	5.178	5.110	9.241	7.268	10.796
4.424	3.495	4.874	5.216	5.114	9.273	7.428	10.823
4.430	3.536	4.884	5.254	5.118	9.304	7.544	10.841
4.436	3.576	4.896	5.302	5.122	9.330	7.726	10.866

pK_{a1} = 5.846

Table AD138. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH= pHr + 1.073.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.978	4.620	4.408	5.018	6.208	5.354	9.982
0.308	1.018	4.632	4.445	5.022	6.296	5.412	10.057
0.618	1.061	4.648	4.497	5.026	6.384	5.476	10.123
0.770	1.083	4.660	4.531	5.030	6.493	5.532	10.176
1.106	1.134	4.666	4.556	5.032	6.571	5.586	10.222
1.288	1.165	4.674	4.580	5.036	6.721	5.636	10.257
1.472	1.196	4.682	4.606	5.038	6.826	5.760	10.338
1.630	1.226	4.690	4.630	5.042	7.053	5.890	10.407
1.992	1.296	4.702	4.669	5.044	7.333	6.016	10.463
2.158	1.332	4.712	4.699	5.048	7.653	6.114	10.502
2.336	1.373	4.722	4.733	5.052	7.979	6.220	10.546
2.638	1.451	4.732	4.763	5.056	8.254	6.332	10.583
2.942	1.541	4.742	4.792	5.060	8.438	6.444	10.616
3.026	1.636	4.756	4.835	5.064	8.561	6.588	10.653
3.352	1.698	4.770	4.876	5.068	8.676	6.722	10.686
3.514	1.788	4.778	4.902	5.072	8.777	6.898	10.725
3.686	1.878	4.786	4.930	5.074	8.830	7.086	10.762
3.818	1.972	4.796	4.963	5.076	8.876	7.260	10.793
3.948	2.088	4.808	5.002	5.078	8.913	7.400	10.816
4.092	2.266	4.814	5.021	5.080	8.950	7.596	10.846
4.242	2.573	4.824	5.057	5.084	9.004	7.758	10.870
4.320	2.877	4.832	5.085	5.088	9.051	7.922	10.893
4.364	3.115	4.842	5.119	5.092	9.101	8.086	10.913
4.412	3.484	4.850	5.147	5.098	9.160	8.270	10.934
4.448	3.670	4.858	5.177	5.102	9.197	8.452	10.954
4.454	3.710	4.866	5.206	5.106	9.230	8.640	10.975
4.460	3.746	4.874	5.237	5.116	9.306		
4.466	3.779	4.880	5.259	5.126	9.369		
4.474	3.824	4.886	5.287	5.134	9.414		
4.484	3.869	4.896	5.325	5.142	9.457		
4.494	3.917	4.910	5.384	5.152	9.503		
4.506	3.974	4.920	5.433	5.164	9.554		
4.516	4.011	4.932	5.487	5.172	9.587		
4.524	4.050	4.942	5.543	5.180	9.615		
4.532	4.086	4.952	5.600	5.190	9.649		
4.538	4.111	4.964	5.669	5.200	9.680		
4.550	4.156	4.972	5.729	5.208	9.703		
4.560	4.201	4.980	5.784	5.220	9.735		
4.570	4.236	4.988	5.855	5.230	9.761		
4.584	4.287	4.990	5.880	5.238	9.781		
4.590	4.306	4.998	5.948	5.246	9.798		
4.596	4.328	5.004	6.025	5.254	9.816		
4.604	4.355	5.012	6.116	5.300	9.899		

$pK_{a1} = 5.801$

Table AD139. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH= pHr + 1.116.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.938	4.490	3.456	4.852	4.877	5.154	8.777
0.312	0.983	4.498	3.507	4.860	4.903	5.158	8.861
0.642	1.030	4.506	3.558	4.872	4.940	5.160	8.916
0.920	1.073	4.512	3.593	4.884	4.978	5.164	8.981
1.188	1.115	4.518	3.633	4.892	5.006	5.166	9.017
1.494	1.169	4.522	3.658	4.902	5.039	5.170	9.067
1.790	1.225	4.528	3.688	4.910	5.067	5.172	9.100
2.052	1.278	4.534	3.726	4.918	5.095	5.174	9.123
2.180	1.303	4.540	3.759	4.930	5.136	5.178	9.165
2.440	1.365	4.546	3.790	4.940	5.172	5.184	9.219
2.698	1.433	4.552	3.821	4.950	5.210	5.188	9.255
2.972	1.515	4.558	3.852	4.964	5.261	5.194	9.301
3.216	1.600	4.564	3.881	4.976	5.303	5.200	9.342
3.366	1.661	4.570	3.910	4.982	5.325	5.204	9.370
3.506	1.726	4.576	3.937	4.994	5.387	5.208	9.394
3.574	1.760	4.582	3.965	5.002	5.427	5.212	9.419
3.640	1.796	4.588	3.991	5.010	5.461	5.216	9.441
3.726	1.848	4.592	4.008	5.018	5.505	5.224	9.481
3.822	1.913	4.598	4.034	5.028	5.557	5.232	9.517
3.978	2.041	4.604	4.057	5.038	5.600	5.238	9.544
4.050	2.113	4.610	4.076	5.042	5.642	5.246	9.576
4.116	2.192	4.618	4.111	5.044	5.658	5.256	9.614
4.170	2.267	4.626	4.139	5.048	5.683	5.262	9.636
4.228	2.366	4.634	4.172	5.054	5.722	5.270	9.662
4.278	2.465	4.640	4.195	5.062	5.780	5.278	9.686
4.282	2.480	4.646	4.217	5.068	5.830	5.286	9.708
4.288	2.494	4.660	4.268	5.074	5.881	5.294	9.731
4.336	2.629	4.670	4.301	5.082	5.952	5.302	9.751
4.362	2.718	4.682	4.345	5.088	6.016	5.310	9.771
4.390	2.834	4.692	4.376	5.092	6.073	5.354	9.864
4.396	2.863	4.700	4.403	5.098	6.151	5.384	9.918
4.404	2.902	4.712	4.444	5.104	6.242	5.412	9.961
4.410	2.935	4.728	4.493	5.110	6.375	5.444	10.006
4.418	2.980	4.738	4.525	5.118	6.580	5.480	10.053
4.426	3.028	4.758	4.585	5.124	6.841	5.626	10.197
4.434	3.077	4.768	4.616	5.128	7.156	5.712	10.263
4.440	3.115	4.780	4.656	5.132	7.577	5.784	10.312
4.448	3.168	4.788	4.681	5.136	7.962	5.862	10.357
4.454	3.219	4.798	4.712	5.138	8.159	5.948	10.402
4.462	3.264	4.808	4.742	5.140	8.278	6.028	10.439
4.470	3.320	4.818	4.773	5.144	8.451	6.102	10.470
4.478	3.376	4.830	4.810	5.148	8.599	6.188	10.542
4.484	3.415	4.842	4.846	5.152	8.716	6.270	10.565

Table AD139. Continued.

NaOH, mL	pHr
6.520	10.614
6.684	10.657
6.846	10.695
7.002	10.729
7.200	10.766
7.366	10.795
7.558	10.825
7.704	10.846
7.920	10.876
8.094	10.898
8.262	10.918
8.438	10.938
8.652	10.962

$pK_{a1} = 5.840$

Table AD140. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH= pHr + 1.118.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.947	4.466	3.667	4.806	4.952	5.096	8.956
0.338	0.994	4.470	3.690	4.816	4.986	5.098	8.997
0.660	1.043	4.474	3.713	4.824	5.011	5.100	9.027
0.974	1.090	4.478	3.737	4.832	5.038	5.104	9.081
1.266	1.138	4.482	3.758	4.840	5.065	5.108	9.128
1.558	1.190	4.490	3.801	4.850	5.100	5.110	9.154
1.730	1.224	4.496	3.832	4.860	5.136	5.114	9.194
2.034	1.286	4.502	3.863	4.872	5.178	5.118	9.233
2.342	1.355	4.508	3.893	4.884	5.223	5.122	9.269
2.654	1.439	4.514	3.921	4.898	5.278	5.124	9.286
2.960	1.532	4.520	3.947	4.908	5.323	5.128	9.318
3.128	1.592	4.528	3.985	4.918	5.365	5.132	9.349
3.444	1.727	4.536	4.019	4.928	5.411	5.136	9.377
3.584	1.801	4.542	4.046	4.940	5.467	5.140	9.404
3.662	1.848	4.552	4.087	4.950	5.517	5.144	9.429
3.760	1.912	4.560	4.120	4.962	5.582	5.148	9.451
3.848	1.981	4.572	4.166	4.972	5.642	5.152	9.476
3.944	2.067	4.580	4.196	4.982	5.708	5.154	9.487
4.058	2.197	4.588	4.229	4.992	5.777	5.158	9.507
4.118	2.282	4.598	4.265	4.998	5.829	5.162	9.528
4.128	2.297	4.606	4.294	5.006	5.890	5.166	9.547
4.138	2.314	4.614	4.323	5.012	5.961	5.182	9.613
4.150	2.335	4.622	4.352	5.018	6.023	5.194	9.658
4.172	2.375	4.628	4.374	5.024	6.104	5.208	9.704
4.190	2.431	4.634	4.394	5.030	6.192	5.222	9.747
4.214	2.460	4.644	4.427	5.036	6.304	5.236	9.785
4.236	2.513	4.652	4.453	5.040	6.407	5.250	9.821
4.252	2.554	4.658	4.475	5.042	6.454	5.264	9.854
4.276	2.624	4.666	4.501	5.044	6.510	5.278	9.885
4.286	2.656	4.674	4.528	5.048	6.629	5.292	9.914
4.304	2.719	4.680	4.547	5.050	6.720	5.304	9.936
4.316	2.765	4.692	4.587	5.052	6.811	5.320	9.966
4.338	2.861	4.698	4.605	5.054	6.936	5.334	9.989
4.358	2.963	4.704	4.626	5.058	7.195	5.344	10.006
4.376	3.067	4.714	4.658	5.062	7.599	5.356	10.023
4.398	3.212	4.724	4.689	5.066	7.945	5.374	10.051
4.408	3.280	4.736	4.726	5.068	8.130	5.434	10.126
4.418	3.351	4.742	4.746	5.072	8.326	5.494	10.188
4.428	3.422	4.752	4.778	5.076	8.487	5.550	10.243
4.438	3.489	4.764	4.816	5.080	8.606	5.606	10.288
4.448	3.554	4.778	4.860	5.084	8.714	5.666	10.334
4.458	3.618	4.788	4.892	5.088	8.807	5.748	10.386
4.460	3.629	4.796	4.920	5.092	8.884	5.816	10.427

Table AD140. Continued.

NaOH, mL	pHr
5.904	10.474
5.982	10.510
6.040	10.536
6.168	10.586
6.322	10.638
6.464	10.680
6.630	10.724
6.774	10.759
6.906	10.788
7.042	10.816
7.192	10.844
7.316	10.867
7.458	10.890
7.592	10.911
7.726	10.930
7.840	10.946
7.998	10.967
8.152	10.987

$pK_{a1} = 5.866$

Table AD141. Potentiometric Titration Data for the pK_a Values of 1,10-Phenanthroline in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol 1,10-Phenanthroline, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH= pHr + 1.056.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.009	4.500	3.915	4.916	5.368	5.148	9.402
0.290	1.051	4.510	3.962	4.924	5.403	5.154	9.433
0.630	1.100	4.518	3.999	4.932	5.438	5.160	9.462
0.970	1.154	4.526	4.035	4.944	5.495	5.166	9.490
1.326	1.212	4.536	4.076	4.962	5.582	5.172	9.514
1.656	1.273	4.546	4.116	4.972	5.649	5.178	9.539
1.990	1.339	4.552	4.137	4.982	5.711	5.192	9.588
2.304	1.410	4.560	4.171	4.992	5.784	5.204	9.634
2.654	1.500	4.570	4.208	5.002	5.863	5.216	9.665
2.990	1.601	4.578	4.235	5.012	5.955	5.228	9.699
3.316	1.729	4.588	4.279	5.018	6.024	5.242	9.736
3.502	1.817	4.594	4.299	5.026	6.120	5.266	9.789
3.676	1.913	4.602	4.325	5.034	6.260	5.290	9.837
3.816	2.013	4.610	4.354	5.038	6.346	5.306	9.869
3.962	2.145	4.618	4.380	5.042	6.438	5.322	9.896
4.058	2.255	4.626	4.408	5.046	6.539	5.336	9.922
4.174	2.435	4.634	4.435	5.050	6.697	5.350	9.941
4.214	2.518	4.644	4.464	5.054	6.876	5.366	9.965
4.244	2.601	4.652	4.493	5.058	7.128	5.418	10.031
4.252	2.617	4.660	4.501	5.060	7.378	5.478	10.098
4.270	2.672	4.666	4.538	5.064	7.667	5.534	10.149
4.290	2.737	4.672	4.556	5.066	7.937	5.576	10.185
4.300	2.778	4.680	4.579	5.068	8.120	5.634	10.229
4.310	2.812	4.688	4.603	5.072	8.291	5.678	10.261
4.324	2.884	4.698	4.636	5.074	8.431	5.734	10.296
4.336	2.935	4.714	4.690	5.078	8.558	5.844	10.360
4.352	3.022	4.728	4.727	5.082	8.661	6.006	10.432
4.362	3.086	4.738	4.760	5.084	8.727	6.106	10.473
4.370	3.122	4.748	4.792	5.088	8.802	6.220	10.515
4.380	3.184	4.756	4.814	5.090	8.851	6.328	10.550
4.390	3.280	4.764	4.839	5.094	8.912	6.464	10.590
4.398	3.307	4.774	4.871	5.096	8.953	6.586	10.622
4.406	3.356	4.786	4.906	5.098	8.985	6.704	10.652
4.416	3.424	4.796	4.939	5.104	9.054	6.818	10.676
4.426	3.497	4.804	4.964	5.108	9.101	6.960	10.707
4.436	3.553	4.816	5.011	5.112	9.144	7.138	10.740
4.444	3.603	4.824	5.038	5.116	9.181	7.342	10.776
4.454	3.667	4.842	5.086	5.118	9.203		
4.462	3.716	4.858	5.143	5.122	9.234		
4.470	3.762	4.868	5.177	5.124	9.250		
4.476	3.792	4.876	5.211	5.132	9.305		
4.482	3.823	4.890	5.261	5.136	9.331		
4.490	3.868	4.904	5.318	5.140	9.357		

pK_{a1} = 5.732

Table AD142. Potentiometric Titration Data for the pK_a Values of TTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH =pHr - 0.037.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.014	4.784	3.490	5.180	5.003	5.368	6.335
0.210	2.041	4.836	3.574	5.184	5.032	5.372	6.358
0.376	2.062	4.884	3.667	5.195	5.078	5.376	6.409
0.550	2.083	4.932	3.775	5.194	5.110	5.382	6.429
0.718	2.108	4.942	3.803	5.200	5.158	5.388	6.464
0.864	2.128	4.952	3.832	5.204	5.191	5.396	6.494
1.028	2.151	4.960	3.857	5.208	5.224	5.400	6.525
1.312	2.193	4.970	3.890	5.212	5.258	5.402	6.538
1.456	2.216	4.980	3.924	5.220	5.323	5.408	6.588
1.618	2.241	4.988	3.950	5.226	5.370	5.412	6.629
1.764	2.266	4.998	3.988	5.228	5.385	5.416	6.666
1.910	2.291	5.006	4.019	5.234	5.435	5.422	6.737
2.056	2.317	5.014	4.051	5.240	5.487	5.432	6.772
2.214	2.347	5.022	4.084	5.244	5.514	5.444	6.843
2.358	2.375	5.030	4.119	5.250	5.567	5.452	7.003
2.504	2.405	5.038	4.153	5.252	5.578	5.456	7.123
2.646	2.435	5.046	4.190	5.256	5.613	5.464	7.249
2.790	2.469	5.056	4.239	5.260	5.641	5.472	7.415
2.932	2.503	5.068	4.299	5.264	5.670	5.482	7.560
3.058	2.535	5.070	4.308	5.268	5.698	5.488	7.595
3.186	2.569	5.072	4.317	5.270	5.710	5.492	7.680
3.320	2.608	5.078	4.350	5.276	5.762	5.498	7.953
3.470	2.655	5.086	4.394	5.282	5.804	5.500	8.135
3.624	2.708	5.092	4.428	5.284	5.817	5.512	8.405
3.752	2.757	5.094	4.440	5.292	5.867	5.516	8.569
3.896	2.818	5.098	4.462	5.300	5.926	5.520	8.724
3.986	2.858	5.102	4.485	5.302	5.931	5.526	8.936
4.070	2.899	5.108	4.521	5.306	5.955	5.532	9.107
4.158	2.948	5.112	4.544	5.310	5.978	5.538	9.258
4.218	2.981	5.120	4.594	5.314	6.010	5.546	9.403
4.274	3.015	5.128	4.646	5.320	6.053	5.550	9.472
4.330	3.050	5.134	4.685	5.324	6.071	5.554	9.530
4.384	3.087	5.138	4.709	5.328	6.097	5.562	9.620
4.430	3.121	5.146	4.762	5.332	6.124	5.566	9.665
4.474	3.155	5.148	4.774	5.336	6.150	5.572	9.718
4.522	3.194	5.154	4.817	5.340	6.176	5.576	9.753
4.576	3.242	5.158	4.842	5.346	6.208	5.580	9.783
4.626	3.292	5.166	4.899	5.352	6.244	5.584	9.812
4.684	3.357	5.172	4.944	5.356	6.261	5.588	9.840
4.736	3.422	5.176	4.973	5.362	6.311	5.596	9.888

Table AD142. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.604	9.933	6.138	10.791
5.612	9.974	6.188	10.825
5.620	10.010	6.240	10.852
5.628	10.043	6.288	10.882
5.636	10.074	6.340	10.913
5.668	10.179	6.398	10.939
5.698	10.260	6.444	10.960
5.728	10.327	6.500	10.984
5.754	10.379	6.546	11.003
5.778	10.420		
5.802	10.458		
5.832	10.503		
5.858	10.538		
5.882	10.566		
5.914	10.602		
5.946	10.640		
5.980	10.666		
6.028	10.710		
6.056	10.729		
6.090	10.758		

$pK_{a1} = 6.23$

Table AD143. Potentiometric Titration Data for the pK_a Values of TTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.009.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.006	4.744	3.478	5.128	4.952	5.354	6.420
0.170	2.027	4.772	3.524	5.134	4.996	5.360	6.461
0.364	2.052	4.778	3.535	5.140	5.042	5.366	6.480
0.532	2.073	4.788	3.553	5.146	5.089	5.372	6.505
0.700	2.096	4.812	3.598	5.152	5.134	5.380	6.562
0.858	2.118	4.832	3.639	5.158	5.180	5.386	6.608
1.016	2.140	4.852	3.683	5.164	5.229	5.394	6.653
1.168	2.162	4.878	3.748	5.168	5.259	5.400	6.696
1.310	2.185	4.906	3.823	5.174	5.308	5.406	6.732
1.474	2.210	4.926	3.892	5.178	5.336	5.412	6.778
1.636	2.235	4.936	3.918	5.186	5.398	5.418	6.814
1.804	2.264	4.942	3.940	5.192	5.444	5.424	6.876
1.962	2.292	4.950	3.971	5.198	5.489	5.428	6.897
2.104	2.317	4.958	4.001	5.204	5.533	5.436	7.066
2.254	2.346	4.966	4.032	5.210	5.578	5.448	7.155
2.394	2.374	4.974	4.065	5.216	5.621	5.456	7.386
2.534	2.403	4.982	4.099	5.222	5.662	5.460	7.426
2.676	2.435	4.988	4.126	5.228	5.705	5.466	7.494
2.826	2.469	4.994	4.155	5.232	5.734	5.472	7.574
2.970	2.505	5.002	4.192	5.236	5.761	5.478	7.688
3.094	2.537	5.008	4.222	5.240	5.784	5.484	7.851
3.226	2.573	5.014	4.252	5.244	5.810	5.490	8.007
3.332	2.605	5.022	4.293	5.250	5.840	5.496	8.152
3.464	2.646	5.028	4.326	5.258	5.889	5.500	8.228
3.570	2.682	5.034	4.358	5.264	5.924	5.506	8.415
3.680	2.722	5.040	4.391	5.270	5.958	5.510	8.506
3.786	2.764	5.048	4.435	5.276	6.001	5.516	8.700
3.898	2.810	5.056	4.482	5.282	6.035	5.522	8.852
4.014	2.866	5.062	4.516	5.288	6.061	5.526	8.956
4.116	2.919	5.068	4.553	5.292	6.083	5.532	9.106
4.232	2.987	5.074	4.589	5.296	6.101	5.538	9.249
4.342	3.062	5.080	4.626	5.300	6.122	5.544	9.356
4.402	3.107	5.086	4.666	5.306	6.161	5.550	9.447
4.446	3.142	5.092	4.703	5.312	6.191	5.554	9.501
4.502	3.191	5.098	4.742	5.318	6.232	5.562	9.592
4.560	3.247	5.104	4.783	5.322	6.258	5.566	9.631
4.614	3.305	5.108	4.812	5.328	6.275	5.570	9.669
4.668	3.371	5.114	4.853	5.334	6.312	5.576	9.718
4.696	3.408	5.118	4.881	5.342	6.348	5.582	9.768
4.720	3.442	5.122	4.909	5.348	6.384	5.588	9.808

Table AD143. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.594	9.847	6.018	10.689
5.600	9.882	6.066	10.729
5.608	9.925	6.120	10.767
5.614	9.956	6.168	10.801
5.620	9.984	6.214	10.829
5.626	10.011	6.268	10.859
5.632	10.036	6.326	10.891
5.638	10.059	6.382	10.920
5.644	10.082	6.436	10.945
5.710	10.268	6.486	10.966
5.736	10.326	6.532	10.988
5.762	10.377	6.586	11.008
5.790	10.424		
5.820	10.469		
5.850	10.511		
5.878	10.546		
5.908	10.581		
5.936	10.610		
5.964	10.638		
5.992	10.664		

$pK_{a1} = 6.26$

Table AD144. Potentiometric Titration Data for the pK_a Values of TTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.053.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.965	4.582	3.232	5.170	5.094	5.340	6.301
0.144	1.983	4.614	3.265	5.174	5.125	5.344	6.330
0.294	2.003	4.650	3.305	5.178	5.158	5.348	6.338
0.534	2.034	4.680	3.341	5.184	5.207	5.352	6.385
0.698	2.056	4.710	3.379	5.188	5.239	5.358	6.412
0.842	2.076	4.747	3.424	5.192	5.272	5.364	6.452
0.982	2.096	4.776	3.468	5.196	5.309	5.368	6.470
1.144	2.121	4.815	3.569	5.202	5.358	5.372	6.479
1.302	2.145	4.858	3.630	5.206	5.389	5.376	6.503
1.482	2.173	4.870	3.658	5.212	5.438	5.380	6.544
1.638	2.200	4.884	3.691	5.216	5.470	5.386	6.587
1.814	2.230	4.900	3.732	5.218	5.485	5.390	6.613
1.954	2.254	4.914	3.769	5.222	5.522	5.394	6.637
2.092	2.280	4.926	3.803	5.226	5.551	5.400	6.665
2.254	2.312	4.938	3.838	5.230	5.580	5.404	6.689
2.404	2.342	4.950	3.876	5.234	5.618	5.410	6.743
2.548	2.373	4.962	3.918	5.238	5.650	5.416	6.810
2.692	2.405	4.974	3.961	5.242	5.684	5.420	6.843
2.830	2.438	4.988	4.017	5.246	5.712	5.424	6.860
2.964	2.472	5.002	4.076	5.250	5.739	5.428	6.887
3.100	2.508	5.014	4.128	5.252	5.746	5.434	6.902
3.272	2.557	5.024	4.174	5.256	5.780	5.442	7.019
3.372	2.588	5.036	4.233	5.262	5.814	5.448	7.165
3.466	2.618	5.048	4.294	5.268	5.863	5.454	7.234
3.566	2.652	5.058	4.348	5.272	5.888	5.460	7.357
3.662	2.689	5.070	4.416	5.278	5.955	5.466	7.492
3.764	2.727	5.084	4.498	5.282	5.970	5.474	7.687
3.864	2.770	5.096	4.569	5.284	5.982	5.480	7.838
3.956	2.812	5.108	4.648	5.290	6.001	5.486	7.921
4.044	2.856	5.120	4.727	5.294	6.023	5.494	8.208
4.110	2.890	5.124	4.754	5.300	6.066	5.500	8.352
4.174	2.925	5.128	4.781	5.306	6.094	5.504	8.409
4.238	2.964	5.132	4.809	5.310	6.138	5.510	8.610
4.306	3.008	5.138	4.850	5.314	6.155	5.514	8.709
4.372	3.054	5.142	4.881	5.318	6.167	5.520	8.895
4.428	3.096	5.146	4.911	5.320	6.175	5.524	9.011
4.474	3.134	5.150	4.941	5.324	6.201	5.528	9.117
4.502	3.158	5.154	4.970	5.328	6.225	5.532	9.227
4.528	3.181	5.156	4.987	5.332	6.256	5.538	9.360
4.552	3.203	5.162	5.032	5.336	6.278	5.544	9.466

Table AD144. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.548	9.541	5.802	10.555
5.554	9.625	5.856	10.630
5.558	9.675	5.898	10.680
5.564	9.739	5.948	10.734
5.568	9.779	6.000	10.783
5.574	9.832	6.040	10.817
5.578	9.864	6.084	10.851
5.584	9.908	6.142	10.895
5.590	9.947	6.192	10.926
5.594	9.974	6.234	10.952
5.600	10.009	6.298	10.987
5.604	10.031	6.358	11.018
5.610	10.062		
5.616	10.090		
5.622	10.116		
5.630	10.151		
5.664	10.266		
5.698	10.358		
5.732	10.434		
5.768	10.500		

$pK_{a1} = 6.26$

Table AD145. Potentiometric Titration Data for the pK_a Values of TTA in 0.10 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.07 m NaCl, pcH = pHr + 0.025.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.984	4.664	3.314	5.106	4.510	5.416	6.521
0.156	2.004	4.698	3.355	5.112	4.544	5.428	6.593
0.306	2.024	4.726	3.391	5.118	4.579	5.436	6.643
0.464	2.044	4.750	3.425	5.124	4.618	5.450	6.747
0.600	2.063	4.774	3.459	5.130	4.655	5.462	6.842
0.746	2.080	4.806	3.511	5.136	4.690	5.472	6.932
0.908	2.105	4.812	3.520	5.142	4.729	5.488	7.098
1.022	2.120	4.822	3.537	5.148	4.769	5.500	7.264
1.174	2.143	4.828	3.549	5.154	4.810	5.508	7.402
1.316	2.165	4.836	3.564	5.158	4.837	5.518	7.620
1.452	2.185	4.850	3.591	5.164	4.879	5.528	7.962
1.574	2.206	4.858	3.606	5.170	4.920	5.540	8.494
1.706	2.227	4.866	3.622	5.176	4.963	5.546	8.739
1.842	2.250	4.876	3.643	5.182	5.007	5.554	8.956
1.982	2.274	4.882	3.656	5.190	5.068	5.564	9.120
2.104	2.297	4.894	3.683	5.196	5.112	5.574	9.258
2.230	2.319	4.904	3.706	5.202	5.161	5.582	9.367
2.344	2.342	4.910	3.720	5.208	5.203	5.594	9.503
2.480	2.371	4.920	3.746	5.212	5.232	5.604	9.612
2.604	2.397	4.928	3.766	5.218	5.282	5.618	9.730
2.732	2.426	4.940	3.799	5.224	5.323	5.630	9.816
2.866	2.457	4.946	3.816	5.230	5.371	5.642	9.889
2.984	2.487	4.958	3.853	5.236	5.417	5.654	9.952
3.094	2.516	4.964	3.872	5.242	5.462	5.666	10.006
3.198	2.543	4.974	3.903	5.248	5.507	5.678	10.054
3.336	2.584	4.980	3.924	5.258	5.578	5.688	10.092
3.450	2.619	4.988	3.951	5.264	5.619	5.702	10.137
3.554	2.654	4.996	3.982	5.272	5.675	5.712	10.168
3.632	2.681	5.002	4.003	5.280	5.729	5.726	10.207
3.722	2.715	5.008	4.026	5.286	5.765	5.740	10.243
3.790	2.741	5.014	4.051	5.290	5.793	5.754	10.277
3.862	2.772	5.020	4.075	5.298	5.841	5.766	10.303
3.956	2.813	5.026	4.100	5.304	5.877	5.780	10.332
4.036	2.852	5.032	4.125	5.312	5.927	5.872	10.483
4.110	2.890	5.040	4.162	5.322	5.988	5.932	10.559
4.200	2.939	5.048	4.200	5.330	6.036	5.994	10.624
4.300	3.000	5.054	4.229	5.340	6.090	6.052	10.677
4.384	3.060	5.060	4.258	5.350	6.146	6.098	10.715
4.456	3.116	5.068	4.300	5.364	6.223	6.158	10.759
4.510	3.160	5.076	4.341	5.374	6.276	6.210	10.794
4.562	3.208	5.084	4.384	5.386	6.343	6.264	10.827
4.618	3.264	5.092	4.428	5.396	6.400	6.332	10.865
4.642	3.290	5.098	4.463	5.406	6.457	6.398	10.900

$pK_{a1} = 6.20$

Table AD146. Potentiometric Titration Data for the pK_a Values of TTA in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.037.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.936	4.950	3.529	5.390	5.754	5.700	9.855
0.138	1.951	4.978	3.586	5.394	5.785	5.708	9.890
0.308	1.970	5.014	3.661	5.400	5.830	5.716	9.921
0.488	1.993	5.048	3.744	5.410	5.895	5.724	9.950
0.640	2.012	5.086	3.853	5.418	5.949	5.732	9.979
0.778	2.030	5.118	3.960	5.426	6.003	5.740	10.070
0.932	2.053	5.126	3.991	5.434	6.057	5.794	10.144
1.082	2.073	5.132	4.015	5.442	6.105	5.824	10.206
1.244	2.090	5.138	4.040	5.448	6.143	5.858	10.269
1.384	2.117	5.144	4.066	5.454	6.183	5.890	10.320
1.528	2.139	5.152	4.101	5.460	6.222	5.920	10.362
1.690	2.165	5.160	4.137	5.468	6.275	5.952	10.403
1.852	2.193	5.168	4.173	5.476	6.329	5.980	10.437
1.990	2.216	5.176	4.213	5.482	6.371	6.012	10.472
2.126	2.240	5.186	4.266	5.490	6.427	6.048	10.510
2.260	2.265	5.192	4.298	5.496	6.491	6.094	10.551
2.390	2.291	5.198	4.330	5.504	6.529	6.140	10.590
2.522	2.316	5.206	4.372	5.512	6.595	6.182	10.623
2.658	2.345	5.214	4.418	5.520	6.661	6.222	10.651
2.798	2.376	5.220	4.452	5.530	6.749	6.262	10.678
2.954	2.412	5.228	4.502	5.538	6.842	6.318	10.721
3.112	2.451	5.236	4.552	5.544	6.904	6.368	10.748
3.238	2.484	5.244	4.604	5.552	7.001	6.402	10.766
3.366	2.520	5.250	4.644	5.560	7.128	6.456	10.792
3.500	2.560	5.258	4.699	5.568	7.284	6.496	10.809
3.636	2.604	5.264	4.742	5.574	7.441	6.540	10.828
3.766	2.648	5.272	4.800	5.582	7.753	6.590	10.849
3.898	2.698	5.278	4.843	5.590	8.233	6.636	10.873
4.038	2.760	5.284	4.899	5.598	8.638	6.684	10.890
4.166	2.819	5.290	4.937	5.604	8.840	6.724	10.904
4.294	2.887	5.296	4.985	5.612	9.044	6.784	10.924
4.390	2.944	5.302	5.037	5.618	9.172	6.846	10.946
4.454	2.984	5.310	5.107	5.624	9.265	6.914	10.966
4.500	3.017	5.316	5.157	5.630	9.348	6.942	10.975
4.558	3.061	5.324	5.228	5.636	9.414	6.966	10.982
4.622	3.114	5.330	5.275	5.644	9.495	6.996	10.995
4.672	3.155	5.336	5.327	5.652	9.565	7.024	11.003
4.748	3.238	5.342	5.380	5.658	9.613		
4.810	3.311	5.350	5.445	5.666	9.671		
4.818	3.321	5.358	5.510	5.672	9.710		
4.856	3.373	5.366	5.572	5.680	9.755		
4.888	3.420	5.374	5.635	5.686	9.787		
4.918	3.470	5.382	5.694	5.692	9.818		

$pK_{a1} = 6.17$

Table AD147. Potentiometric Titration Data for the pK_a Values of TTA in 0.30 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.27 m NaCl, pcH = pHr + 0.038.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.935	4.716	3.303	5.118	4.401	5.366	6.109
0.146	1.949	4.740	3.334	5.126	4.443	5.370	6.136
0.290	1.967	4.762	3.364	5.134	4.491	5.376	6.176
0.428	1.985	4.786	3.398	5.142	4.537	5.380	6.203
0.600	2.007	4.810	3.434	5.150	4.585	5.384	6.230
0.752	2.025	4.830	3.467	5.158	4.635	5.388	6.257
0.874	2.044	4.854	3.508	5.166	4.687	5.394	6.298
0.982	2.062	4.860	3.520	5.172	4.701	5.400	6.337
1.106	2.080	4.868	3.536	5.178	4.742	5.404	6.366
1.240	2.099	4.884	3.569	5.184	4.782	5.408	6.393
1.374	2.119	4.892	3.587	5.190	4.821	5.412	6.422
1.506	2.140	4.900	3.605	5.196	4.865	5.418	6.465
1.632	2.160	4.908	3.622	5.204	4.922	5.422	6.494
1.768	2.183	4.918	3.646	5.212	4.981	5.428	6.540
1.858	2.198	4.926	3.666	5.218	5.027	5.434	6.589
1.968	2.218	4.934	3.685	5.224	5.076	5.440	6.639
2.064	2.236	4.940	3.702	5.230	5.126	5.444	6.673
2.184	2.259	4.948	3.722	5.236	5.174	5.452	6.749
2.328	2.286	4.956	3.745	5.244	5.241	5.458	6.814
2.492	2.320	4.962	3.762	5.250	5.286	5.466	6.905
2.612	2.345	4.972	3.791	5.256	5.336	5.476	7.037
2.732	2.372	4.980	3.814	5.262	5.384	5.486	7.217
2.864	2.403	4.986	3.835	5.270	5.446	5.492	7.371
2.984	2.431	4.994	3.861	5.278	5.507	5.498	7.563
3.126	2.469	5.004	3.896	5.284	5.553	5.506	7.978
3.258	2.506	5.012	3.924	5.290	5.598	5.516	8.617
3.386	2.544	5.020	3.953	5.298	5.656	5.522	8.862
3.536	2.593	5.028	3.983	5.302	5.686	5.528	9.043
3.636	2.627	5.034	4.008	5.306	5.716	5.536	9.219
3.736	2.665	5.040	4.032	5.310	5.745	5.544	9.308
3.852	2.711	5.046	4.055	5.316	5.787	5.556	9.461
4.002	2.778	5.052	4.080	5.320	5.813	5.562	9.526
4.126	2.841	5.060	4.116	5.324	5.842	5.568	9.583
4.240	2.905	5.066	4.143	5.328	5.869	5.598	9.762
4.356	2.982	5.074	4.179	5.332	5.894	5.626	9.905
4.414	3.023	5.082	4.217	5.338	5.935	5.654	10.006
4.486	3.077	5.090	4.256	5.344	5.978	5.686	10.104
4.538	3.121	5.096	4.286	5.350	6.016	5.716	10.177
4.594	3.172	5.104	4.326	5.354	6.043	5.748	10.242
4.660	3.239	5.110	4.357	5.360	6.072	5.782	10.306

Table AD147. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.812	10.354	6.876	11.014
5.840	10.393		
5.874	10.438		
5.908	10.478		
5.940	10.515		
5.970	10.546		
6.024	10.595		
6.084	10.643		
6.130	10.677		
6.180	10.711		
6.250	10.753		
6.306	10.786		
6.358	10.812		
6.410	10.838		
6.474	10.867		
6.542	10.896		
6.610	10.922		
6.682	10.949		
6.748	10.973		
6.814	10.995		

$pK_{a1} = 6.22$

Table AD148. Potentiometric Titration Data for the pK_a Values of TTA in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.170.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.845	4.542	2.970	5.166	4.188	5.364	5.603
0.142	1.862	4.576	2.995	5.174	4.231	5.370	5.645
0.304	1.880	4.608	3.022	5.182	4.277	5.374	5.672
0.472	1.903	4.638	3.049	5.190	4.322	5.380	5.713
0.640	1.923	4.672	3.078	5.198	4.371	5.384	5.739
0.810	1.946	4.712	3.118	5.204	4.408	5.388	5.766
0.952	1.965	4.742	3.151	5.210	4.448	5.394	5.806
1.096	1.985	4.776	3.190	5.218	4.496	5.398	5.830
1.220	2.003	4.806	3.226	5.226	4.549	5.404	5.869
1.354	2.023	4.812	3.233	5.234	4.604	5.408	5.893
1.480	2.042	4.820	3.244	5.240	4.645	5.414	5.930
1.612	2.063	4.844	3.276	5.246	4.688	5.420	5.966
1.734	2.083	4.874	3.322	5.250	4.716	5.424	5.992
1.874	2.107	4.900	3.363	5.254	4.745	5.430	6.030
2.026	2.133	4.928	3.411	5.260	4.789	5.434	6.053
2.154	2.157	4.942	3.437	5.264	4.821	5.442	6.102
2.298	2.184	4.956	3.465	5.268	4.851	5.448	6.142
2.402	2.203	4.964	3.483	5.274	4.896	5.456	6.190
2.548	2.233	4.972	3.500	5.280	4.945	5.460	6.215
2.672	2.260	4.980	3.519	5.284	4.978	5.468	6.268
2.866	2.303	4.990	3.544	5.288	5.010	5.474	6.307
2.982	2.331	4.998	3.563	5.292	5.043	5.478	6.334
3.124	2.367	5.008	3.588	5.296	5.077	5.482	6.361
3.252	2.401	5.016	3.610	5.302	5.128	5.488	6.403
3.388	2.441	5.024	3.630	5.306	5.157	5.492	6.431
3.532	2.485	5.032	3.653	5.310	5.193	5.498	6.473
3.652	2.525	5.040	3.677	5.312	5.208	5.506	6.538
3.750	2.561	5.054	3.720	5.316	5.243	5.514	6.603
3.824	2.587	5.064	3.752	5.320	5.276	5.518	6.645
3.912	2.623	5.078	3.802	5.324	5.307	5.524	6.695
3.992	2.656	5.088	3.838	5.328	5.340	5.530	6.750
4.056	2.684	5.096	3.869	5.332	5.372	5.538	6.840
4.122	2.715	5.104	3.901	5.334	5.386	5.544	6.917
4.186	2.747	5.112	3.934	5.338	5.421	5.550	7.005
4.262	2.788	5.120	3.968	5.344	5.472	5.556	7.107
4.344	2.839	5.126	3.994	5.348	5.495	5.562	7.236
4.370	2.851	5.134	4.030	5.350	5.505	5.566	7.342
4.432	2.891	5.142	4.068	5.354	5.540	5.572	7.552
4.474	2.919	5.150	4.105	5.358	5.568	5.576	7.784
4.506	2.942	5.158	4.147	5.362	5.594	5.582	8.038

Table AD148. Continued.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
5.588	8.280	5.818	10.034	6.776	10.807
5.594	8.470	5.848	10.098	6.854	10.834
5.602	8.675	5.880	10.157	6.928	10.859
5.606	8.760	5.906	10.200	7.020	10.887
5.612	8.863	5.936	10.244	7.124	10.916
5.618	8.959	5.966	10.286	7.202	10.939
5.624	9.038	5.998	10.326	7.284	10.959
5.630	9.114	6.028	10.358	7.354	10.975
5.638	9.204	6.060	10.392		
5.652	9.331	6.102	10.432		
5.664	9.423	6.140	10.465		
5.676	9.504	6.198	10.511		
5.688	9.575	6.238	10.540		
5.700	9.639	6.280	10.569		
5.710	9.686	6.342	10.607		
5.718	9.725	6.402	10.643		
5.732	9.782	6.490	10.686		
5.744	9.826	6.568	10.723		
5.756	9.866	6.644	10.755		
5.784	9.952	6.704	10.780		

$pK_{a1} = 6.22$

Table AD149. Potentiometric Titration Data for the pK_a Values of TTA in 0.50 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.47 m NaCl, pcH = pHr + 0.190.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.834	4.832	3.330	5.284	5.441	5.554	8.721
0.264	1.866	4.858	3.374	5.288	5.474	5.560	8.890
0.406	1.885	4.886	3.425	5.292	5.500	5.568	9.045
0.534	1.901	4.910	3.474	5.298	5.541	5.574	9.145
0.720	1.925	4.934	3.527	5.304	5.581	5.580	9.229
0.876	1.950	4.942	3.547	5.310	5.620	5.588	9.330
1.036	1.971	4.952	3.572	5.314	5.646	5.606	9.492
1.182	1.993	4.964	3.605	5.320	5.685	5.624	9.619
1.330	2.014	4.978	3.645	5.328	5.734	5.646	9.740
1.480	2.038	4.990	3.681	5.334	5.770	5.670	9.852
1.630	2.061	4.998	3.707	5.338	5.795	5.688	9.912
1.772	2.085	5.012	3.752	5.344	5.831	5.706	9.970
1.898	2.106	5.022	3.789	5.350	5.867	5.728	10.033
2.068	2.136	5.030	3.818	5.356	5.903	5.792	10.171
2.210	2.163	5.036	3.842	5.362	5.938	5.870	10.298
2.372	2.194	5.046	3.881	5.368	5.972	5.914	10.356
2.534	2.227	5.056	3.924	5.376	6.019	5.962	10.411
2.686	2.260	5.066	3.967	5.382	6.051	6.012	10.461
2.820	2.290	5.076	4.014	5.388	6.086	6.064	10.514
2.958	2.323	5.086	4.063	5.394	6.121	6.124	10.557
3.136	2.370	5.096	4.113	5.402	6.167	6.182	10.599
3.284	2.409	5.106	4.165	5.410	6.215	6.274	10.655
3.426	2.453	5.116	4.221	5.416	6.252	6.358	10.702
3.566	2.498	5.124	4.266	5.422	6.287	6.468	10.759
3.642	2.523	5.134	4.324	5.428	6.323	6.564	10.799
3.728	2.554	5.142	4.373	5.436	6.376	6.652	10.835
3.814	2.586	5.152	4.437	5.444	6.430	6.756	10.872
3.890	2.617	5.160	4.488	5.450	6.471	6.822	10.896
3.960	2.647	5.168	4.539	5.456	6.516	6.882	10.912
4.032	2.680	5.180	4.623	5.462	6.563	6.976	10.940
4.108	2.716	5.186	4.666	5.468	6.612	7.026	10.956
4.192	2.760	5.196	4.740	5.474	6.666	7.092	10.973
4.274	2.806	5.206	4.818	5.478	6.701	7.154	10.991
4.354	2.856	5.214	4.882	5.484	6.760	7.212	11.008
4.420	2.902	5.220	4.931	5.492	6.843		
4.480	2.946	5.228	4.997	5.498	6.918		
4.538	2.992	5.236	5.061	5.504	7.002		
4.598	3.046	5.246	5.143	5.512	7.142		
4.654	3.101	5.252	5.191	5.520	7.313		
4.694	3.144	5.260	5.256	5.528	7.562		
4.728	3.185	5.266	5.303	5.536	7.967		
4.778	3.249	5.270	5.336	5.542	8.271		
4.810	3.295	5.276	5.382	5.548	8.523		

$pK_{a1} = 6.23$

Table AD150. Potentiometric Titration Data for the pK_a Values of TTA in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.188.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.820	4.776	3.206	5.196	4.639	5.428	6.334
0.134	1.836	4.806	3.247	5.200	4.670	5.434	6.371
0.298	1.857	4.836	3.291	5.202	4.690	5.440	6.410
0.480	1.880	4.850	3.315	5.208	4.735	5.446	6.452
0.654	1.903	4.862	3.334	5.214	4.776	5.454	6.506
0.820	1.925	4.872	3.353	5.220	4.827	5.460	6.553
0.968	1.945	4.882	3.371	5.224	4.864	5.466	6.602
1.128	1.968	4.892	3.390	5.228	4.900	5.472	6.649
1.276	1.990	4.904	3.414	5.230	4.922	5.478	6.702
1.454	2.017	4.914	3.434	5.234	4.951	5.484	6.758
1.592	2.039	4.926	3.460	5.238	4.986	5.490	6.819
1.742	2.063	4.936	3.483	5.242	5.019	5.496	6.885
1.910	2.092	4.946	3.506	5.246	5.047	5.502	6.962
2.070	2.120	4.956	3.531	5.250	5.077	5.510	7.079
2.236	2.151	4.966	3.557	5.254	5.142	5.516	7.192
2.380	2.180	4.976	3.583	5.258	5.181	5.524	7.396
2.516	2.207	4.986	3.612	5.262	5.212	5.530	7.605
2.660	2.237	4.996	3.640	5.268	5.264	5.538	8.032
2.786	2.265	5.006	3.671	5.272	5.308	5.544	8.358
2.920	2.297	5.014	3.696	5.278	5.352	5.550	8.631
3.056	2.331	5.024	3.727	5.284	5.407	5.556	8.839
3.196	2.368	5.034	3.765	5.288	5.444	5.564	9.019
3.334	2.407	5.044	3.802	5.294	5.489	5.572	9.156
3.476	2.451	5.054	3.839	5.298	5.523	5.578	9.250
3.556	2.476	5.064	3.878	5.304	5.566	5.584	9.328
3.678	2.518	5.074	3.918	5.308	5.591	5.626	9.654
3.764	2.550	5.084	3.965	5.312	5.621	5.668	9.867
3.844	2.581	5.094	4.013	5.318	5.662	5.710	9.997
3.924	2.613	5.104	4.065	5.326	5.720	5.754	10.103
4.004	2.648	5.114	4.115	5.332	5.762	5.794	10.187
4.086	2.688	5.122	4.159	5.338	5.789	5.834	10.257
4.178	2.734	5.130	4.202	5.346	5.848	5.874	10.315
4.250	2.773	5.138	4.248	5.354	5.898	5.916	10.369
4.358	2.837	5.148	4.309	5.362	5.945	5.988	10.447
4.422	2.870	5.156	4.359	5.370	5.993	6.062	10.513
4.486	2.925	5.166	4.428	5.376	6.031	6.126	10.560
4.534	2.962	5.170	4.454	5.382	6.063	6.186	10.603
4.578	2.998	5.174	4.481	5.388	6.103	6.242	10.638
4.614	3.031	5.178	4.509	5.396	6.148	6.310	10.679
4.648	3.062	5.180	4.529	5.402	6.180	6.384	10.717
4.680	3.095	5.184	4.552	5.408	6.211	6.468	10.759
4.714	3.132	5.188	4.579	5.416	6.266	6.548	10.792
4.744	3.167	5.192	4.607	5.422	6.298	6.612	10.817

$pK_{a1} = 6.25$

Table AD151. Potentiometric Titration Data for the pK_a Values of TTA in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.282.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.732	4.800	3.125	5.286	5.108	5.516	7.037
0.186	1.745	4.850	3.195	5.290	5.138	5.520	7.109
0.354	1.766	4.906	3.289	5.294	5.170	5.526	7.268
0.512	1.786	4.958	3.391	5.298	5.202	5.532	7.491
0.676	1.807	4.962	3.401	5.302	5.234	5.538	7.886
0.838	1.829	4.968	3.415	5.308	5.282	5.544	8.237
0.978	1.848	4.978	3.440	5.312	5.313	5.550	8.515
1.150	1.872	4.990	3.472	5.320	5.376	5.556	8.718
1.314	1.897	5.002	3.505	5.326	5.426	5.560	8.835
1.452	1.917	5.014	3.541	5.332	5.466	5.564	8.918
1.586	1.939	5.024	3.571	5.336	5.495	5.568	9.000
1.712	1.959	5.036	3.609	5.340	5.524	5.574	9.101
1.842	1.982	5.048	3.650	5.344	5.554	5.580	9.214
1.980	2.006	5.060	3.694	5.350	5.594	5.612	9.479
2.144	2.035	5.070	3.731	5.356	5.644	5.640	9.640
2.290	2.062	5.082	3.781	5.362	5.679	5.670	9.770
2.424	2.088	5.092	3.823	5.368	5.718	5.702	9.877
2.548	2.113	5.104	3.876	5.374	5.755	5.732	9.959
2.686	2.143	5.112	3.917	5.378	5.779	5.760	10.022
2.818	2.173	5.122	3.965	5.384	5.816	5.792	10.085
2.946	2.204	5.134	4.026	5.390	5.855	5.826	10.143
3.082	2.239	5.140	4.059	5.394	5.879	5.864	10.202
3.200	2.270	5.146	4.093	5.398	5.906	5.898	10.245
3.314	2.303	5.152	4.125	5.404	5.942	5.932	10.286
3.462	2.347	5.158	4.158	5.408	5.967	5.978	10.337
3.586	2.387	5.168	4.217	5.414	6.004	6.026	10.383
3.668	2.415	5.176	4.268	5.420	6.044	6.086	10.434
3.746	2.443	5.184	4.317	5.426	6.081	6.156	10.485
3.822	2.472	5.190	4.355	5.432	6.119	6.230	10.534
3.918	2.510	5.196	4.412	5.436	6.147	6.294	10.573
3.998	2.544	5.200	4.430	5.442	6.190	6.356	10.607
4.066	2.574	5.208	4.482	5.448	6.231	6.426	10.643
4.164	2.623	5.220	4.566	5.454	6.275	6.498	10.675
4.258	2.673	5.226	4.620	5.460	6.321	6.588	10.712
4.352	2.730	5.232	4.668	5.466	6.372	6.662	10.742
4.404	2.763	5.238	4.709	5.472	6.420	6.734	10.767
4.460	2.803	5.244	4.756	5.476	6.455	6.824	10.796
4.512	2.841	5.250	4.811	5.482	6.513	6.936	10.832
4.558	2.877	5.256	4.857	5.488	6.579	7.042	10.861
4.614	2.924	5.262	4.904	5.494	6.642	7.126	10.883
4.656	2.963	5.268	4.950	5.498	6.691	7.218	10.906
4.708	3.015	5.274	5.002	5.504	6.825	7.320	10.930
4.754	3.067	5.280	5.067	5.510	6.896	7.408	10.950

$pK_{a1} = 6.17$

Table AD152. Potentiometric Titration Data for the pK_a Values of TTA in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.281.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.722	4.910	3.355	5.260	5.168	5.536	8.781
0.258	1.751	4.930	3.402	5.266	5.212	5.542	8.913
0.534	1.785	4.948	3.446	5.272	5.262	5.548	8.987
0.806	1.821	4.962	3.484	5.280	5.318	5.554	9.063
1.078	1.858	4.974	3.520	5.286	5.361	5.560	9.133
1.348	1.898	4.984	3.550	5.290	5.387	5.566	9.194
1.578	1.933	4.996	3.590	5.298	5.443	5.572	9.248
1.846	1.976	5.008	3.631	5.304	5.482	5.580	9.316
2.122	2.025	5.020	3.674	5.310	5.522	5.586	9.357
2.272	2.053	5.032	3.721	5.318	5.574	5.594	9.412
2.408	2.080	5.044	3.770	5.322	5.601	5.602	9.462
2.528	2.103	5.056	3.822	5.328	5.638	5.630	9.601
2.636	2.126	5.068	3.879	5.334	5.676	5.664	9.728
2.756	2.153	5.080	3.939	5.340	5.713	5.690	9.807
2.852	2.175	5.090	3.990	5.346	5.749	5.722	9.891
2.978	2.203	5.100	4.044	5.356	5.808	5.756	9.963
3.080	2.230	5.110	4.100	5.364	5.858	5.786	10.018
3.206	2.262	5.114	4.122	5.370	5.894	5.820	10.073
3.322	2.296	5.118	4.147	5.376	5.930	5.858	10.127
3.440	2.331	5.122	4.169	5.382	5.967	5.900	10.180
3.572	2.373	5.128	4.205	5.388	6.007	5.948	10.233
3.696	2.416	5.134	4.241	5.394	6.044	6.006	10.290
3.814	2.460	5.138	4.266	5.400	6.084	6.060	10.337
3.936	2.511	5.144	4.304	5.406	6.121	6.116	10.381
4.022	2.549	5.150	4.345	5.412	6.163	6.176	10.422
4.136	2.604	5.156	4.383	5.418	6.203	6.246	10.466
4.240	2.661	5.164	4.436	5.424	6.245	6.314	10.505
4.356	2.733	5.170	4.477	5.432	6.305	6.380	10.540
4.422	2.778	5.174	4.504	5.440	6.370	6.450	10.572
4.486	2.826	5.180	4.543	5.448	6.437	6.522	10.604
4.528	2.860	5.186	4.587	5.454	6.490	6.618	10.643
4.596	2.919	5.192	4.635	5.462	6.572	6.696	10.671
4.638	2.960	5.198	4.685	5.470	6.692	6.792	10.704
4.678	3.001	5.204	4.725	5.476	6.765	6.892	10.735
4.704	3.031	5.210	4.772	5.482	6.860	6.990	10.763
4.732	3.065	5.216	4.819	5.488	6.973	7.096	10.792
4.756	3.094	5.222	4.867	5.494	7.153	7.182	10.814
4.782	3.130	5.228	4.914	5.500	7.356	7.290	10.839
4.810	3.171	5.232	4.944	5.506	7.662	7.396	10.861
4.832	3.205	5.238	4.994	5.512	8.052	7.490	10.881
4.858	3.250	5.242	5.026	5.516	8.214	7.610	10.903
4.864	3.260	5.246	5.062	5.522	8.449	7.746	10.928
4.894	3.321	5.254	5.121	5.530	8.651	7.958	10.963

$pK_{a1} = 6.17$

Table AD153. Potentiometric Titration Data for the pK_a Values of TTA in 1.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 0.97 m NaCl, pcH = pHr + 0.241.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.762	5.074	3.953	5.418	6.260	5.960	10.259
0.310	1.798	5.084	4.003	5.428	6.340	6.034	10.325
0.602	1.835	5.096	4.071	5.438	6.424	6.110	10.387
0.872	1.871	5.106	4.128	5.448	6.515	6.196	10.446
1.160	1.910	5.114	4.176	5.458	6.615	6.284	10.497
1.442	1.952	5.122	4.225	5.468	6.737	6.374	10.547
1.702	1.992	5.132	4.286	5.476	6.855	6.448	10.581
1.958	2.036	5.144	4.364	5.486	7.060	6.544	10.624
2.234	2.086	5.154	4.431	5.496	7.380	6.634	10.658
2.490	2.136	5.162	4.485	5.508	7.983	6.754	10.702
2.748	2.191	5.170	4.541	5.520	8.414	6.884	10.745
3.008	2.252	5.180	4.611	5.532	8.723	7.012	10.781
3.352	2.317	5.188	4.669	5.542	8.903	7.136	10.813
3.492	2.389	5.198	4.746	5.554	9.060	7.286	10.848
3.624	2.433	5.208	4.822	5.564	9.165	7.426	10.879
3.744	2.476	5.218	4.906	5.576	9.273	7.572	10.909
3.864	2.523	5.228	4.983	5.588	9.368	7.728	10.936
3.996	2.580	5.236	5.046	5.598	9.435	7.900	10.966
4.120	2.640	5.244	5.109	5.608	9.493	8.066	10.991
4.246	2.710	5.254	5.186	5.618	9.545		
4.364	2.783	5.262	5.248	5.628	9.594		
4.472	2.862	5.270	5.305	5.640	9.644		
4.586	2.959	5.280	5.374	5.652	9.689		
4.700	3.082	5.290	5.442	5.662	9.726		
4.758	3.156	5.300	5.507	5.674	9.766		
4.802	3.217	5.310	5.574	5.686	9.802		
4.848	3.292	5.318	5.624	5.698	9.836		
4.888	3.367	5.330	5.697	5.710	9.869		
4.930	3.458	5.342	5.774	5.724	9.903		
4.972	3.566	5.352	5.833	5.734	9.927		
5.004	3.666	5.362	5.893	5.770	9.998		
5.038	3.787	5.372	5.953	5.808	10.063		
5.046	3.823	5.382	6.013	5.848	10.123		
5.056	3.867	5.394	6.087	5.884	10.173		
5.066	3.916	5.404	6.152	5.920	10.216		

$pK_{a1} = 6.14$

Table AD154. Potentiometric Titration Data for the pK_a Values of TTA in 2.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.437.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.564	5.106	3.973	5.410	6.066	6.292	10.406
0.280	1.603	5.114	4.021	5.420	6.148	6.374	10.447
0.566	1.638	5.122	4.070	5.434	6.274	6.458	10.485
0.844	1.675	5.128	4.109	5.446	6.401	6.544	10.519
1.116	1.713	5.136	4.157	5.466	6.681	6.620	10.549
1.382	1.751	5.144	4.207	5.480	7.015	6.714	10.581
1.656	1.794	5.156	4.283	5.490	7.525	6.806	10.611
1.934	1.839	5.172	4.389	5.500	8.148	6.892	10.636
2.188	1.885	5.180	4.447	5.510	8.573	6.982	10.660
2.464	1.938	5.188	4.501	5.522	8.824	7.116	10.696
2.738	1.996	5.200	4.589	5.532	8.973	7.254	10.728
3.018	2.062	5.210	4.665	5.542	9.094	7.404	10.759
3.262	2.126	5.222	4.756	5.562	9.266	7.542	10.786
3.520	2.204	5.232	4.835	5.572	9.336	7.684	10.811
3.800	2.303	5.244	4.924	5.582	9.401	7.822	10.835
3.938	2.360	5.254	5.002	5.612	9.539	7.970	10.857
4.078	2.425	5.264	5.077	5.644	9.654	8.106	10.879
4.210	2.495	5.280	5.188	5.676	9.748	8.252	10.899
4.338	2.572	5.290	5.261	5.710	9.829	8.394	10.918
4.462	2.659	5.300	5.329	5.740	9.890	8.530	10.934
4.590	2.768	5.312	5.406	5.768	9.939	8.676	10.952
4.706	2.894	5.320	5.458	5.802	9.991	8.842	10.972
4.782	2.995	5.330	5.524	5.834	10.036	8.994	10.988
4.866	3.136	5.340	5.591	5.868	10.078	9.136	11.003
4.958	3.347	5.350	5.656	5.902	10.117		
5.016	3.540	5.360	5.720	5.932	10.151		
5.050	3.678	5.370	5.787	5.964	10.182		
5.080	3.823	5.380	5.853	6.056	10.257		
5.090	3.880	5.390	5.923	6.134	10.313		
5.098	3.927	5.400	5.992	6.212	10.361		

pK_{a1} = 6.17

Table AD155. Potentiometric Titration Data for the pK_a Values of TTA in 2.00. m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 1.97 m NaCl, pcH = pHr + 0.508.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.501	5.032	3.632	5.366	5.886	5.958	10.244
0.284	1.533	5.040	3.669	5.372	5.928	6.034	10.305
0.596	1.573	5.052	3.727	5.380	5.988	6.106	10.355
0.908	1.616	5.072	3.830	5.388	6.051	6.198	10.411
1.190	1.656	5.086	3.912	5.394	6.104	6.296	10.465
1.428	1.691	5.100	3.995	5.402	6.172	6.378	10.504
1.678	1.731	5.112	4.069	5.410	6.245	6.436	10.531
1.902	1.768	5.120	4.119	5.418	6.331	6.494	10.554
2.138	1.811	5.128	4.170	5.426	6.428	6.548	10.574
2.376	1.856	5.136	4.223	5.434	6.537	6.666	10.617
2.628	1.909	5.142	4.259	5.440	6.636	6.786	10.655
2.876	1.965	5.148	4.299	5.448	6.808	6.946	10.701
3.126	2.028	5.158	4.370	5.454	6.994	7.076	10.735
3.356	2.095	5.170	4.453	5.462	7.593	7.162	10.757
3.626	2.183	5.180	4.526	5.468	7.971	7.254	10.778
3.886	2.283	5.190	4.602	5.474	8.358	7.372	10.804
4.108	2.389	5.200	4.679	5.480	8.584	7.478	10.825
4.226	2.453	5.210	4.759	5.488	8.769	7.592	10.847
4.334	2.521	5.218	4.824	5.496	8.933	7.764	10.877
4.464	2.616	5.232	4.934	5.504	9.051	7.894	10.898
4.578	2.717	5.246	5.041	5.512	9.149	8.036	10.920
4.698	2.853	5.258	5.130	5.520	9.223	8.172	10.938
4.772	2.953	5.266	5.190	5.528	9.295	8.302	10.957
4.828	3.046	5.274	5.250	5.534	9.338	8.440	10.975
4.838	3.065	5.280	5.290	5.546	9.415	8.566	10.990
4.864	3.123	5.286	5.331	5.558	9.482	8.702	11.007
4.886	3.159	5.292	5.371	5.568	9.532		
4.914	3.223	5.300	5.426	5.594	9.641		
4.940	3.291	5.308	5.482	5.620	9.725		
4.964	3.362	5.316	5.534	5.656	9.823		
4.972	3.390	5.324	5.592	5.686	9.888		
4.982	3.425	5.330	5.630	5.716	9.947		
4.992	3.464	5.336	5.672	5.762	10.019		
5.006	3.519	5.346	5.740	5.822	10.100		
5.020	3.576	5.356	5.809	5.896	10.187		

$pK_{a1} = 6.21$

Table AD156. Potentiometric Titration Data for the pK_a Values of TTA in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.705.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.318	5.142	4.675	5.350	6.665	6.944	10.664
0.352	1.360	5.152	4.762	5.358	6.926	7.086	10.699
0.666	1.398	5.158	4.818	5.366	7.424	7.240	10.734
0.950	1.433	5.166	4.886	5.374	8.065	7.406	10.765
1.246	1.493	5.172	4.925	5.380	8.362	7.560	10.793
1.528	1.537	5.178	4.975	5.386	8.568	7.674	10.813
1.812	1.584	5.186	5.041	5.392	8.728	7.828	10.839
2.068	1.629	5.194	5.116	5.398	8.836	7.980	10.860
2.326	1.679	5.200	5.166	5.404	8.930	8.114	10.881
2.594	1.734	5.206	5.212	5.414	9.057	8.242	10.899
2.870	1.798	5.212	5.257	5.420	9.119	8.344	10.912
3.120	1.863	5.218	5.306	5.450	9.349	8.444	10.924
3.390	1.942	5.224	5.351	5.480	9.505	8.564	10.940
3.648	2.030	5.230	5.402	5.514	9.632	8.680	10.953
3.928	2.148	5.236	5.452	5.548	9.728	8.792	10.965
4.206	2.298	5.244	5.510	5.580	9.806	8.908	10.978
4.448	2.475	5.250	5.554	5.622	9.889	9.036	10.992
4.720	2.792	5.256	5.599	5.678	9.979		
4.960	3.446	5.264	5.665	5.746	10.066		
5.036	3.860	5.270	5.710	5.824	10.148		
5.068	4.072	5.276	5.755	5.902	10.217		
5.074	4.119	5.282	5.804	5.976	10.273		
5.078	4.150	5.290	5.872	6.052	10.323		
5.086	4.212	5.296	5.921	6.132	10.369		
5.094	4.273	5.304	5.999	6.228	10.419		
5.102	4.337	5.314	6.099	6.324	10.463		
5.112	4.419	5.322	6.187	6.424	10.503		
5.120	4.487	5.328	6.263	6.518	10.538		
5.126	4.537	5.336	6.385	6.642	10.579		
5.134	4.604	5.342	6.483	6.786	10.623		

$pK_{a1} = 6.22$

Table AD157. Potentiometric Titration Data for the pK_a Values of TTA in 3.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 2.97 m NaCl, pcH = pHr + 0.684.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.321	5.090	3.562	5.386	5.751	5.984	10.165
0.300	1.357	5.098	3.609	5.394	5.794	6.064	10.226
0.572	1.391	5.106	3.653	5.404	5.867	6.154	10.286
0.806	1.422	5.112	3.691	5.412	5.930	6.294	10.366
1.062	1.457	5.120	3.737	5.420	6.004	6.418	10.434
1.308	1.492	5.128	3.787	5.428	6.081	6.520	10.475
1.562	1.531	5.138	3.851	5.434	6.145	6.656	10.525
1.796	1.568	5.148	3.917	5.444	6.270	6.774	10.563
2.066	1.616	5.158	3.982	5.454	6.439	6.910	10.605
2.318	1.662	5.168	4.048	5.464	6.666	7.014	10.634
2.592	1.718	5.176	4.104	5.474	6.994	7.124	10.662
2.860	1.778	5.186	4.171	5.484	7.601	7.206	10.681
3.030	1.819	5.194	4.226	5.492	8.225	7.298	10.701
3.292	1.889	5.202	4.285	5.502	8.505	7.424	10.729
3.492	1.948	5.210	4.344	5.514	8.726	7.542	10.752
3.716	2.025	5.218	4.401	5.522	8.864	7.666	10.774
3.952	2.118	5.226	4.457	5.532	8.995	7.820	10.801
4.186	2.231	5.238	4.550	5.542	9.097	7.992	10.828
4.298	2.295	5.246	4.613	5.550	9.171	8.124	10.846
4.404	2.364	5.254	4.676	5.562	9.260	8.272	10.867
4.524	2.453	5.264	4.754	5.574	9.341	8.438	10.887
4.608	2.524	5.272	4.818	5.586	9.403	8.616	10.910
4.682	2.600	5.280	4.884	5.598	9.464	8.764	10.927
4.770	2.704	5.288	4.951	5.610	9.521	8.914	10.944
4.856	2.832	5.300	5.043	5.622	9.564	9.082	10.961
4.940	3.000	5.308	5.105	5.636	9.611	9.262	10.977
4.978	3.099	5.314	5.155	5.656	9.673	9.436	10.994
4.998	3.159	5.318	5.186	5.678	9.731	9.568	11.007
5.018	3.229	5.326	5.246	5.712	9.805		
5.030	3.274	5.334	5.312	5.744	9.867		
5.040	3.314	5.342	5.371	5.768	9.908		
5.048	3.350	5.350	5.428	5.798	9.956		
5.064	3.424	5.360	5.541	5.826	9.995		
5.074	3.475	5.370	5.595	5.860	10.040		
5.082	3.518	5.378	5.647	5.896	10.079		

pK_{a1} = 6.26

Table AD158. Potentiometric Titration Data for the pK_a Values of TTA in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.111.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.890	5.168	3.822	5.410	5.985	6.232	10.265
0.294	0.922	5.174	3.876	5.418	6.116	6.344	10.320
0.570	0.956	5.178	3.907	5.426	6.268	6.454	10.367
0.858	0.994	5.186	3.971	5.434	6.500	6.556	10.407
1.104	1.030	5.190	4.001	5.442	6.855	6.642	10.439
1.348	1.066	5.198	4.060	5.450	7.373	6.756	10.476
1.590	1.103	5.206	4.121	5.460	7.858	6.870	10.512
1.826	1.141	5.212	4.169	5.468	8.247	6.978	10.542
2.074	1.184	5.218	4.211	5.478	8.515	7.084	10.570
2.304	1.227	5.224	4.258	5.488	8.669	7.214	10.601
2.520	1.270	5.234	4.347	5.500	8.821	7.356	10.632
2.746	1.318	5.240	4.395	5.510	8.926	7.494	10.661
3.032	1.385	5.246	4.445	5.522	9.047	7.642	10.688
3.282	1.451	5.250	4.478	5.532	9.126	7.786	10.714
3.528	1.526	5.256	4.535	5.544	9.202	7.944	10.742
3.798	1.620	5.264	4.603	5.556	9.279	8.096	10.764
4.056	1.727	5.272	4.670	5.566	9.338	8.248	10.789
4.184	1.790	5.278	4.724	5.574	9.377	8.382	10.807
4.308	1.860	5.286	4.800	5.584	9.416	8.546	10.827
4.422	1.933	5.292	4.854	5.616	9.526	8.674	10.843
4.534	2.016	5.296	4.891	5.650	9.625	8.810	10.857
4.626	2.098	5.302	4.942	5.686	9.714	8.968	10.874
4.742	2.221	5.312	5.026	5.720	9.778	9.116	10.890
4.868	2.406	5.318	5.081	5.754	9.838	9.256	10.905
4.984	2.664	5.324	5.132	5.788	9.888	9.390	10.917
5.078	3.052	5.332	5.200	5.824	9.934	9.590	10.934
5.090	3.177	5.340	5.279	5.858	9.976	9.774	10.952
5.098	3.222	5.348	5.358	5.892	10.010	9.920	10.965
5.108	3.298	5.354	5.405	5.934	10.052	10.074	10.976
5.116	3.366	5.360	5.458	5.974	10.088	10.214	10.987
5.124	3.435	5.370	5.541	6.010	10.118	10.362	10.998
5.132	3.505	5.376	5.616	6.048	10.146	10.494	11.009
5.144	3.610	5.386	5.713	6.082	10.171		
5.154	3.701	5.396	5.812	6.124	10.200		
5.162	3.767	5.404	5.916	6.160	10.224		

$pK_{a1} = 6.50$

Table AD159. Potentiometric Titration Data for the pK_a Values of TTA in 5.00 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol TTA, 0.15 mmol Excess HCl, Titrant = 0.030 M NaOH in 4.97 m NaCl, pcH = pHr + 1.104.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.916	5.190	3.996	5.434	6.412	6.346	10.352
0.278	0.950	5.194	4.026	5.442	6.666	6.442	10.397
0.550	0.983	5.200	4.073	5.450	7.092	6.530	10.432
0.796	1.016	5.206	4.121	5.458	7.542	6.678	10.486
0.990	1.042	5.214	4.182	5.468	7.954	6.768	10.518
1.258	1.082	5.220	4.230	5.476	8.221	6.858	10.543
1.498	1.117	5.226	4.275	5.484	8.399	7.024	10.589
1.762	1.160	5.232	4.325	5.492	8.555	7.160	10.625
1.986	1.198	5.240	4.389	5.498	8.650	7.306	10.659
2.280	1.251	5.246	4.438	5.506	8.765	7.446	10.689
2.534	1.302	5.252	4.487	5.514	8.866	7.594	10.716
2.776	1.354	5.260	4.551	5.522	8.970	7.748	10.743
3.006	1.408	5.266	4.603	5.530	9.035	7.876	10.766
3.292	1.483	5.274	4.674	5.538	9.108	8.014	10.787
3.554	1.563	5.282	4.747	5.544	9.153	8.202	10.814
3.768	1.637	5.288	4.801	5.556	9.238	8.360	10.836
4.010	1.735	5.296	4.875	5.564	9.285	8.510	10.853
4.316	1.894	5.302	4.929	5.574	9.337	8.654	10.869
4.472	1.997	5.310	5.001	5.588	9.408	8.812	10.887
4.604	2.106	5.318	5.077	5.618	9.524	9.042	10.912
4.736	2.243	5.326	5.145	5.646	9.613	9.212	10.928
4.878	2.454	5.332	5.200	5.678	9.696	9.402	10.943
4.974	2.672	5.340	5.266	5.712	9.769	9.566	10.959
5.086	3.142	5.346	5.320	5.744	9.829	9.738	10.973
5.114	3.353	5.354	5.392	5.778	9.883	9.900	10.987
5.122	3.419	5.360	5.443	5.810	9.931	10.024	10.997
5.128	3.475	5.366	5.497	5.846	9.979	10.132	11.005
5.134	3.531	5.374	5.569	5.878	10.015		
5.140	3.578	5.382	5.651	5.916	10.055		
5.148	3.648	5.388	5.711	5.968	10.108		
5.156	3.716	5.394	5.772	6.028	10.157		
5.162	3.767	5.402	5.866	6.088	10.202		
5.170	3.835	5.410	5.970	6.144	10.239		
5.176	3.883	5.416	6.052	6.204	10.275		
5.184	3.950	5.424	6.182	6.258	10.306		

$pK_{a1} = 6.45$

Table AD160. Potentiometric Titration Data for the pK_a Values of Lactate in 0.30 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol Lactate, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.27 m $NaClO_4$, pcH = pHr + 0.049.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.962	3.114	3.082	3.588	4.165	3.762	8.888
0.120	1.982	3.138	3.112	3.594	4.195	3.768	9.038
0.254	2.005	3.168	3.146	3.598	4.214	3.774	9.160
0.380	2.028	3.200	3.188	3.602	4.235	3.778	9.235
0.520	2.055	3.210	3.202	3.608	4.266	3.784	9.325
0.702	2.091	3.222	3.220	3.614	4.298	3.790	9.406
0.834	2.118	3.232	3.232	3.620	4.334	3.796	9.476
0.964	2.145	3.244	3.250	3.624	4.358	3.802	9.538
1.084	2.171	3.260	3.276	3.630	4.394	3.806	9.580
1.216	2.202	3.270	3.292	3.636	4.431	3.812	9.633
1.344	2.234	3.284	3.314	3.642	4.471	3.818	9.684
1.474	2.268	3.298	3.338	3.646	4.498	3.824	9.729
1.586	2.298	3.316	3.371	3.650	4.527	3.846	9.858
1.712	2.334	3.330	3.396	3.656	4.570	3.864	9.947
1.812	2.363	3.344	3.424	3.662	4.618	3.882	10.023
1.922	2.399	3.360	3.456	3.668	4.667	3.900	10.090
2.032	2.437	3.372	3.485	3.672	4.704	3.918	10.149
2.106	2.464	3.382	3.503	3.678	4.758	3.936	10.202
2.204	2.500	3.394	3.530	3.684	4.815	3.962	10.261
2.314	2.546	3.404	3.553	3.690	4.879	4.634	10.915
2.386	2.577	3.416	3.582	3.694	4.926	4.716	10.945
2.448	2.605	3.432	3.625	3.698	4.977	4.790	10.982
2.518	2.640	3.450	3.670	3.704	5.062	4.866	11.008
2.586	2.675	3.462	3.706	3.708	5.123	4.936	11.035
2.660	2.718	3.474	3.738	3.712	5.192	5.012	11.069
2.712	2.749	3.488	3.779	3.716	5.271		
2.760	2.779	3.500	3.820	3.722	5.412		
2.808	2.811	3.512	3.858	3.728	5.596		
2.854	2.843	3.522	3.892	3.732	5.783		
2.894	2.873	3.532	3.928	3.736	6.038		
2.938	2.911	3.542	3.965	3.740	6.444		
2.984	2.951	3.552	4.005	3.744	7.301		
3.032	2.996	3.562	4.046	3.748	8.071		
3.058	3.023	3.572	4.090	3.752	8.470		
3.086	3.051	3.582	4.136	3.758	8.737		

pK_{a1} = 3.735

Table AD161. Potentiometric Titration Data for the pK_a Values of Lactate in 0.30 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol of Lactate, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.27 m $NaClO_4$, pcH = pHr - 0.042.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.060	3.102	3.191	3.618	4.585	3.766	9.447
0.188	2.084	3.160	3.265	3.624	4.627	3.770	9.496
0.236	2.097	3.188	3.303	3.630	4.671	3.778	9.574
0.366	2.119	3.216	3.347	3.636	4.715	3.784	9.631
0.482	2.140	3.246	3.390	3.642	4.767	3.792	9.692
0.592	2.161	3.272	3.432	3.650	4.837	3.798	9.737
0.728	2.188	3.300	3.483	3.656	4.896	3.804	9.778
0.846	2.212	3.330	3.543	3.662	4.959	3.812	9.826
0.976	2.239	3.340	3.563	3.668	5.028	3.828	9.908
1.088	2.264	3.354	3.593	3.672	5.077	3.842	9.972
1.188	2.287	3.364	3.617	3.676	5.131	3.858	10.036
1.322	2.320	3.374	3.639	3.678	5.159	3.874	10.092
1.458	2.354	3.384	3.664	3.682	5.223	3.894	10.155
1.582	2.388	3.394	3.686	3.686	5.282	3.916	10.212
1.708	2.424	3.408	3.721	3.688	5.326	3.942	10.268
1.838	2.463	3.422	3.759	3.690	5.369	3.972	10.331
1.950	2.501	3.436	3.802	3.694	5.450	4.004	10.389
2.056	2.539	3.446	3.839	3.698	5.559	4.038	10.442
2.158	2.577	3.456	3.863	3.702	5.693	4.076	10.500
2.272	2.623	3.466	3.893	3.706	5.888	4.756	10.958
2.356	2.659	3.476	3.929	3.710	6.112	4.838	10.992
2.440	2.699	3.486	3.960	3.714	6.462	4.926	11.024
2.518	2.739	3.496	3.994	3.718	7.294	4.998	11.052
2.606	2.788	3.504	4.023	3.722	8.050	4.936	11.035
2.662	2.821	3.514	4.060	3.726	8.453	5.012	11.069
2.722	2.859	3.524	4.098	3.728	8.600		
2.776	2.896	3.536	4.148	3.732	8.762		
2.820	2.927	3.546	4.192	3.736	8.880		
2.862	2.959	3.556	4.235	3.740	8.984		
2.904	2.993	3.566	4.282	3.744	9.084		
2.952	3.035	3.576	4.333	3.748	9.165		
2.980	3.062	3.586	4.387	3.752	9.237		
3.010	3.090	3.594	4.467	3.756	9.298		
3.044	3.126	3.607	4.506	3.760	9.361		
3.076	3.161	3.612	4.542	3.764	9.413		

$pK_{a1} = 3.886$

Table AD162. Potentiometric Titration Data for the pK_a Values of Lactate in 2.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol Lactate, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 1.97 m $NaClO_4$, pcH = pHr + 0.487.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.536	3.152	2.870	3.540	4.395	3.720	9.388
0.130	1.557	3.166	2.895	3.546	4.457	3.730	9.448
0.276	1.585	3.184	2.928	3.552	4.525	3.738	9.498
0.388	1.604	3.198	2.955	3.558	4.603	3.748	9.551
0.518	1.629	3.212	2.983	3.564	4.679	3.756	9.591
0.710	1.670	3.226	3.013	3.570	4.769	3.774	9.669
0.910	1.713	3.240	3.047	3.574	4.839	3.796	9.750
1.110	1.759	3.254	3.078	3.578	4.914	3.816	9.808
1.300	1.806	3.268	3.113	3.582	4.998	3.834	9.862
1.454	1.847	3.280	3.140	3.586	5.100	3.856	9.916
1.576	1.881	3.296	3.183	3.592	5.278	3.878	9.964
1.692	1.916	3.306	3.213	3.596	5.435	3.898	10.005
1.798	1.950	3.320	3.252	3.600	5.623	3.916	10.038
1.912	1.988	3.334	3.297	3.604	5.845	3.946	10.085
2.030	2.031	3.348	3.342	3.608	6.199	4.000	10.159
2.150	2.078	3.362	3.389	3.612	6.828	4.070	10.241
2.270	2.130	3.372	3.421	3.618	7.487	4.136	10.304
2.370	2.176	3.382	3.458	3.622	7.792	4.194	10.353
2.448	2.216	3.394	3.506	3.626	7.985	4.274	10.414
2.522	2.258	3.404	3.545	3.632	8.193	5.546	10.875
2.594	2.301	3.416	3.595	3.638	8.356	5.724	10.909
2.632	2.327	3.428	3.654	3.642	8.460	5.844	10.932
2.680	2.359	3.440	3.714	3.646	8.534	5.990	10.958
2.728	2.394	3.452	3.771	3.650	8.612	6.214	10.996
2.766	2.421	3.464	3.836	3.654	8.676		
2.802	2.452	3.472	3.882	3.658	8.741		
2.842	2.488	3.482	3.941	3.664	8.828		
2.888	2.531	3.488	3.979	3.668	8.888		
2.936	2.578	3.494	4.019	3.672	8.950		
2.990	2.637	3.500	4.061	3.676	8.996		
3.016	2.670	3.508	4.119	3.680	9.043		
3.040	2.702	3.516	4.182	3.684	9.090		
3.070	2.741	3.522	4.231	3.692	9.167		
3.100	2.785	3.528	4.283	3.702	9.257		
3.124	2.822	3.534	4.337	3.712	9.331		

$pK_{a1} = 3.935$

Table AD163. Potentiometric Titration Data for the pK_a Values of Lactate in 2.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol Lactate, 0.10 mmol Excess $HClO_4$, Titrant=0.030 M NaOH in 1.97 m $NaClO_4$, pcH = pHr + 0.488.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.535	3.334	3.149	3.656	5.320	4.122	10.144
0.156	1.559	3.344	3.174	3.662	5.561	4.156	10.181
0.284	1.583	3.356	3.209	3.668	5.883	4.188	10.214
0.440	1.611	3.366	3.238	3.674	6.402	4.236	10.255
0.602	1.643	3.378	3.272	3.680	7.248		
0.780	1.680	3.390	3.307	3.686	7.701		
0.922	1.711	3.402	3.344	3.692	7.937		
1.060	1.742	3.414	3.385	3.698	8.118		
1.212	1.778	3.428	3.433	3.704	8.261		
1.334	1.809	3.440	3.475	3.710	8.378		
1.472	1.845	3.446	3.500	3.716	8.482		
1.616	1.886	3.454	3.531	3.722	8.579		
1.742	1.924	3.464	3.572	3.730	8.690		
1.878	1.968	3.474	3.613	3.736	8.769		
1.994	2.008	3.486	3.665	3.744	8.860		
2.098	2.046	3.496	3.713	3.750	8.927		
2.224	2.098	3.504	3.750	3.756	8.986		
2.312	2.136	3.514	3.801	3.764	9.061		
2.400	2.177	3.522	3.842	3.772	9.129		
2.484	2.221	3.528	3.876	3.778	9.181		
2.576	2.271	3.534	3.909	3.786	9.241		
2.634	2.306	3.542	3.959	3.794	9.297		
2.702	2.350	3.550	4.008	3.802	9.346		
2.760	2.389	3.558	4.060	3.812	9.404		
2.808	2.426	3.564	4.102	3.818	9.438		
2.870	2.475	3.570	4.146	3.824	9.472		
2.910	2.512	3.576	4.191	3.832	9.510		
2.976	2.575	3.582	4.239	3.840	9.547		
3.034	2.636	3.588	4.291	3.862	9.630		
3.074	2.684	3.594	4.342	3.882	9.695		
3.098	2.715	3.598	4.377	3.906	9.765		
3.120	2.745	3.604	4.435	3.930	9.824		
3.146	2.782	3.608	4.476	3.958	9.886		
3.176	2.827	3.614	4.541	3.980	9.930		
3.200	2.868	3.620	4.613	3.998	9.965		
3.226	2.912	3.626	4.691	4.018	9.999		
3.246	2.949	3.632	4.777	4.036	10.027		
3.264	3.022	3.638	4.875	4.058	10.052		
3.304	3.071	3.644	4.990	4.074	10.085		
3.324	3.131	3.648	5.085	4.094	10.112		

pK_{a1} = 3.820

Table AD164. Potentiometric Titration Data for the pK_a Values of Lactate in 4.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol Lactate, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 3.97 m $NaClO_4$, pcH = pHr + 0.868.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.161	2.932	2.236	3.382	3.365	3.566	5.151
0.164	1.186	2.978	2.296	3.390	3.403	3.570	5.296
0.324	1.218	2.998	2.322	3.398	3.444	3.576	5.569
0.478	1.245	3.024	2.360	3.406	3.485	3.580	5.773
0.626	1.273	3.046	2.395	3.416	3.542	3.586	6.282
0.776	1.305	3.066	2.428	3.424	3.584	3.590	6.825
0.932	1.340	3.092	2.473	3.432	3.638	3.594	7.232
1.092	1.377	3.114	2.514	3.440	3.688	3.600	7.575
1.240	1.414	3.130	2.547	3.446	3.726	3.604	7.733
1.372	1.447	3.156	2.602	3.454	3.781	3.608	7.870
1.504	1.485	3.176	2.647	3.464	3.851	3.612	7.984
1.644	1.526	3.196	2.695	3.472	3.911	3.616	8.080
1.804	1.577	3.218	2.753	3.478	3.957	3.622	8.227
1.960	1.632	3.244	2.828	3.486	4.022	3.642	8.564
2.098	1.685	3.268	2.902	3.492	4.075	3.662	8.829
2.196	1.727	3.290	2.975	3.500	4.147	3.682	9.028
2.302	1.776	3.306	3.033	3.508	4.224	3.724	9.297
2.410	1.830	3.318	3.081	3.514	4.284	3.780	9.514
2.496	1.879	3.326	3.112	3.522	4.370	3.884	9.753
2.572	1.926	3.334	3.144	3.530	4.466	4.010	9.929
2.636	1.969	3.342	3.179	3.538	4.574	4.142	10.061
2.698	2.016	3.348	3.209	3.544	4.669	4.278	10.164
2.770	2.072	3.354	3.234	3.550	4.767	4.594	10.322
2.832	2.130	3.362	3.271	3.556	4.885	4.996	10.550
2.886	2.184	3.372	3.317	3.562	5.028	5.132	10.635

$pK_{a1} = 4.261$

Table AD165. Potentiometric Titration Data for the pK_a Values of Lactate in 4.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol Lactate, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 3.97 m $NaClO_4$, pcH = pHr + 0.848.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.179	2.958	2.302	3.386	3.436	3.594	7.513
0.176	1.209	2.982	2.335	3.394	3.476	3.600	7.773
0.328	1.237	3.006	2.368	3.404	3.529	3.608	7.996
0.472	1.264	3.032	2.407	3.412	3.575	3.614	8.149
0.600	1.291	3.060	2.452	3.422	3.632	3.620	8.278
0.722	1.315	3.080	2.487	3.430	3.683	3.626	8.389
0.840	1.338	3.102	2.528	3.440	3.746	3.632	8.492
0.964	1.369	3.128	2.579	3.450	3.816	3.638	8.586
1.106	1.402	3.156	2.638	3.456	3.862	3.666	8.925
1.248	1.438	3.184	2.705	3.464	3.926	3.692	9.138
1.366	1.469	3.212	2.775	3.472	3.987	3.720	9.305
1.480	1.502	3.220	2.798	3.480	4.051	3.752	9.447
1.610	1.539	3.230	2.827	3.486	4.101	3.788	9.567
1.728	1.577	3.244	2.870	3.492	4.155	3.820	9.656
1.852	1.618	3.252	2.895	3.500	4.229	3.854	9.735
1.962	1.658	3.262	2.927	3.508	4.310	3.916	9.846
2.070	1.700	3.270	2.954	3.516	4.392	4.028	9.987
2.182	1.746	3.280	2.987	3.522	4.463	4.158	10.107
2.274	1.789	3.288	3.017	3.530	4.564	4.304	10.203
2.362	1.833	3.296	3.046	3.534	4.621	4.442	10.276
2.434	1.871	3.304	3.076	3.540	4.716	4.580	10.345
2.524	1.924	3.314	3.115	3.546	4.822	4.710	10.399
2.588	1.966	3.322	3.145	3.552	4.941	4.850	10.450
2.644	2.002	3.328	3.171	3.556	5.035	4.990	10.500
2.700	2.047	3.336	3.204	3.562	5.208	5.108	10.539
2.760	2.095	3.344	3.241	3.566	5.350	5.254	10.583
2.802	2.132	3.354	3.283	3.572	5.626	5.388	10.688
2.842	2.171	3.362	3.320	3.578	5.980		
2.878	2.208	3.370	3.358	3.584	6.606		
2.922	2.257	3.378	3.397	3.590	7.242		

pK_{a1} = 4.235

Table AD166. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.07 M $NaClO_4$, pcH = pHr + 0.081.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.920	4.824	2.908	5.730	3.872	6.322	10.531
0.252	1.948	4.880	2.938	5.746	3.906	6.388	10.593
0.506	1.977	4.940	2.974	5.762	3.940	6.444	10.641
0.750	2.005	4.996	3.008	5.782	3.985	6.502	10.686
1.000	2.036	5.040	3.037	5.796	4.019	6.580	10.726
1.250	2.069	5.082	3.066	5.810	4.053	6.616	10.761
1.500	2.102	5.122	3.096	5.824	4.090	6.672	10.793
1.740	2.136	5.160	3.125	5.836	4.123	6.730	10.824
1.970	2.171	5.196	3.155	5.848	4.155	6.778	10.849
2.190	2.205	5.230	3.184	5.860	4.191	6.826	10.870
2.400	2.238	5.262	3.213	5.872	4.227	6.882	10.895
2.600	2.273	5.292	3.241	5.884	4.267	6.948	10.921
2.792	2.308	5.320	3.269	5.894	4.302	7.000	10.939
2.970	2.342	5.348	3.297	5.904	4.338	7.058	10.962
3.140	2.376	5.376	3.327	5.914	4.378	7.114	10.982
3.300	2.410	5.404	3.358	5.924	4.419	7.160	10.992
3.450	2.444	5.432	3.392	5.934	4.464	7.214	11.018
3.592	2.477	5.460	3.428	5.944	4.513		
3.722	2.510	5.486	3.462	5.954	4.566		
3.840	2.542	5.512	3.498	5.964	4.624		
3.952	2.573	5.536	3.532	5.974	4.688		
4.050	2.602	5.560	3.569	5.984	4.760		
4.150	2.634	5.582	3.603	5.994	4.844		
4.240	2.663	5.604	3.639	6.004	4.946		
4.382	2.713	5.624	3.673	6.014	5.075		
4.468	2.746	5.644	3.706	6.024	5.256		
4.550	2.779	5.662	3.739	6.034	5.525		
4.624	2.809	5.680	3.772	6.044	6.023		
4.694	2.841	5.698	3.807	6.206	10.388		
4.762	2.874	5.714	3.839	6.264	10.465		

pK_{a2} = 3.808

Table AD167. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.07 M $NaClO_4$, pcH = pHr + 0.144.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.870	4.858	2.881	5.754	3.900
0.250	1.894	4.920	2.917	5.768	3.930
0.500	1.922	4.978	2.953	5.782	3.963
0.750	1.951	5.034	2.990	5.796	3.996
1.000	1.980	5.082	3.024	5.810	4.032
1.250	2.011	5.128	3.058	5.824	4.069
1.500	2.044	5.172	3.093	5.836	4.102
1.740	2.078	5.214	3.130	5.848	4.137
1.970	2.113	5.254	3.166	5.860	4.173
2.192	2.148	5.292	3.201	5.872	4.210
2.400	2.180	5.328	3.238	5.884	4.249
2.600	2.215	5.362	3.275	5.896	4.291
2.796	2.250	5.394	3.311	5.906	4.327
2.970	2.284	5.242	3.348	5.916	4.366
3.142	2.318	5.452	3.384	5.926	4.409
3.300	2.351	5.478	3.419	5.936	4.455
3.452	2.388	5.502	3.453	5.946	4.505
3.592	2.422	5.524	3.484	5.956	4.558
3.720	2.455	5.544	3.515	5.966	4.618
3.840	2.487	5.564	3.546	5.976	4.686
3.950	2.518	5.584	3.578	5.986	4.765
4.050	2.548	5.604	3.611	5.996	4.857
4.150	2.580	5.624	3.645	6.006	4.969
4.250	2.614	5.644	3.680	6.016	5.126
4.350	2.652	5.662	3.713	6.026	5.350
4.450	2.689	5.680	3.747	6.036	5.799
4.550	2.730	5.696	3.778	6.046	5.784
4.640	2.770	5.712	3.810		
4.720	2.807	5.726	3.838		
4.796	2.845	5.740	3.869		

pK_{a2} = 3.857

Table AD168. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 M $NaClO_4$ at 25°C. Initial Volume = 13.0 mL, 0.130 mmol Oxalic Acid, 1.3 mmol Excess $HClO_4$, Titrant = 0.10 M NaOH, pcH = pHr + 0.061.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.924	8.108	1.631	12.660	2.888	13.600	4.013
0.402	0.947	8.352	1.661	12.700	2.927	13.630	4.051
0.704	0.973	8.600	1.693	12.740	2.969	13.660	4.089
0.998	0.995	8.862	1.727	12.780	3.012	13.692	4.132
1.302	1.019	9.102	1.762	12.820	3.055	13.720	4.169
1.600	1.041	9.356	1.799	12.850	3.089	13.750	4.211
1.904	1.062	9.602	1.837	12.880	3.124	13.780	4.255
2.204	1.086	9.838	1.876	12.910	3.161	13.810	4.301
2.504	1.111	10.054	1.915	12.942	3.199	13.840	4.347
2.802	1.137	10.252	1.951	12.970	3.235	13.870	4.398
3.104	1.160	10.450	1.989	13.000	3.273	13.900	4.449
3.350	1.181	10.640	2.030	13.030	3.311	13.930	4.506
3.602	1.200	10.824	2.071	13.060	3.347	13.960	4.565
3.854	1.220	11.000	2.113	13.090	3.385	13.990	4.634
4.106	1.241	11.172	2.159	13.120	3.423	14.020	4.707
4.354	1.262	11.340	2.206	13.150	3.461	14.052	4.801
4.600	1.283	11.490	2.253	13.180	3.500	14.082	4.902
4.852	1.304	11.620	2.297	13.210	3.536	14.110	5.019
5.104	1.325	11.742	2.342	13.240	3.573	14.140	5.178
5.352	1.346	11.850	2.385	13.270	3.610	14.170	5.420
5.606	1.370	11.952	2.428	13.300	3.647	14.200	5.980
5.854	1.394	12.052	2.476	13.330	3.684	14.230	9.061
6.102	1.419	12.150	2.525	13.360	3.720	14.262	9.776
6.352	1.443	12.242	2.578	13.390	3.756		
6.604	1.468	12.326	2.630	13.420	3.792		
6.852	1.492	12.400	2.677	13.454	3.833		
7.102	1.518	12.462	2.722	13.480	3.866		
7.358	1.544	12.518	2.765	13.510	3.902		
7.602	1.572	12.570	2.808	13.542	3.942		
7.856	1.600	12.620	2.852	13.570	3.976		

$pK_{a1} = 1.726$, $pK_{a2} = 3.974$

Table AD169. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.10 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.10 M NaOH, pcH = pHr + 0.048.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.923	11.354	1.862	14.906	3.066	15.910	4.139
0.402	0.948	11.604	1.899	14.944	3.106	15.942	4.176
0.802	0.973	11.852	1.938	14.982	3.145	15.970	4.209
1.212	1.000	12.106	1.981	15.020	3.184	16.000	4.247
1.600	1.023	12.338	2.023	15.058	3.225	16.034	4.290
2.006	1.051	12.610	2.076	15.096	3.266	16.062	4.327
2.398	1.080	12.800	2.115	15.132	3.305	16.090	4.365
2.792	1.106	12.978	2.155	15.170	3.347	16.120	4.408
3.200	1.133	13.152	2.198	15.206	3.387	16.150	4.454
3.602	1.161	13.306	2.238	15.244	3.428	16.180	4.504
4.006	1.191	13.446	2.278	15.280	3.468	16.210	4.554
4.400	1.219	13.582	2.319	15.320	3.511	16.240	4.609
4.802	1.246	13.714	2.363	15.360	3.554	16.270	4.670
5.202	1.274	13.818	2.400	15.400	3.598	16.300	4.738
5.604	1.304	13.918	2.439	15.430	3.630	16.330	4.813
6.000	1.334	14.018	2.480	15.460	3.661	16.360	4.901
6.400	1.365	14.118	2.524	15.490	3.692	16.390	5.007
6.802	1.396	14.204	2.565	15.520	3.724	16.420	5.140
7.206	1.429	14.298	2.614	15.550	3.754	16.450	5.319
7.600	1.462	14.376	2.657	15.580	3.785	16.480	5.612
8.012	1.498	14.440	2.696	15.620	3.818	16.514	6.881
8.400	1.532	14.500	2.735	15.640	3.848		
8.806	1.570	14.552	2.769	15.670	3.881		
9.204	1.609	14.602	2.805	15.702	3.914		
9.570	1.645	14.650	2.842	15.730	3.942		
9.920	1.684	14.702	2.882	15.760	3.974		
10.220	1.717	14.746	2.918	15.790	4.007		
10.456	1.744	14.786	2.954	15.820	4.039		
10.812	1.789	14.826	2.990	15.850	4.072		
11.102	1.827	14.866	3.028	15.880	4.105		

pK_{a1} = 1.630, pK_{a2} = 3.957

Table AD170. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 0.27 M $NaClO_4$, pcH = pHr + 0.223.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.783	4.450	2.611	5.592	3.497	5.848	4.058
0.250	1.808	4.550	2.653	5.606	3.520	5.858	4.093
0.500	1.831	4.640	2.693	5.618	3.540	5.868	4.129
0.750	1.867	4.720	2.731	5.628	3.556	5.878	4.169
1.000	1.898	4.790	2.766	5.638	3.573	5.888	4.200
1.250	1.931	4.850	2.800	5.648	3.592	5.898	4.256
1.500	1.965	4.900	2.828	5.658	3.609	5.908	4.307
1.740	1.999	4.960	2.865	5.668	3.627	5.918	4.361
1.970	2.033	5.010	2.898	5.678	3.645	5.928	4.422
2.190	2.067	5.060	2.933	5.680	3.663	5.938	4.493
2.400	2.101	5.110	2.971	5.698	3.681	5.948	4.572
2.600	2.136	5.156	3.007	5.708	3.701	5.958	4.664
2.790	2.170	5.202	3.047	5.718	3.721	5.968	4.781
2.970	2.204	5.244	3.084	5.728	3.742	5.978	4.931
3.140	2.238	5.284	3.122	5.738	3.763	5.988	5.159
3.300	2.272	5.322	3.159	5.748	3.784	5.998	5.594
3.450	2.307	5.358	3.196	5.758	3.807	6.008	7.299
3.590	2.341	5.392	3.233	5.768	3.830		
3.720	2.374	5.424	3.268	5.778	3.855		
3.840	2.406	5.454	3.306	0.788	3.881		
3.950	2.438	5.484	3.343	5.798	3.906		
4.050	2.469	5.510	3.378	5.808	3.933		
4.150	2.501	5.534	3.410	5.818	3.963		
4.250	2.535	5.558	3.445	5.828	3.994		
4.350	2.572	5.576	3.472	5.838	4.025		

$pK_{a2} = 3.694$

Table AD171. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 0.27 M $NaClO_4$, pcH = pHr + 0.250.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.741	4.450	2.563	5.552	3.397	5.912	4.291
0.250	1.770	4.540	2.600	5.572	3.427	5.922	4.343
0.500	1.799	4.620	2.636	5.592	3.459	5.932	4.403
0.750	1.830	4.690	2.670	5.612	3.491	5.942	4.471
1.000	1.861	4.754	2.703	5.632	3.524	5.952	4.551
1.250	1.894	4.816	2.735	5.650	3.557	5.962	4.636
1.500	1.929	4.874	2.769	5.666	3.587	5.972	4.747
1.740	1.963	4.930	2.802	5.680	3.613	5.982	4.891
1.970	1.995	4.982	2.836	5.694	3.641	5.992	5.107
2.190	2.029	5.032	2.870	5.708	3.670	6.002	5.500
2.400	2.062	5.080	2.905	5.722	3.700	6.012	6.942
2.600	2.094	5.126	2.940	5.736	3.731		
2.792	2.127	5.168	2.973	5.750	3.761		
2.970	2.159	5.206	3.005	5.774	3.818		
3.140	2.193	5.242	3.038	5.788	3.854		
3.300	2.226	5.276	3.069	5.802	3.892		
3.450	2.260	5.310	3.101	5.816	3.933		
3.590	2.294	5.342	3.135	5.830	3.974		
3.720	2.328	5.372	3.167	5.842	4.011		
3.840	2.361	5.404	3.204	5.852	4.044		
3.950	2.393	5.432	3.237	5.862	4.080		
4.052	2.424	5.460	3.270	5.872	4.116		
4.150	2.456	5.486	3.304	5.882	4.154		
4.250	2.489	5.510	3.337	5.892	4.196		
4.350	2.525	5.532	3.367	5.902	4.241		

pK_{a2} = 3.747

Table AD172. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 0.10 M $NaClO_4$, pcH = pHr + 0.148.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.804	7.516	2.052	8.590	3.436	9.082	9.399
0.406	0.837	7.588	2.093	8.610	3.477	9.092	9.796
0.746	0.868	7.652	2.133	8.630	3.517	9.102	10.013
1.096	0.901	7.714	2.174	8.650	3.557	9.112	10.164
1.404	0.930	7.768	2.214	8.670	3.597	9.122	10.274
1.708	0.959	7.812	2.248	8.690	3.638	9.132	10.363
2.008	0.990	7.862	2.290	8.710	3.680	9.142	10.439
2.304	1.021	7.900	2.324	8.730	3.723	9.152	10.502
2.606	1.053	7.946	2.368	8.748	3.763	9.162	10.558
2.908	1.087	7.988	2.412	8.766	3.802	9.174	10.616
3.176	1.117	8.030	2.459	8.784	3.844	9.182	10.651
3.452	1.151	8.064	2.499	8.804	3.891	9.192	10.692
3.730	1.185	8.096	2.541	8.822	3.936	9.202	10.728
3.998	1.220	8.126	2.581	8.840	3.983	9.212	10.762
4.274	1.256	8.154	2.622	8.854	4.019	9.222	10.792
4.544	1.294	8.180	2.661	8.868	4.059	9.232	10.821
4.808	1.334	8.214	2.716	8.882	4.099	9.242	10.849
5.040	1.371	8.236	2.752	8.896	4.141	9.252	10.863
5.274	1.410	8.256	2.786	8.910	4.189	9.264	10.901
5.484	1.447	8.276	2.822	8.922	4.231	9.278	10.933
5.684	1.486	8.296	2.859	8.932	4.268	9.294	10.966
5.872	1.524	8.316	2.895	8.942	4.308	9.312	11.002
6.054	1.563	8.336	2.934	8.952	4.351		
6.228	1.603	8.354	2.969	8.962	4.396		
6.388	1.642	8.372	3.003	8.972	4.444		
6.538	1.682	8.390	3.037	8.982	4.498		
6.668	1.718	8.410	3.077	8.992	4.554		
6.782	1.752	8.430	3.117	9.002	4.619		
6.884	1.785	8.450	3.156	9.012	4.693		
6.988	1.821	8.470	3.196	9.022	4.777		
7.088	1.857	8.490	3.237	9.032	4.886		
7.184	1.895	8.510	3.276	9.042	5.021		
7.278	1.934	8.530	3.315	9.052	5.193		
7.358	1.971	8.550	3.356	9.062	5.503		
7.434	2.008	8.570	3.396	9.072	7.443		

pK_{a1} = 1.461, pK_{a2} = 3.731

Table AD173. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.30 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant=0.20 M NaOH in 0.10 M $NaClO_4$, pcH = pHr + 0.140.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.809	7.604	2.106	8.578	3.415	9.062	5.459
0.414	0.844	7.670	2.147	8.596	3.450	9.072	6.938
0.752	0.872	7.730	2.189	8.614	3.486	9.082	9.300
1.104	0.904	7.780	2.225	8.632	3.522	9.112	10.164
1.404	0.933	7.826	2.263	8.650	3.559	9.122	10.274
1.718	0.964	7.870	2.300	8.670	3.599	9.132	10.363
2.004	0.992	7.910	2.336	8.688	3.636	9.142	10.439
2.312	1.024	7.952	2.377	8.706	3.674	9.152	10.502
2.600	1.056	7.990	2.416	8.724	3.712	9.162	10.558
2.900	1.089	8.038	2.470	8.742	3.750	9.174	10.616
3.204	1.124	8.070	2.510	8.760	3.789	9.182	10.651
3.470	1.156	8.098	2.546	8.778	3.830	9.192	10.692
3.738	1.189	8.124	2.582	8.796	3.871	9.202	10.728
4.004	1.224	8.148	2.617	8.814	3.915	9.212	10.762
4.250	1.257	8.170	2.649	8.830	3.956	9.222	10.792
4.500	1.292	8.192	2.683	8.844	3.992	9.232	10.821
4.740	1.328	8.212	2.716	8.858	4.030	9.242	10.849
4.968	1.363	8.234	2.753	8.870	4.063	9.252	10.863
5.180	1.398	8.254	2.786	8.882	4.097	9.264	10.901
5.382	1.433	8.274	2.822	8.894	4.133	9.278	10.933
5.572	1.469	8.294	2.858	8.906	4.172	9.294	10.966
5.750	1.503	8.314	2.895	8.918	4.215	9.312	11.002
5.920	1.537	8.334	2.933	8.930	4.256		
6.080	1.567	8.354	2.970	8.942	4.303		
6.234	1.608	8.374	3.010	8.952	4.345		
6.380	1.643	8.394	3.048	8.962	4.388		
6.534	1.683	8.412	3.082	8.972	4.436		
6.674	1.723	8.430	3.118	8.982	4.489		
6.812	1.760	8.448	3.154	8.992	4.544		
6.950	1.810	8.466	3.191	9.002	4.606		
7.100	1.864	8.484	3.227	9.014	4.695		
7.230	1.916	8.504	3.267	9.022	4.760		
7.350	1.970	8.522	3.303	9.032	4.860		
7.450	2.019	8.540	3.339	9.042	4.985		
7.532	2.064	8.560	3.378	9.052	5.183		

pK_{a1} = 1.403, pK_{a2} = 3.726

Table AD174. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.50 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.47 M $NaClO_4$, pcH = pHr + 0.234.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.820	4.450	2.596	5.584	3.389	5.920	4.138
0.250	1.847	4.540	2.632	5.602	3.414	5.930	4.185
0.500	1.873	4.620	2.664	5.622	3.444	5.940	4.236
0.750	1.902	4.696	2.696	5.642	3.474	5.950	4.290
1.000	1.931	4.766	2.727	5.662	3.504	5.960	4.351
1.250	1.961	4.830	2.758	5.682	3.538	5.970	4.421
1.500	1.993	4.888	2.788	5.704	3.576	5.980	4.500
1.740	2.025	4.946	2.820	5.722	3.608	5.990	4.594
1.970	2.057	4.998	2.851	5.738	3.638	6.000	4.708
2.190	2.088	5.048	2.880	5.754	3.668	6.010	4.860
2.402	2.119	5.106	2.920	5.768	3.697	6.020	5.085
2.600	2.150	5.150	2.951	5.780	3.722	6.030	5.343
2.790	2.182	5.190	2.981	5.790	3.745	6.040	6.621
2.970	2.214	5.230	3.013	5.800	3.768		
3.140	2.246	5.276	3.052	5.812	3.792		
3.300	2.278	5.310	3.080	5.820	3.816		
3.450	2.310	5.340	3.111	5.830	3.843		
3.590	2.342	5.368	3.137	5.840	3.870		
3.720	2.372	5.398	3.166	5.850	3.897		
3.842	2.404	5.428	3.197	5.860	3.925		
3.952	2.434	5.458	3.230	5.870	3.953		
4.050	2.463	5.488	3.264	5.880	3.985		
4.150	2.493	5.516	3.298	5.890	4.020		
4.250	2.525	5.542	3.330	5.900	4.056		
4.350	2.559	5.564	3.360	5.910	4.097		

pK_{a2} = 3.707

Table AD175. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.50 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 0.47 M $NaClO_4$, pcH = pHr + 0.254.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.744	4.450	2.516	5.584	3.307	5.930	4.097
0.250	1.768	4.550	2.554	5.606	3.337	5.940	4.144
0.500	1.794	4.640	2.591	5.626	3.366	5.952	4.209
0.752	1.822	4.720	2.627	5.646	3.397	5.960	4.258
1.006	1.850	4.792	2.662	5.664	3.426	5.970	4.324
1.252	1.881	4.850	2.692	5.682	3.456	5.980	4.398
1.500	1.911	4.906	2.722	5.698	3.483	5.990	4.488
1.742	1.943	4.960	2.753	5.714	3.512	6.000	4.594
1.970	1.977	5.010	2.783	5.735	3.542	6.010	4.747
2.190	2.009	5.060	2.815	5.746	3.573	6.020	4.935
2.400	2.043	5.104	2.846	5.762	3.604	6.030	5.295
2.600	2.075	5.146	2.876	5.778	3.638	6.040	6.603
2.794	2.109	5.186	2.906	5.792	3.668	6.050	7.994
2.970	2.141	5.224	2.938	5.806	3.702		
3.140	2.171	5.260	2.968	5.818	3.732		
3.304	2.203	5.294	2.997	5.830	3.764		
3.450	2.235	5.326	3.026	5.840	3.789		
3.590	2.266	5.356	3.053	5.850	3.828		
3.720	2.297	5.386	3.080	5.860	3.847		
3.840	2.328	5.416	3.107	5.870	3.877		
3.950	2.357	5.446	3.138	5.880	3.909		
4.050	2.385	5.476	3.172	5.890	3.942		
4.150	2.414	5.506	3.207	5.900	3.976		
4.250	2.445	5.534	3.241	5.910	4.014		
4.350	2.479	5.560	3.274	5.920	4.054		

pK_{a2} = 3.687

Table AD176. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 0.50 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 0.30 M $NaClO_4$, pcH = pHr + 0.155.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.785	7.812	2.203	8.812	3.780	9.260	10.755
0.404	0.820	7.862	2.242	8.826	3.813	9.272	10.787
0.762	0.852	7.898	2.273	8.840	3.847	9.284	10.815
1.094	0.882	7.948	2.320	8.854	3.882	9.296	10.841
1.404	0.910	7.990	2.361	8.868	3.919		
1.712	0.941	8.028	2.401	8.884	3.963		
2.006	0.969	8.066	2.444	8.896	3.996		
2.304	1.001	8.106	2.492	8.914	4.052		
2.602	1.032	8.140	2.537	8.924	4.084		
2.896	1.064	8.170	2.578	8.936	4.125		
3.178	1.096	8.200	2.622	8.948	4.168		
3.452	1.129	8.234	2.674	8.958	4.208		
3.724	1.163	8.274	2.738	8.968	4.247		
3.992	1.196	8.302	2.785	8.978	4.291		
4.270	1.233	8.330	2.835	8.989	4.337		
4.542	1.271	8.354	2.878	8.998	4.388		
4.804	1.310	8.374	2.914	9.008	4.442		
5.040	1.346	8.396	2.954	9.018	4.503		
5.274	1.385	8.414	2.986	9.028	4.574		
5.482	1.421	8.432	3.021	9.038	4.653		
5.684	1.459	8.452	3.059	9.048	4.750		
5.872	1.497	8.468	3.090	9.058	4.870		
6.056	1.535	8.486	3.125	9.068	5.031		
6.228	1.574	8.504	3.158	9.078	5.272		
6.388	1.613	8.522	3.193	9.088	5.855		
6.536	1.651	8.540	3.227	9.098	9.063		
6.670	1.687	8.560	3.265	9.114	9.779		
6.782	1.721	8.578	3.300	9.124	9.968		
6.884	1.753	8.596	3.336	9.134	10.101		
6.988	1.788	8.612	3.367	9.144	10.210		
7.088	1.823	8.630	3.401	9.154	10.294		
7.182	1.859	8.648	3.437	9.164	10.366		
7.274	1.898	8.666	3.471	9.174	10.428		
7.358	1.934	8.686	3.511	9.184	10.484		
7.432	1.969	8.710	3.559	9.194	10.532		
7.514	2.012	8.726	3.592	9.204	10.574		
7.584	2.050	8.746	3.634	9.216	10.620		
7.650	2.090	8.762	3.668	9.226	10.656		
7.716	2.133	8.780	3.707	9.236	10.687		
7.766	2.168	8.796	3.743	9.248	10.724		

$pK_{a1} = 1.252$, $pK_{a2} = 3.645$

Table AD177. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 0.97 M $NaClO_4$, pcH = pHr + 0.378.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.686	4.144	2.331	5.498	3.099	5.930	3.919
0.250	1.706	4.236	2.360	5.520	3.125	5.940	3.959
0.500	1.728	4.324	2.389	5.542	3.152	5.950	3.999
0.750	1.751	4.412	2.420	5.564	3.179	5.960	4.044
1.000	1.779	4.490	2.450	5.586	3.207	5.970	4.092
1.240	1.806	4.562	2.479	5.608	3.237	5.980	4.145
1.470	1.834	4.630	2.507	5.630	3.268	5.990	4.206
1.690	1.863	4.700	2.537	5.652	3.300	6.000	4.274
1.900	1.890	4.770	2.570	5.672	3.330	6.010	4.350
2.100	1.918	4.830	2.600	5.692	3.362	6.020	4.445
2.290	1.945	4.884	2.628	5.710	3.392	6.030	4.560
2.470	1.972	4.940	2.658	5.728	3.423	6.042	4.751
2.640	1.999	4.992	2.687	5.744	3.451	6.050	4.934
2.804	2.027	5.042	2.716	5.760	3.480		
2.950	2.052	5.102	2.755	5.786	3.530		
3.090	2.078	5.150	2.787	5.804	3.567		
3.220	2.103	5.196	2.820	5.820	3.602		
3.340	2.128	5.242	2.855	5.834	3.635		
3.452	2.151	5.282	2.887	5.848	3.669		
3.550	2.174	5.320	2.920	5.862	3.706		
3.650	2.197	5.356	2.952	5.874	3.738		
3.750	2.221	5.388	2.983	5.886	3.772		
3.850	2.246	5.420	3.014	5.898	3.809		
3.950	2.274	5.448	3.043	5.912	3.855		
4.050	2.303	5.474	3.072	5.920	3.882		

pK_{a2} = 3.543

Table AD178. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 0.97 M $NaClO_4$, pcH = pHr + 0.375.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.622	4.448	2.415	5.602	3.201	5.970	4.015
0.250	1.649	4.540	2.450	5.620	3.225	5.980	4.062
0.500	1.677	4.620	2.484	5.640	3.253	5.990	4.115
0.750	1.706	4.690	2.514	5.660	3.282	6.000	4.173
1.000	1.736	4.760	2.547	5.680	3.312	6.010	4.236
1.250	1.768	4.820	2.575	5.700	3.343	6.020	4.314
1.500	1.801	4.880	2.606	5.725	3.375	6.030	4.404
1.740	1.834	4.936	2.636	5.740	3.408	6.040	4.508
1.972	1.868	4.990	2.667	5.760	3.443	6.050	4.650
2.190	1.900	5.042	2.698	5.780	3.480	6.060	4.850
2.400	1.933	5.092	2.730	5.800	3.519	6.070	5.210
2.600	1.966	5.140	2.762	5.818	3.555		
2.790	1.998	5.186	2.795	5.834	3.590		
2.970	2.031	5.230	2.828	5.848	3.623		
3.140	2.064	5.272	2.861	5.860	3.654		
3.300	2.096	5.312	2.894	5.870	3.680		
3.450	2.129	5.350	2.927	5.880	3.700		
3.590	2.162	5.386	2.959	5.890	3.732		
3.720	2.194	5.420	2.991	5.900	3.761		
3.840	2.224	5.452	3.023	5.910	3.791		
3.950	2.255	5.482	3.055	5.920	3.823		
4.050	2.285	5.510	3.086	5.930	3.857		
4.146	2.313	5.536	3.117	5.940	3.893		
4.248	2.346	5.560	3.147	5.950	3.931		
4.348	2.379	5.582	3.177	5.960	3.971		

$pK_{a2} = 3.562$

Table AD179. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 0.8 M $NaClO_4$, pcH= pHr + 0.281.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.672	6.158	1.450	8.184	2.582
0.412	0.708	6.318	1.490	8.208	2.620
0.702	0.734	6.428	1.518	8.232	2.660
1.000	0.762	6.548	1.551	8.254	2.697
1.204	0.782	6.668	1.585	8.274	2.731
1.404	0.800	6.768	1.616	8.296	2.770
1.604	0.820	6.868	1.648	8.316	2.805
1.816	0.840	6.970	1.682	8.336	2.841
2.004	0.859	7.074	1.721	8.356	2.878
2.206	0.880	7.170	1.760	8.376	2.913
2.404	0.900	7.272	1.804	8.398	2.954
2.606	0.922	7.368	1.850	8.418	2.991
2.806	0.944	7.430	1.882	8.438	3.028
3.004	0.965	7.488	1.914	8.458	3.065
3.204	0.988	7.546	1.948	8.478	3.103
3.404	1.012	7.614	1.991	8.498	3.140
3.604	1.035	7.650	2.014	8.518	3.177
3.812	1.061	7.692	2.044	8.538	3.216
4.010	1.087	7.732	2.074	8.560	3.258
4.208	1.113	7.780	2.111	8.580	3.297
4.406	1.139	7.834	2.158	8.600	3.336
4.606	1.168	7.874	2.195	8.620	3.376
4.804	1.198	7.912	2.232	8.642	3.421
5.010	1.230	7.950	2.271	8.660	3.459
5.204	1.262	7.990	2.316	8.678	3.496
5.384	1.294	8.030	2.365	8.698	3.539
5.550	1.324	8.064	2.407	8.716	3.581
5.704	1.354	8.084	2.434	8.734	3.622
5.850	1.384	8.114	2.476		
6.010	1.418	8.152	2.532		

pK_{a1} = 1.276, pK_{a2} = 3.590

Table AD180. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 1.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 0.8 M $NaClO_4$, pcH = pHr + 0.282.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.681	7.476	1.896	8.618	3.308	9.100	10.194
0.400	0.717	7.542	1.932	8.636	3.344	9.110	10.263
0.700	0.742	7.602	1.968	8.654	3.378	9.120	10.320
1.000	0.769	7.654	2.000	8.670	3.410	9.130	10.373
1.266	0.793	7.698	2.030	8.686	3.443	9.258	10.773
1.518	0.818	7.748	2.066	8.702	3.477	9.274	10.805
1.766	0.841	7.800	2.106	8.718	3.511	9.292	10.838
2.010	0.866	7.846	2.145	8.734	3.546	9.312	10.872
2.256	0.890	7.886	2.180	8.750	3.581	9.334	10.904
2.506	0.916	7.922	2.214	8.766	3.617	9.356	10.935
2.760	0.943	7.956	2.248	8.780	3.651	9.380	10.967
3.000	0.969	7.988	2.282	8.794	3.685		
3.228	0.995	8.020	2.318	8.808	3.720		
3.446	1.021	8.050	2.352	8.822	3.759		
3.654	1.045	8.084	2.395	8.834	3.791		
3.864	1.071	8.114	2.435	8.846	3.825		
4.064	1.097	8.142	2.472	8.858	3.861		
4.266	1.124	8.172	2.516	8.870	3.899		
4.466	1.152	8.198	2.555	8.880	3.931		
4.664	1.180	8.224	2.596	8.890	3.967		
4.864	1.210	8.248	2.634	8.900	4.004		
5.060	1.241	8.272	2.674	8.910	4.043		
5.250	1.272	8.294	2.711	8.920	4.085		
5.432	1.305	8.314	2.746	8.930	4.129		
5.600	1.335	8.332	2.778	8.940	4.179		
5.752	1.364	8.348	2.807	8.950	4.232		
5.900	1.395	8.364	2.835	8.960	4.289		
6.044	1.425	8.382	2.868	8.970	4.354		
6.196	1.459	8.400	2.900	8.980	4.430		
6.334	1.493	8.418	2.932	8.990	4.517		
6.464	1.526	8.436	2.965	9.000	4.626		
6.594	1.560	8.454	2.999	9.010	4.765		
6.714	1.596	8.472	3.032	9.020	4.953		
6.828	1.630	8.490	3.065	9.030	5.740		
6.938	1.666	8.508	3.098	9.040	8.643		
7.038	1.702	8.526	3.132	9.050	9.278		
7.130	1.738	8.544	3.166	9.060	9.715		
7.228	1.777	8.564	3.204	9.070	9.864		
7.324	1.820	8.582	3.238	9.080	9.998		
7.408	1.860	8.600	3.274	9.090	10.110		

$pK_{a1} = 1.351$, $pK_{a2} = 3.600$

Table AD181. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 2.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 1.97 M $NaClO_4$, pcH = pHr + 0.617.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.394	4.290	2.157	5.430	2.881	5.852	3.679
0.250	1.417	4.370	2.188	5.450	2.905	5.864	3.723
0.500	1.446	4.440	2.215	5.470	2.931	5.876	3.768
0.750	1.475	4.506	2.242	5.490	2.957	5.888	3.817
1.000	1.506	4.558	2.262	5.510	2.982	5.900	3.869
1.240	1.537	4.620	2.289	5.530	3.010	5.912	3.929
1.470	1.567	4.682	2.318	5.550	3.039	5.924	3.994
1.690	1.600	4.740	2.347	5.570	3.069	5.936	4.072
1.900	1.627	4.802	2.380	5.590	3.098	5.952	4.196
2.102	1.658	4.854	2.411	5.610	3.131	5.964	4.316
2.292	1.688	4.902	2.438	5.630	3.164	5.973	4.477
2.470	1.717	4.954	2.465	5.650	3.197	5.988	4.719
2.640	1.747	5.004	2.496	5.668	3.229	6.000	5.227
2.800	1.775	5.054	2.528	5.686	3.260		
2.950	1.803	5.100	2.563	5.704	3.295		
3.100	1.832	5.140	2.593	5.720	3.328		
3.250	1.864	5.178	2.622	5.736	3.363		
3.400	1.897	5.214	2.655	5.752	3.400		
3.540	1.933	5.248	2.688	5.768	3.438		
3.670	1.966	5.280	2.718	5.780	3.467		
3.790	1.999	5.310	2.749	5.792	3.498		
3.900	2.031	5.338	2.779	5.804	3.531		
4.000	2.061	5.364	2.805	5.816	3.567		
4.100	2.092	5.388	2.831	5.828	3.602		
4.200	2.123	5.410	2.856	5.840	3.639		

pK_{a2} = 3.696

Table AD182. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 2.97 M $NaClO_4$, pcH = pHr + 0.859.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.111	4.240	1.924	5.326	2.681	5.768	3.596
0.300	1.167	4.326	1.958	5.352	2.717	5.780	3.643
0.520	1.197	4.406	1.990	5.376	2.751	5.792	3.694
0.740	1.227	4.480	2.023	5.398	2.782	5.804	3.749
0.962	1.258	4.570	2.064	5.422	2.820	5.816	3.811
1.180	1.289	4.630	2.095	5.442	2.851	5.828	3.882
1.400	1.318	4.680	2.122	5.470	2.896	5.838	3.947
1.622	1.351	4.730	2.150	5.490	2.931	5.848	4.022
1.840	1.384	4.780	2.179	5.510	2.965	5.858	4.108
2.050	1.416	4.830	2.209	5.528	2.996	5.868	4.209
2.250	1.449	4.872	2.238	5.546	3.030	5.878	4.335
2.440	1.481	4.908	2.263	5.564	3.066	5.888	4.505
2.620	1.513	4.938	2.287	5.580	3.099	5.898	4.763
2.790	1.544	4.970	2.312	5.596	3.133		
2.950	1.576	5.000	2.336	5.614	3.170		
3.104	1.607	5.032	2.363	5.636	3.220		
3.250	1.639	5.066	2.393	5.650	3.253		
3.390	1.671	5.098	2.422	5.664	3.286		
3.520	1.703	5.130	2.453	5.678	3.321		
3.640	1.735	5.160	2.483	5.692	3.357		
3.750	1.766	5.190	2.515	5.708	3.401		
3.850	1.795	5.220	2.549	5.720	3.436		
3.950	1.825	5.246	2.578	5.732	3.473		
4.050	1.857	5.274	2.612	5.744	3.511		
4.150	1.891	5.300	2.646	5.756	3.553		

$pK_{a2} = 3.880$

Table AD183. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 2.97 M $NaClO_4$, pcH = pHr + 0.861.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.144	4.242	1.931	5.414	2.778	5.814	3.694
0.250	1.173	4.332	1.966	5.436	2.811	5.824	3.739
0.502	1.203	4.410	1.998	5.458	2.845	5.834	3.787
0.750	1.233	4.480	2.030	5.478	2.875	5.844	3.839
1.000	1.265	4.560	2.068	5.500	2.911	5.854	3.906
1.240	1.298	4.630	2.104	5.518	2.941	5.864	3.967
1.470	1.330	4.700	2.140	5.540	2.980	5.874	4.046
1.690	1.361	4.760	2.176	5.560	3.016	5.882	4.117
1.900	1.393	4.812	2.207	5.580	3.054	5.890	4.201
2.102	1.426	4.860	2.236	5.602	3.099	5.898	4.309
2.290	1.457	4.910	2.271	5.620	3.136	5.906	4.406
2.470	1.488	4.960	2.305	5.638	3.175	5.914	4.539
2.640	1.518	5.012	2.345	5.654	3.211	5.924	4.815
2.800	1.547	5.050	2.375	5.668	3.244		
2.960	1.580	5.090	2.410	5.680	3.274		
3.110	1.612	5.132	2.450	5.692	3.305		
3.250	1.634	5.170	2.488	5.704	3.336		
3.382	1.674	5.206	2.525	5.716	3.365		
3.512	1.705	5.238	2.560	5.728	3.397		
3.630	1.737	5.268	2.592	5.740	3.432		
3.750	1.771	5.298	2.627	5.752	3.468		
3.862	1.803	5.326	2.661	5.764	3.506		
3.962	1.835	5.350	2.691	5.776	3.547		
4.060	1.867	5.372	2.721	5.788	3.589		
4.150	1.898	5.392	2.748	5.800	3.634		

pK_{a2} = 3.867

Table AD184. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 2.97 M $NaClO_4$, pcH = pHr + 0.848.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.165	4.236	1.940	5.376	2.726	5.790	3.583
0.250	1.191	4.324	1.970	5.400	2.757	5.802	3.627
0.500	1.220	4.416	2.008	5.430	2.799	5.814	3.675
0.750	1.251	4.496	2.045	5.454	2.835	5.826	3.729
1.000	1.283	4.576	2.081	5.478	2.871	5.838	3.786
1.240	1.314	4.646	2.117	5.500	2.905	5.850	3.848
1.470	1.345	4.710	2.151	5.520	2.940	5.862	3.920
1.692	1.377	4.770	2.186	5.538	2.970	5.874	4.000
1.900	1.407	4.820	2.216	5.556	3.003	5.886	4.094
2.100	1.438	4.870	2.249	5.574	3.038	5.898	4.209
2.290	1.469	4.912	2.278	5.592	3.073	5.910	4.369
2.472	1.500	4.950	2.303	5.610	3.110	5.920	4.540
2.642	1.531	4.984	2.328	5.628	3.148	5.930	4.807
2.800	1.560	5.020	2.356	5.644	3.183		
2.950	1.589	5.060	2.388	5.658	3.214		
3.104	1.622	5.096	2.421	5.670	3.244		
3.250	1.654	5.132	2.453	5.682	3.272		
3.390	1.687	5.164	2.484	5.694	3.301		
3.530	1.722	5.194	2.515	5.706	3.332		
3.660	1.755	5.222	2.545	5.718	3.362		
3.770	1.786	5.250	2.576	5.730	3.393		
3.870	1.817	5.276	2.604	5.742	3.427		
3.970	1.847	5.300	2.630	5.754	3.464		
4.060	1.878	5.326	2.661	5.766	3.502		
4.150	1.907	5.352	2.695	5.778	3.541		

pK_{a2} = 3.868

Table AD185. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 2.8 M $NaClO_4$, pcH = pHr + 0.790.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.186	6.802	1.165	8.132	2.237	8.672	3.410
0.400	0.220	6.896	1.198	8.150	2.275	8.690	3.457
0.790	0.256	6.984	1.231	8.168	2.313	8.708	3.507
1.150	0.288	7.068	1.266	8.186	2.352	8.726	3.558
1.482	0.321	7.130	1.292	8.204	2.391	8.744	3.616
1.872	0.358	7.206	1.327	8.222	2.430	8.762	3.676
2.206	0.393	7.270	1.357	8.240	2.470	8.780	3.742
2.526	0.426	7.326	1.387	8.258	2.509	8.798	3.816
2.852	0.462	7.376	1.414	8.276	2.549	8.816	3.902
3.136	0.494	7.428	1.444	8.294	2.588	8.834	4.003
3.502	0.538	7.480	1.476	8.312	2.626	8.852	4.122
3.756	0.569	7.538	1.515	8.330	2.665	8.870	4.280
4.000	0.601	7.590	1.552	8.348	2.704	8.888	4.508
4.210	0.630	7.640	1.590	8.366	2.742	8.906	4.978
4.412	0.659	7.680	1.624	8.384	2.779	8.916	7.000
4.608	0.688	7.718	1.656	8.402	2.817		
4.808	0.718	7.756	1.692	8.420	2.853		
5.004	0.749	7.794	1.730	8.438	2.891		
5.194	0.782	7.834	1.773	8.456	2.929		
5.384	0.816	7.868	1.813	8.474	2.966		
5.568	0.851	7.916	1.874	8.492	3.004		
5.714	0.880	7.942	1.908	8.510	3.041		
5.866	0.913	7.972	1.951	8.528	3.078		
6.000	0.943	7.990	1.980	8.546	3.117		
6.136	0.974	8.012	2.014	8.564	3.156		
6.256	1.004	8.032	2.048	8.582	3.197		
6.376	1.036	8.052	2.083	8.600	3.236		
6.480	1.064	8.074	2.124	8.618	3.278		
6.602	1.100	8.094	2.162	8.636	3.320		
6.704	1.132	8.114	2.202	8.654	3.364		

pK_{a1} = 1.464, pK_{a2} = 3.842

Table AD186. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 3.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 2.8 M $NaClO_4$, pcH = pHr + 0.798.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.192	6.150	0.963	8.166	2.175	8.780	3.508
0.400	0.222	6.302	1.001	8.194	2.230	8.800	3.566
0.700	0.249	6.420	1.032	8.220	2.284	8.820	3.630
1.000	0.274	6.540	1.064	8.248	2.344	8.840	3.699
1.200	0.292	6.660	1.100	8.264	2.376	8.860	3.776
1.400	0.310	6.760	1.131	8.280	2.410	8.880	3.861
1.600	0.330	6.862	1.165	8.302	2.459	8.902	3.976
1.800	0.349	6.960	1.199	8.324	2.506	8.920	4.088
2.000	0.367	7.060	1.237	8.342	2.545	8.940	4.259
2.200	0.388	7.160	1.278	8.360	2.583	8.950	4.370
2.400	0.409	7.260	1.323	8.380	2.626	8.960	4.505
2.604	0.430	7.360	1.372	8.400	2.668	8.970	4.706
2.800	0.451	7.422	1.406	8.422	2.714	8.980	5.061
3.000	0.473	7.484	1.441	8.440	2.752		
3.200	0.495	7.542	1.476	8.462	2.799		
3.406	0.520	7.616	1.526	8.480	2.836		
3.600	0.544	7.650	1.550	8.500	2.876		
3.806	0.569	7.690	1.581	8.520	2.918		
4.002	0.594	7.732	1.615	8.542	2.963		
4.202	0.621	7.780	1.656	8.560	3.001		
4.402	0.648	7.832	1.705	8.580	3.042		
4.600	0.677	7.872	1.746	8.600	3.085		
4.800	0.708	7.912	1.789	8.620	3.127		
5.000	0.740	7.950	1.835	8.640	3.170		
5.200	0.773	7.992	1.890	8.660	3.213		
5.382	0.805	8.030	1.942	8.682	3.263		
5.550	0.837	8.060	1.988	8.700	3.305		
5.700	0.866	8.084	2.027	8.720	3.353		
5.852	0.897	8.114	2.079	8.740	3.402		
6.000	0.929	8.140	2.126	8.760	3.453		

$pK_{a1} = 1.509$, $pK_{a2} = 3.842$

Table AD187. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 5.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 4.97 M $NaClO_4$, pcH = pHr + 1.391.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.646	4.322	1.496	5.266	2.346	5.610	3.134
0.300	0.680	4.390	1.529	5.280	2.370	5.624	3.175
0.600	0.716	4.450	1.558	5.294	2.397	5.636	3.209
0.890	0.753	4.510	1.588	5.308	2.425	5.648	3.246
1.160	0.789	4.570	1.624	5.332	2.473	5.660	3.285
1.412	0.823	4.620	1.653	5.344	2.498	5.672	3.324
1.640	0.857	4.670	1.685	5.356	2.523	5.684	3.366
1.860	0.890	4.720	1.719	5.370	2.553	5.696	3.411
2.060	0.922	4.760	1.748	5.384	2.583	5.708	3.457
2.260	0.956	4.800	1.778	5.398	2.613	5.720	3.506
2.450	0.988	4.840	1.810	5.412	2.645	5.732	3.558
2.640	1.023	4.876	1.842	5.426	2.676	5.744	3.616
2.820	1.059	4.928	1.889	5.440	2.707	5.756	3.678
2.990	1.093	4.960	1.921	5.454	2.740		
3.150	1.129	4.986	1.948	5.466	2.768		
3.302	1.165	5.016	1.981	5.480	2.800		
3.442	1.199	5.044	2.013	5.494	2.833		
3.570	1.234	5.074	2.049	5.508	2.867		
3.690	1.269	5.106	2.091	5.522	2.901		
3.802	1.303	5.130	2.123	5.536	2.935		
3.900	1.334	5.156	2.163	5.550	2.971		
4.000	1.368	5.180	2.199	5.562	3.002		
4.090	1.402	5.202	2.234	5.574	3.034		
4.170	1.433	5.222	2.268	5.586	3.068		
4.250	1.466	5.240	2.299	5.598	3.101		

pK_{a2} = 4.332

Table AD188. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 5.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 4.97 M $NaClO_4$, pcH = pHr + 1.382.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.655	4.322	1.498	5.266	2.317	5.610	3.084
0.300	0.698	4.390	1.529	5.280	2.341	5.624	3.123
0.602	0.726	4.450	1.558	5.294	2.367	5.636	3.157
0.890	0.761	4.510	1.588	5.308	2.393	5.648	3.192
1.160	0.796	4.570	1.622	5.332	2.439	5.660	3.228
1.412	0.831	4.620	1.652	5.344	2.463	5.672	3.265
1.640	0.863	4.670	1.683	5.356	2.487	5.684	3.304
1.860	0.897	4.720	1.716	5.370	2.515	5.696	3.344
2.060	0.928	4.760	1.744	5.384	2.544	5.708	3.387
2.260	0.961	4.800	1.774	5.398	2.573	5.720	3.433
2.450	0.994	4.840	1.805	5.412	2.604	5.732	3.479
2.640	1.028	4.876	1.835	5.426	2.636	5.744	3.530
2.820	1.064	4.928	1.882	5.440	2.666	5.758	3.593
2.990	1.098	4.962	1.914	5.456	2.703		
3.150	1.134	4.988	1.941	5.468	2.730		
3.302	1.169	5.016	1.970	5.484	2.766		
3.442	1.204	5.046	2.002	5.498	2.800		
3.570	1.237	5.074	2.034	5.510	2.829		
3.690	1.271	5.106	2.074	5.524	2.861		
3.802	1.305	5.130	2.107	5.538	2.896		
3.900	1.336	5.156	2.141	5.552	2.932		
4.000	1.370	5.180	2.177	5.564	2.962		
4.090	1.403	5.202	2.211	5.578	2.998		
4.170	1.433	5.222	2.243	5.586	3.020		
4.250	1.467	5.240	2.272	5.598	3.052		

pK_{a1} = 1.383, pK_{a2} = 4.226

Table AD189. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 5.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 4.8 M $NaClO_4$, pcH = pHr + 1.382.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-0.420	7.262	0.689	8.268	1.921	8.700	3.003
0.500	-0.384	7.354	0.734	8.280	1.957	8.716	3.041
0.962	-0.346	7.438	0.779	8.292	1.995	8.732	3.079
1.364	-0.312	7.532	0.836	8.304	2.033	8.748	3.119
1.720	-0.279	7.622	0.896	8.318	2.074	8.764	3.159
2.078	-0.246	7.698	0.953	8.330	2.110	8.780	3.201
2.422	-0.212	7.752	0.999	8.342	2.147	8.796	3.244
2.770	-0.176	7.820	1.062	8.354	2.181	8.812	3.292
3.106	-0.139	7.860	1.104	8.366	2.215	8.828	3.341
3.414	-0.103	7.894	1.142	8.378	2.247	8.844	3.393
3.712	-0.067	7.924	1.179	8.390	2.280	8.860	3.451
4.002	-0.032	7.950	1.213	8.404	2.317	8.874	3.502
4.286	0.005	7.974	1.246	8.418	2.354	8.888	3.560
4.542	0.041	7.996	1.278	8.432	2.390	8.902	3.623
4.804	0.079	8.018	1.313	8.446	2.424	8.914	3.687
5.028	0.114	8.040	1.350	8.460	2.460	8.926	3.754
5.248	0.151	8.062	1.389	8.474	2.493	8.938	3.835
5.428	0.182	8.082	1.428	8.484	2.526	8.950	3.931
5.606	0.216	8.102	1.470	8.504	2.564	8.962	4.041
5.792	0.253	8.122	1.514	8.520	2.599	8.974	4.189
5.978	0.293	8.140	1.555	8.536	2.635	8.986	4.400
6.154	0.332	8.156	1.596	8.552	2.672	8.998	4.770
6.304	0.369	8.172	1.638	8.570	2.712	9.010	7.386
6.450	0.407	8.184	1.670	8.586	2.748		
6.612	0.452	8.196	1.704	8.602	2.784		
6.736	0.490	8.208	1.739	8.618	2.818		
6.858	0.529	8.220	1.773	8.634	2.854		
6.958	0.565	8.232	1.811	8.650	2.890		
7.048	0.598	8.244	1.847	8.668	2.930		
7.162	0.645	8.256	1.884	8.684	2.966		

$pK_{a2} = 4.310$

Table AD190. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 5.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 4.8 M $NaClO_4$, pcH= pHr + 1.422.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-0.409	7.378	0.785	8.314	2.083	8.716	3.063
0.508	-0.366	7.436	0.817	8.324	2.114	8.730	3.097
0.900	-0.330	7.486	0.845	8.334	2.143	8.744	3.132
1.268	-0.297	7.562	0.894	8.344	2.173	8.758	3.166
1.654	-0.260	7.618	0.932	8.354	2.203	8.772	3.202
1.900	-0.236	7.662	0.963	8.364	2.231	8.786	3.239
2.150	-0.210	7.710	1.003	8.374	2.259	8.800	3.279
2.426	-0.182	7.772	1.053	8.384	2.286	8.812	3.314
2.712	-0.151	7.834	1.115	8.394	2.314	8.824	3.348
2.950	-0.125	7.882	1.168	8.404	2.340	8.836	3.386
3.206	-0.096	7.924	1.218	8.414	2.366	8.846	3.418
3.486	-0.062	7.962	1.269	8.424	2.392	8.858	3.462
3.710	-0.035	7.984	1.302	8.434	2.419	8.870	3.506
3.968	-0.001	8.004	1.332	8.444	2.444	8.882	3.551
4.202	0.026	8.026	1.368	8.454	2.468	8.894	3.600
4.404	0.053	8.044	1.398	8.464	2.494	8.906	3.656
4.612	0.084	8.062	1.431	8.474	2.518	8.918	3.719
4.854	0.120	8.080	1.466	8.484	2.542	8.932	3.799
5.056	0.153	8.098	1.503	8.494	2.565	8.944	3.881
5.254	0.187	8.120	1.552	8.506	2.592	8.494	2.565
5.450	0.221	8.138	1.595	8.518	2.619	8.506	2.592
5.650	0.260	8.154	1.633	8.530	2.646	8.518	2.619
5.822	0.295	8.178	1.698	8.542	2.674	8.530	2.646
6.002	0.334	8.192	1.739	8.554	2.702	8.542	2.674
6.196	0.379	8.204	1.773	8.556	2.728	8.554	2.702
6.352	0.418	8.214	1.804	8.578	2.755	8.556	2.728
6.494	0.456	8.224	1.834	8.590	2.782	8.578	2.755
6.614	0.489	8.234	1.864	8.602	2.809	8.590	2.782
6.738	0.527	8.244	1.895	8.616	2.839	8.602	2.809
6.838	0.560	8.254	1.925	8.630	2.869	9.078	9.956
6.946	0.597	8.264	1.956	8.644	2.900	9.090	10.044
7.048	0.636	8.274	1.987	8.658	2.932	9.102	10.110
7.162	0.683	8.284	2.018	8.672	2.963	9.114	10.177
7.240	0.717	8.294	2.024	8.686	2.995	9.126	10.229
7.312	0.751	8.304	2.052	8.702	3.032	9.138	10.275

pK_{a1} = 1.383, pK_{a2} = 4.230

Table AD191. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 7.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 6.97 M $NaClO_4$, pcH = pHr + 2.037.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.022	4.782	1.170	5.418	2.357	8.870	3.506
0.206	0.047	4.820	1.205	5.430	2.392	8.882	3.551
0.500	0.065	4.868	1.252	5.442	2.427	8.894	3.600
0.800	0.101	4.900	1.283	5.454	2.463	8.906	3.656
1.100	0.144	4.936	1.322	5.466	2.498	8.918	3.719
1.374	0.184	4.968	1.360	5.478	2.532	8.932	3.799
1.624	0.222	5.000	1.401	5.490	2.566	8.944	3.881
1.850	0.258	5.028	1.439	5.502	2.602	5.634	3.006
2.050	0.291	5.052	1.472	5.514	2.636	5.646	3.047
2.240	0.323	5.072	1.504	5.526	2.671	5.658	3.089
2.420	0.354	5.094	1.541	5.538	2.706	5.670	3.134
2.590	0.387	5.110	1.569	5.550	2.741	5.682	3.180
2.750	0.420	5.126	1.598	5.562	2.777	5.694	3.229
2.900	0.451	5.150	1.644	5.574	2.813	5.706	3.284
3.040	0.481	5.168	1.681	5.586	2.850	5.718	3.340
3.170	0.511	5.180	1.706	5.598	2.888	5.730	3.399
3.290	0.539	5.190	1.729	5.610	2.927	5.742	3.464
3.402	0.568	5.200	1.751	5.622	2.966	9.078	9.956
3.500	0.594	5.212	1.778	5.634	3.006	9.090	10.044
3.600	0.621	5.224	1.809	5.646	3.047	9.102	10.110
3.700	0.651	5.236	1.839	5.658	3.089	9.114	10.177
3.800	0.682	5.248	1.868	5.670	3.134	9.126	10.229
3.900	0.715	5.260	1.901	5.682	3.180	9.138	10.275
4.000	0.751	5.272	1.933	5.694	3.229		
4.090	0.785	5.284	1.966	5.706	3.284		
4.182	0.823	5.298	2.006	5.718	3.340		
4.260	0.857	5.310	2.040	5.730	3.399		
4.340	0.893	5.322	2.075	5.742	3.464		
4.410	0.928	5.334	2.110	5.754	3.538		
4.476	0.963	5.346	2.146	5.766	3.621		
4.542	1.001	5.358	2.181	5.778	3.718		
4.602	1.039	5.370	2.216	5.790	3.833		
4.650	1.070	5.382	2.252	5.802	3.978		
4.700	1.106	5.394	2.287	5.814	4.179		
4.742	1.138	5.406	2.322	5.826	4.484		

$pK_{a2} = 4.745$

Table AD192. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 7.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 6.97 M $NaClO_4$, pcH = pHr + 2.040.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.017	4.462	0.951	5.252	1.866	5.556	2.739
0.300	0.051	4.530	0.990	5.264	1.898	5.568	2.775
0.600	0.087	4.600	1.033	5.276	1.930	5.580	2.811
0.900	0.124	4.660	1.073	5.288	1.962	5.592	2.849
1.200	0.163	4.710	1.109	5.300	1.996	5.604	2.885
1.490	0.202	4.760	1.147	5.316	2.043	5.616	2.922
1.670	0.230	4.800	1.181	5.324	2.065	5.628	2.960
1.840	0.256	4.844	1.221	5.336	2.101	5.640	2.999
2.020	0.284	4.882	1.258	5.348	2.137	5.652	3.041
2.202	0.315	4.916	1.293	5.360	2.171	5.664	3.084
2.380	0.346	4.944	1.325	5.372	2.206	5.676	3.128
2.560	0.379	4.976	1.362	5.384	2.241	5.688	3.176
2.740	0.413	5.004	1.398	5.398	2.281	5.700	3.226
2.920	0.451	5.030	1.434	5.408	2.311	5.712	3.278
3.100	0.491	5.054	1.468	5.420	2.346	5.724	3.334
3.280	0.534	5.076	1.502	5.432	2.382	5.736	3.394
3.450	0.577	5.100	1.542	5.444	2.416	5.750	3.474
3.612	0.622	5.122	1.581	5.456	2.451	5.760	3.532
3.752	0.664	5.142	1.618	5.468	2.485	5.770	3.598
3.890	0.709	5.160	1.654	5.480	2.519	5.780	3.679
3.998	0.747	5.184	1.704	5.492	2.554	5.790	3.766
4.100	0.786	5.200	1.740	5.504	2.589	5.800	3.871
4.202	0.828	5.214	1.773	5.516	2.623	5.810	4.006
4.298	0.869	5.228	1.807	5.528	2.657	5.820	4.180
4.380	0.909	5.240	1.836	5.544	2.705	5.830	4.429

$pK_{a2} = 4.771$

Table AD193. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 7.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 6.8 M $NaClO_4$, pcH = pHr + 1.932.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-0.937	7.538	0.439	8.268	2.057	8.742	3.328
0.508	-0.895	7.596	0.484	8.278	2.093	8.756	3.374
0.948	-0.855	7.646	0.527	8.288	2.128	8.770	3.425
1.360	-0.816	7.694	0.570	8.298	2.163	8.782	3.471
1.772	-0.776	7.734	0.611	8.308	2.196	8.794	3.521
2.144	-0.737	7.772	0.653	8.318	2.228	8.804	3.566
2.462	-0.703	7.808	0.696	8.330	2.265	8.814	3.617
2.766	-0.671	7.842	0.740	8.342	2.301	8.824	3.670
3.070	-0.635	7.874	0.785	8.354	2.336	8.834	3.726
3.362	-0.600	7.906	0.836	8.366	2.370	8.844	3.791
3.656	-0.563	7.932	0.881	8.378	2.402	8.854	3.865
3.938	-0.526	7.958	0.931	8.390	2.434	8.864	3.946
4.236	-0.484	7.984	0.985	8.402	2.464	8.874	4.048
4.520	-0.443	8.016	1.066	8.414	2.494	8.884	4.176
4.836	-0.393	8.034	1.109	8.426	2.525	8.894	4.344
5.112	-0.346	8.050	1.154	8.436	2.550	8.904	4.609
5.390	-0.295	8.064	1.191	8.448	2.578	8.914	5.254
5.640	-0.245	8.076	1.238	8.462	2.613	8.924	7.683
5.846	-0.200	8.088	1.279	8.476	2.645	8.934	8.689
6.022	-0.158	8.102	1.333	8.490	2.677	8.476	2.645
6.150	-0.126	8.114	1.382	8.506	2.715	8.490	2.677
6.278	-0.093	8.124	1.423	8.522	2.752	8.506	2.715
6.382	-0.064	8.134	1.467	8.538	2.789	8.522	2.752
6.484	-0.035	8.144	1.512	8.554	2.827	8.538	2.789
6.584	-0.004	8.154	1.558	8.570	2.866	8.554	2.827
6.686	0.028	8.164	1.603	8.586	2.904	8.570	2.866
6.786	0.063	8.174	1.650	8.602	2.944	8.586	2.904
6.886	0.099	8.184	1.698	8.618	2.985	8.602	2.944
6.976	0.135	8.194	1.745	8.634	3.023	8.618	2.985
7.062	0.171	8.204	1.792	8.650	3.062	9.044	10.403
7.148	0.211	8.214	1.838	8.666	3.103	9.054	10.447
7.234	0.252	8.224	1.881	8.682	3.146	9.068	10.504
7.326	0.302	8.234	1.924	8.698	3.191	9.078	10.539
7.410	0.353	8.244	1.966	8.714	3.240	9.090	10.580
7.478	0.397	8.254	2.005	8.728	3.283		

pK_{a1} = 1.755, pK_{a2} = 4.715

Table AD194. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 7.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.15 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 6.8 M $NaClO_4$, pcH = pHr + 1.937.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-0.939	7.654	0.489	8.346	2.160	8.758	3.225
0.500	-0.899	7.714	0.541	8.358	2.198	8.772	3.268
0.968	-0.857	7.776	0.603	8.370	2.235	8.786	3.313
1.376	-0.820	7.840	0.674	8.382	2.270	8.800	3.360
1.758	-0.783	7.886	0.733	8.394	2.305	8.812	3.403
2.138	-0.744	7.926	0.791	8.406	2.338	8.824	3.451
2.518	-0.707	7.960	0.845	8.418	2.372	8.836	3.500
2.876	-0.667	7.988	0.897	8.432	2.410	8.848	3.554
3.134	-0.636	8.004	0.934	8.446	2.447	8.862	3.622
3.430	-0.602	8.028	0.985	8.460	2.485	8.874	3.687
3.730	-0.565	8.062	1.060	8.474	2.519	8.886	3.762
4.022	-0.526	8.090	1.135	8.488	2.553	8.898	3.848
4.302	-0.487	8.116	1.220	8.502	2.587	8.910	3.951
4.580	-0.446	8.140	1.301	8.516	2.620	8.922	4.079
4.850	-0.403	8.164	1.396	8.530	2.654	8.934	4.256
5.118	-0.360	8.184	1.482	8.544	2.688	8.946	4.543
5.376	-0.312	8.200	1.555	8.558	2.720	8.958	5.275
5.600	-0.268	8.212	1.613	8.572	2.754	8.968	7.413
5.860	-0.213	8.222	1.657	8.586	2.787		
6.102	-0.157	8.232	1.705	8.600	2.819		
6.330	-0.099	8.242	1.750	8.614	2.853		
6.534	-0.041	8.252	1.794	8.628	2.886		
6.726	0.019	8.262	1.840	8.642	2.920		
6.906	0.083	8.272	1.882	8.656	2.954		
7.050	0.139	8.282	1.923	8.670	2.988		
7.180	0.197	8.294	1.971	8.684	3.024		
7.300	0.256	8.304	2.011	8.698	3.060		
7.410	0.318	8.314	2.048	8.716	3.108		
7.504	0.378	8.324	2.083	8.730	3.146		
7.586	0.435	8.334	2.118	8.744	3.185		

$pK_{a1} = 1.751$, $pK_{a2} = 4.704$

Table AD195. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 9.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 8.97 M $NaClO_4$, pcH = pHr + 2.660.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-0.534	4.700	0.669	5.310	2.182	5.608	3.306
1.400	-0.344	4.742	0.714	5.320	2.217	5.616	3.363
1.636	-0.313	4.782	0.760	5.330	2.252	5.624	3.428
1.904	-0.274	4.818	0.805	5.340	2.284	5.632	3.496
2.120	-0.243	4.856	0.857	5.354	2.329	5.640	3.573
2.334	-0.210	4.890	0.909	5.362	2.357	5.648	3.667
2.540	-0.171	4.920	0.959	5.374	2.398	5.654	3.751
2.726	-0.131	4.952	1.019	5.386	2.436	5.660	3.839
2.888	-0.094	4.978	1.072	5.396	2.471	5.666	3.942
3.040	-0.060	5.002	1.127	5.406	2.503	5.672	4.066
3.154	-0.032	5.026	1.188	5.416	2.535		
3.264	-0.003	5.050	1.253	5.426	2.567		
3.372	0.026	5.072	1.318	5.436	2.599		
3.472	0.055	5.090	1.378	5.446	2.632		
3.580	0.088	5.106	1.433	5.456	2.667		
3.684	0.122	5.124	1.497	5.466	2.700		
3.788	0.158	5.140	1.558	5.476	2.735		
3.888	0.194	5.154	1.611	5.486	2.769		
3.980	0.230	5.184	1.724	5.496	2.804		
4.058	0.264	5.196	1.771	5.506	2.841		
4.122	0.292	5.206	1.811	5.516	2.878		
4.198	0.328	5.216	1.851	5.526	2.915		
4.266	0.363	5.226	1.893	5.536	2.954		
4.330	0.397	5.236	1.929	5.546	2.994		
4.400	0.439	5.248	1.972	5.556	3.034		
4.460	0.477	5.258	2.008	5.566	3.075		
4.514	0.514	5.268	2.042	5.576	3.124		
4.564	0.552	5.278	2.077	5.584	3.164		
4.610	0.588	5.288	2.111	5.592	3.208		
4.656	0.628	5.300	2.150	5.600	3.255		

pK_{a2} = 5.160

Table AD196. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 9.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Oxalic Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 8.97 M $NaClO_4$, pcH = pHr + 2.617.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-0.566	4.520	0.501	5.212	1.838	5.512	2.850
0.500	-0.513	4.582	0.549	5.222	1.876	5.522	2.884
0.760	-0.483	4.638	0.597	5.232	1.916	5.532	2.922
1.010	-0.452	4.688	0.643	5.242	1.953	5.542	2.964
1.250	-0.422	4.736	0.694	5.252	1.989	5.552	3.006
1.480	-0.387	4.784	0.749	5.262	2.025	5.562	3.052
1.692	-0.355	4.822	0.797	5.272	2.061	5.572	3.100
1.890	-0.324	4.856	0.844	5.282	2.095	5.582	3.153
2.080	-0.292	4.892	0.901	5.292	2.129	5.592	3.205
2.262	-0.260	4.922	0.952	5.302	2.163	5.604	3.273
2.432	-0.228	4.946	0.997	5.312	2.197		
2.592	-0.196	4.968	1.042	5.322	2.232		
2.740	-0.165	4.990	1.091	5.332	2.265		
2.880	-0.133	5.012	1.141	5.342	2.299		
3.012	-0.103	5.032	1.194	5.352	2.333		
3.130	-0.073	5.050	1.246	5.362	2.362		
3.240	-0.043	5.066	1.296	5.372	2.399		
3.340	-0.016	5.080	1.342	5.382	2.432		
3.440	0.013	5.092	1.380	5.392	2.465		
3.540	0.043	5.102	1.416	5.402	2.495		
3.640	0.075	5.112	1.453	5.412	2.527		
3.740	0.110	5.122	1.490	5.422	2.558		
3.844	0.149	5.132	1.525	5.432	2.588		
3.940	0.187	5.142	1.563	5.442	2.618		
4.034	0.228	5.152	1.603	5.452	2.652		
4.124	0.267	5.162	1.642	5.462	2.685		
4.210	0.310	5.172	1.681	5.472	2.718		
4.294	0.355	5.182	1.720	5.482	2.749		
4.374	0.404	5.192	1.760	5.492	2.782		
4.450	0.450	5.202	1.798	5.502	2.816		

$pK_{a2} = 5.128$

Table AD197. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 9.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 8.8 M $NaClO_4$, pcH = pHr + 2.536.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-1.522	7.242	-0.210	8.040	1.311	8.392	2.610
0.504	-1.487	7.316	-0.156	8.050	1.374	8.408	2.649
0.934	-1.455	7.392	-0.105	8.060	1.437	8.424	2.690
1.344	-1.420	7.450	-0.058	8.070	1.500	8.440	2.730
1.714	-1.385	7.500	-0.019	8.080	1.562	8.456	2.772
2.044	-1.353	7.540	0.011	8.090	1.618	8.472	2.814
2.370	-1.318	7.570	0.058	8.100	1.674	8.488	2.856
2.718	-1.279	7.616	0.095	8.110	1.719	8.504	2.899
3.030	-1.243	7.646	0.129	8.120	1.770	8.520	2.943
3.344	-1.205	7.698	0.164	8.130	1.807	8.536	2.990
3.644	-1.167	7.720	0.198	8.140	1.843	8.550	3.033
3.946	-1.126	7.740	0.229	8.150	1.889	8.564	3.076
4.240	-1.082	7.762	0.267	8.160	1.924	8.578	3.123
4.514	-1.039	7.782	0.305	8.170	1.966	8.592	3.171
4.764	-1.000	7.802	0.343	8.180	2.003	8.604	3.212
5.000	-0.957	7.822	0.384	8.190	2.039	8.616	3.261
5.264	-0.906	7.842	0.426	8.202	2.081	8.628	3.310
5.498	-0.859	7.862	0.473	8.214	2.121	8.640	3.363
5.706	-0.814	7.880	0.521	8.226	2.159	8.654	3.435
5.896	-0.767	7.898	0.579	8.238	2.198	8.666	3.496
6.072	-0.722	7.916	0.642	8.250	2.234	8.678	3.569
6.258	-0.688	7.932	0.703	8.262	2.269	8.690	3.651
6.404	-0.623	7.948	0.766	8.274	2.303	8.702	3.747
6.542	-0.577	7.962	0.830	8.286	2.336	8.712	3.848
6.662	-0.535	7.976	0.903	8.300	2.375	8.722	3.971
6.772	-0.493	7.988	0.970	8.314	2.412	8.732	4.131
6.872	-0.408	8.000	1.044	8.328	2.449	8.742	4.369
6.968	-0.358	8.010	1.106	8.344	2.490	8.752	4.849
7.066	-0.307	8.020	1.180	8.360	2.530	8.762	6.890
7.158	-0.259	8.030	1.248	8.376	2.570		

$pK_{a1} = 2.171$, $pK_{a2} = 5.149$

Table AD198. Potentiometric Titration Data for the pK_a Values of Oxalic Acid in 9.00 M $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.150 mmol Oxalic Acid, 1.5 mmol Excess $HClO_4$, Titrant = 0.20 M NaOH in 8.8 M $NaClO_4$, pcH = pHr + 2.471.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	-1.552	7.542	-0.040	8.130	1.473	8.604	2.970
0.504	-1.499	7.572	-0.013	8.140	1.528	8.616	2.995
0.934	-1.450	7.616	0.029	8.150	1.582	8.628	3.032
1.344	-1.410	7.646	0.065	8.160	1.636	8.640	3.066
1.714	-1.358	7.672	0.095	8.170	1.688	8.654	3.116
2.044	-1.322	7.698	0.122	8.180	1.723	8.668	3.165
2.370	-1.293	7.720	0.140	8.190	1.744	8.678	3.203
2.718	-1.255	7.740	0.183	8.202	1.810	8.692	3.259
3.030	-1.237	7.762	0.212	8.214	1.874	8.702	3.295
3.344	-1.180	7.782	0.218	8.226	1.928	8.712	3.337
3.644	-1.153	7.802	0.257	8.238	1.967	8.722	3.379
3.946	-1.118	7.822	0.296	8.250	2.009	8.732	3.412
4.240	-1.058	7.842	0.334	8.262	2.056	8.742	3.465
4.514	-1.006	7.862	0.373	8.274	2.099	8.752	3.529
4.764	-0.967	7.880	0.404	8.286	2.143	8.762	3.587
5.002	-0.934	7.898	0.439	8.300	2.161	8.772	3.659
5.264	-0.883	7.916	0.485	8.314	2.213	8.782	3.716
5.498	-0.840	7.932	0.520	8.328	2.261	8.792	3.816
5.706	-0.793	7.948	0.569	8.344	2.298	8.802	3.929
5.896	-0.770	7.964	0.606	8.360	2.348	8.814	4.098
6.072	-0.718	7.976	0.646	8.376	2.391	8.822	4.257
6.258	-0.654	7.988	0.691	8.392	2.434	8.834	4.706
6.410	-0.604	8.000	0.740	8.408	2.472	8.842	5.515
6.544	-0.560	8.010	0.785	8.424	2.508		
6.662	-0.517	8.020	0.831	8.440	2.547		
6.772	-0.478	8.030	0.870	8.456	2.582		
6.872	-0.433	8.040	0.917	8.472	2.625		
6.968	-0.391	8.050	0.968	8.490	2.667		
7.066	-0.343	8.060	1.029	8.504	2.708		
7.158	-0.300	8.070	1.097	8.520	2.744		
7.242	-0.254	8.080	1.160	8.536	2.789		
7.316	-0.219	8.090	1.231	8.552	2.823		
7.392	-0.166	8.100	1.282	8.564	2.848		
7.450	-0.118	8.114	1.365	8.578	2.892		
7.500	-0.081	8.120	1.403	8.592	2.932		

pK_{a1} = 2.083, pK_{a2} = 5.071

Table AD199. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.10 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.07 m $NaClO_4$, pcH = pHr + 0.019.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.195	3.358	3.266	4.194	4.561	4.682	5.723
0.094	2.208	3.384	3.289	4.208	4.590	4.696	5.761
0.200	2.224	3.412	3.315	4.220	4.614	4.708	5.795
0.322	2.242	3.440	3.342	4.232	4.639	4.720	5.828
0.448	2.265	3.468	3.370	4.244	4.663	4.734	5.869
0.580	2.288	3.496	3.399	4.256	4.689	4.746	5.906
0.704	2.311	3.520	3.424	4.268	4.712	4.756	5.937
0.808	2.331	3.546	3.454	4.278	4.734	4.766	5.969
0.922	2.352	3.572	3.484	4.288	4.756	4.776	5.999
1.022	2.372	3.596	3.513	4.298	4.778	4.786	6.035
1.114	2.391	3.618	3.541	4.310	4.803	4.794	6.059
1.212	2.411	3.642	3.572	4.320	4.824	4.804	6.093
1.310	2.432	3.666	3.605	4.330	4.847	4.814	6.132
1.410	2.455	3.692	3.642	4.342	4.872	4.822	6.162
1.500	2.476	3.718	3.680	4.352	4.895	4.832	6.202
1.582	2.496	3.742	3.717	4.362	4.918	4.842	6.243
1.666	2.517	3.766	3.756	4.372	4.941	4.852	6.287
1.764	2.542	3.784	3.783	4.382	4.962	4.860	6.324
1.854	2.567	3.804	3.816	4.392	4.988	4.870	6.374
1.938	2.590	3.824	3.851	4.408	5.024	4.880	6.426
2.032	2.619	3.846	3.889	4.420	5.052	4.890	6.483
2.126	2.647	3.864	3.921	4.432	5.080	4.900	6.546
2.222	2.679	3.878	3.946	4.442	5.105	4.910	6.621
2.300	2.704	3.894	3.976	4.452	5.130	4.918	6.684
2.352	2.723	3.918	4.019	4.464	5.158	4.928	6.776
2.406	2.742	3.934	4.049	4.474	5.183	4.940	6.927
2.462	2.763	3.950	4.080	4.488	5.219	4.948	7.039
2.514	2.784	3.968	4.115	4.502	5.254	4.958	7.222
2.562	2.802	3.986	4.150	4.514	5.283	4.968	7.559
2.626	2.829	4.002	4.181	4.524	5.309	4.976	8.140
2.682	2.853	4.022	4.220	4.534	5.334	4.984	8.810
2.736	2.878	4.040	4.255	4.544	5.359	4.992	9.124
2.788	2.902	4.058	4.289	4.554	5.384	5.000	9.309
2.840	2.928	4.076	4.325	4.566	5.415	5.008	9.441
2.888	2.952	4.086	4.345	4.578	5.445	5.016	9.548
2.934	2.977	4.100	4.373	4.590	5.478	5.024	9.635
2.988	3.006	4.110	4.393	4.600	5.505	5.034	9.725
3.042	3.038	4.122	4.417	4.610	5.529	5.044	9.799
3.100	3.075	4.134	4.441	4.622	5.562	5.054	9.864
3.156	3.111	4.146	4.465	4.634	5.593	5.062	9.910
3.210	3.149	4.158	4.489	4.644	5.619	5.078	9.987
3.266	3.190	4.170	4.513	4.656	5.652	5.092	10.045
3.314	3.228	4.182	4.535	4.670	5.698	5.106	10.100

$pK_{a1} = 3.000$, $pK_{a2} = 4.429$, $pK_{a3} = 5.700$

Table AD200. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.10 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.07 m $NaClO_4$, pcH = pHr + 0.036.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.175	3.490	3.376	4.248	4.657	4.814	6.121
0.130	2.195	3.516	3.404	4.264	4.691	4.828	6.175
0.272	2.217	3.540	3.431	4.280	4.723	4.840	6.224
0.412	2.240	3.562	3.456	4.296	4.759	4.850	6.267
0.544	2.265	3.586	3.484	4.312	4.794	4.862	6.322
0.670	2.286	3.608	3.512	4.328	4.829	4.876	6.392
0.796	2.309	3.636	3.548	4.348	4.874	4.890	6.466
0.920	2.334	3.658	3.578	4.364	4.911	4.902	6.539
1.042	2.359	3.682	3.612	4.376	4.937	4.914	6.629
1.164	2.384	3.704	3.642	4.390	4.970	4.924	6.710
1.290	2.411	3.726	3.676	4.404	5.003	4.936	6.826
1.414	2.439	3.744	3.702	4.418	5.035	4.948	6.977
1.510	2.462	3.766	3.738	4.430	5.066	4.960	7.194
1.644	2.496	3.788	3.775	4.442	5.094	4.972	7.596
1.726	2.515	3.810	3.811	4.454	5.123	4.986	8.711
1.834	2.546	3.826	3.839	4.466	5.153	4.998	9.160
1.842	2.576	3.840	3.863	4.478	5.183	5.008	9.368
2.040	2.604	3.858	3.895	4.492	5.217	5.022	9.555
2.136	2.634	3.874	3.924	4.504	5.247	5.034	9.683
2.224	2.663	3.888	3.949	4.516	5.277	5.046	9.780
2.332	2.700	3.906	3.983	4.528	5.308	5.060	9.873
2.430	2.735	3.922	4.013	4.540	5.338	5.072	9.938
2.514	2.768	3.936	4.039	4.552	5.370	5.086	10.005
2.610	2.807	3.952	4.070	4.564	5.398	5.134	10.171
2.706	2.848	3.964	4.093	4.578	5.436	5.180	10.294
2.768	2.876	3.978	4.120	4.590	5.467	5.224	10.384
2.838	2.910	3.990	4.144	4.602	5.501	5.266	10.455
2.894	2.939	4.006	4.174	4.614	5.530	5.304	10.512
2.944	2.966	4.020	4.202	4.628	5.566	5.344	10.564
2.994	2.995	4.036	4.233	4.640	5.597	5.386	10.613
3.046	3.025	4.050	4.261	4.652	5.629	5.474	10.699
3.096	3.056	4.064	4.287	4.664	5.661	5.558	10.766
3.142	3.086	4.074	4.307	4.676	5.695	5.644	10.826
3.188	3.118	4.086	4.331	4.688	5.727	5.734	10.881
3.234	3.151	4.102	4.363	4.702	5.766	5.814	10.926
3.280	3.187	4.118	4.399	4.714	5.801	5.912	10.972
3.326	3.223	4.134	4.428	4.726	5.835	5.982	11.008
3.348	3.240	4.150	4.458	4.738	5.871		
3.374	3.265	4.168	4.494	4.750	5.907		
3.398	3.285	4.186	4.530	4.762	5.944		
3.418	3.305	4.200	4.559	4.774	5.982		
3.438	3.324	4.216	4.591	4.786	6.022		
3.466	3.351	4.232	4.623	4.800	6.072		

$pK_{a1} = 2.980$, $pK_{a2} = 4.410$, $pK_{a3} = 5.695$

Table AD201. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.30 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.27 m $NaClO_4$, pcH = pHr + 0.113.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.088	3.682	3.345	4.486	4.760	4.962	6.338
0.154	2.111	3.702	3.368	4.498	4.786	4.970	6.417
0.326	2.137	3.724	3.395	4.510	4.821	4.976	6.483
0.462	2.159	3.750	3.427	4.520	4.840	4.982	6.567
0.594	2.181	3.772	3.454	4.538	4.883	4.990	6.702
0.732	2.204	3.808	3.503	4.554	4.917	4.998	6.875
0.874	2.229	3.834	3.540	4.568	4.951	5.006	7.132
1.002	2.253	3.860	3.577	4.584	4.988	5.014	7.623
1.136	2.278	3.882	3.609	4.600	5.026	5.020	8.168
1.260	2.303	3.908	3.649	4.616	5.062	5.028	8.594
1.384	2.329	3.930	3.685	4.630	5.097	5.036	8.841
1.504	2.353	3.948	3.713	4.644	5.131	5.042	8.965
1.630	2.383	3.968	3.751	4.658	5.169	5.050	9.111
1.746	2.410	3.988	3.783	4.674	5.212	5.058	9.232
1.858	2.439	4.008	3.816	4.688	5.245	5.064	9.312
1.974	2.470	4.030	3.854	4.700	5.273	5.072	9.404
2.106	2.505	4.048	3.886	4.712	5.306	5.078	9.461
2.220	2.539	4.068	3.923	4.724	5.340	5.084	9.513
2.334	2.575	4.086	3.956	4.736	5.376	5.090	9.559
2.444	2.611	4.102	3.987	4.750	5.409	5.098	9.616
2.552	2.649	4.118	4.014	4.764	5.453	5.106	9.667
2.652	2.686	4.136	4.047	4.778	5.494	5.114	9.715
2.756	2.728	4.154	4.082	4.794	5.546	5.122	9.758
2.846	2.766	4.170	4.112	4.802	5.567	5.132	9.806
2.946	2.812	4.188	4.147	4.810	5.592	5.152	9.893
3.026	2.852	4.202	4.173	4.818	5.619	5.178	9.991
3.106	2.894	4.216	4.201	4.828	5.653	5.206	10.073
3.184	2.939	4.232	4.233	4.838	5.688	5.232	10.131
3.248	2.979	4.248	4.263	4.846	5.716	5.260	10.204
3.298	3.012	4.264	4.294	4.854	5.745	5.286	10.244
3.352	3.049	4.278	4.325	4.862	5.779	5.338	10.329
3.392	3.080	4.296	4.361	4.870	5.805	5.390	10.401
3.416	3.097	4.312	4.395	4.878	5.840	5.450	10.471
3.442	3.118	4.328	4.426	4.886	5.874	5.496	10.517
3.462	3.134	4.346	4.462	4.892	5.902	5.584	10.594
3.488	3.156	4.368	4.507	4.900	5.938	5.686	10.668
3.510	3.175	4.384	4.539	4.908	5.981	5.774	10.724
3.536	3.198	4.398	4.571	4.916	6.021	5.860	10.771
3.558	3.218	4.416	4.607	4.924	6.074	5.948	10.814
3.582	3.241	4.434	4.648	4.932	6.113	6.030	10.850
3.610	3.268	4.450	4.678	4.940	6.168	6.128	10.889
3.634	3.293	4.458	4.700	4.948	6.225	6.236	10.928
3.656	3.318	4.472	4.732	4.954	6.273	6.358	10.969

$pK_{a1} = 2.728$, $pK_{a2} = 4.194$, $pK_{a3} = 5.418$

Table AD202. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.30 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.03 M NaOH in 0.27 m $NaClO_4$, pcH = pHr + 0.097.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.105	3.582	3.248	4.392	4.541	4.868	5.765
0.174	2.130	3.612	3.278	4.410	4.578	4.876	5.797
0.306	2.150	3.640	3.306	4.422	4.605	4.884	5.828
0.452	2.173	3.672	3.341	4.434	4.630	4.894	5.870
0.592	2.196	3.698	3.371	4.448	4.660	4.902	5.907
0.720	2.217	3.724	3.401	4.462	4.690	4.910	5.947
0.838	2.238	3.750	3.432	4.474	4.717	4.920	5.996
0.956	2.257	3.780	3.470	4.486	4.744	4.930	6.051
1.076	2.281	3.810	3.510	4.500	4.775	4.938	6.099
1.198	2.305	3.830	3.537	4.512	4.802	4.946	6.150
1.322	2.331	3.852	3.568	4.526	4.834	4.954	6.206
1.450	2.357	3.872	3.597	4.538	4.862	4.964	6.283
1.562	2.382	3.892	3.627	4.550	4.889	4.970	6.336
1.668	2.407	3.910	3.655	4.564	4.921	4.974	6.373
1.774	2.432	3.928	3.683	4.578	4.955	4.982	6.465
1.874	2.457	3.950	3.719	4.590	4.984	4.986	6.517
1.978	2.485	3.968	3.748	4.602	5.012	4.992	6.598
2.096	2.517	3.990	3.786	4.616	5.045	4.998	6.703
2.200	2.547	4.006	3.816	4.632	5.085	5.002	6.787
2.294	2.576	4.026	3.849	4.648	5.123	5.006	6.872
2.378	2.602	4.046	3.886	4.658	5.147	5.010	6.994
2.484	2.638	4.066	3.916	4.668	5.173	5.014	7.166
2.562	2.666	4.084	3.948	4.678	5.198	5.020	7.543
2.636	2.693	4.104	3.985	4.690	5.228	5.026	8.139
2.720	2.725	4.124	4.021	4.702	5.260	5.030	8.423
2.822	2.768	4.144	4.058	4.714	5.291	5.036	8.672
2.910	2.807	4.164	4.095	4.726	5.323	5.042	8.849
2.998	2.849	4.182	4.129	4.736	5.350	5.046	8.939
3.082	2.893	4.198	4.159	4.746	5.377	5.052	9.060
3.142	2.926	4.212	4.185	4.756	5.405	5.058	9.159
3.206	2.963	4.226	4.212	4.766	5.433	5.064	9.248
3.266	3.000	4.240	4.239	4.776	5.461	5.070	9.321
3.326	3.042	4.256	4.271	4.792	5.510	5.076	9.385
3.356	3.062	4.274	4.305	4.800	5.532	5.082	9.443
3.392	3.089	4.292	4.340	4.810	5.562	5.088	9.497
3.424	3.112	4.312	4.380	4.824	5.609	5.094	9.544
3.454	3.136	4.330	4.415	4.836	5.648	5.100	9.587
3.486	3.162	4.348	4.452	4.848	5.691	5.114	9.676
3.520	3.192	4.362	4.480	4.856	5.719	5.130	9.763
3.552	3.220	4.376	4.508	4.862	5.742	5.148	9.844

Table AD202. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
5.162	9.898	6.456	10.954
5.176	9.946	6.632	11.004
5.192	9.998		
5.206	10.036		
5.230	10.098		
5.256	10.155		
5.282	10.205		
5.310	10.252		
5.360	10.327		
5.416	10.398		
5.472	10.458		
5.532	10.515		
5.588	10.583		
5.658	10.613		
5.748	10.670		
5.844	10.723		
5.936	10.768		
6.076	10.827		
6.194	10.871		
6.334	10.917		

$pK_{a1} = 2.714$, $pK_{a2} = 4.180$, $pK_{a3} = 5.391$

Table AD203. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.50 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.47 m $NaClO_4$, pcH = pHr + 0.149.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.064	3.744	3.360	4.550	4.675	5.070	6.346
0.138	2.084	3.764	3.383	4.564	4.701	5.078	6.448
0.268	2.103	3.786	3.410	4.578	4.731	5.086	6.572
0.398	2.123	3.814	3.445	4.592	4.760	5.094	6.741
0.524	2.142	3.844	3.486	4.606	4.788	5.102	7.008
0.652	2.162	3.874	3.527	4.622	4.821	5.108	7.351
0.770	2.175	3.902	3.569	4.636	4.850	5.118	7.946
0.898	2.196	3.936	3.616	4.650	4.879	5.122	8.256
1.030	2.221	3.968	3.662	4.664	4.910	5.130	8.540
1.166	2.248	4.000	3.712	4.678	4.941	5.138	8.731
1.308	2.276	4.022	3.742	4.692	4.971	5.144	8.846
1.442	2.305	4.050	3.785	4.706	5.001	5.152	8.974
1.576	2.335	4.076	3.827	4.720	5.031	5.158	9.057
1.704	2.365	4.100	3.867	4.732	5.063	5.166	9.156
1.846	2.400	4.126	3.911	4.750	5.102	5.172	9.220
1.982	2.435	4.152	3.955	4.764	5.132	5.180	9.305
2.098	2.467	4.170	3.985	4.776	5.160	5.186	9.357
2.216	2.502	4.192	4.021	4.790	5.194	5.194	9.421
2.330	2.537	4.208	4.048	4.802	5.222	5.202	9.476
2.446	2.575	4.222	4.071	4.814	5.253	5.210	9.532
2.558	2.615	4.236	4.096	4.828	5.289	5.218	9.579
2.656	2.651	4.248	4.116	4.842	5.326	5.246	9.722
2.746	2.687	4.260	4.137	4.858	5.367	5.274	9.831
2.840	2.726	4.274	4.161	4.872	5.406	5.300	9.919
2.918	2.762	4.286	4.182	4.884	5.441	5.328	9.999
2.992	2.797	4.300	4.207	4.898	5.482	5.356	10.067
3.056	2.829	4.314	4.233	4.912	5.525	5.398	10.150
3.116	2.861	4.328	4.258	4.928	5.575	5.450	10.235
3.174	2.894	4.340	4.278	4.942	5.622	5.504	10.310
3.236	2.931	4.356	4.307	4.962	5.695	5.550	10.365
3.298	2.970	4.366	4.324	4.970	5.728	5.604	10.423
3.356	3.011	4.378	4.346	4.978	5.762	5.658	10.473
3.428	3.063	4.394	4.376	4.986	5.794	5.716	10.520
3.460	3.088	4.410	4.409	4.994	5.831	5.770	10.561
3.488	3.110	4.426	4.442	5.000	5.858	5.864	10.620
3.516	3.133	4.438	4.463	5.008	5.896	5.956	10.676
3.542	3.156	4.450	4.483	5.016	5.938	6.056	10.725
3.570	3.181	4.464	4.505	5.024	5.991	6.154	10.767
3.598	3.207	4.478	4.535	5.030	6.021	6.280	10.817
3.624	3.232	4.494	4.563	5.038	6.069	6.386	10.853
3.660	3.268	4.508	4.592	5.046	6.127	6.516	10.894
3.684	3.293	4.522	4.618	5.054	6.188	6.646	10.930
3.714	3.326	4.536	4.645	5.062	6.263	6.786	10.965

pK_{a1} = 2.894, pK_{a2} = 4.252, pK_{a3} = 5.319

Table AD204. Potentiometric Titration Data for the pK_a Values of Citric Acid in 0.50 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.47 m $NaClO_4$, pcH = pHr + 0.128.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.079	3.672	3.329	4.524	4.708	5.058	6.638
0.160	2.102	3.698	3.359	4.536	4.742	5.076	7.178
0.308	2.121	3.726	3.395	4.548	4.759	5.092	8.299
0.458	2.145	3.752	3.422	4.562	4.789	5.110	8.841
0.588	2.167	3.778	3.459	4.576	4.818	5.126	9.060
0.704	2.186	3.800	3.483	4.588	4.841	5.142	9.253
0.828	2.208	3.826	3.516	4.602	4.867	5.158	9.393
0.958	2.232	3.854	3.556	4.616	4.897	5.174	9.513
1.066	2.251	3.876	3.588	4.630	4.928	5.192	9.628
1.188	2.277	3.902	3.621	4.642	4.952	5.218	9.750
1.328	2.305	3.928	3.660	4.656	4.980	5.248	9.872
1.444	2.330	3.952	3.700	4.668	5.007	5.278	9.968
1.556	2.355	3.980	3.739	4.682	5.038	5.304	10.039
1.698	2.389	3.996	3.766	4.696	5.073	5.366	10.170
1.814	2.418	4.016	3.798	4.708	5.100	5.426	10.267
1.912	2.444	4.034	3.826	4.718	5.121	5.482	10.344
2.002	2.469	4.052	3.855	4.734	5.156	5.544	10.416
2.092	2.494	4.070	3.891	4.746	5.187	5.632	10.500
2.190	2.523	4.088	3.921	4.758	5.211	5.730	10.578
2.280	2.551	4.106	3.951	4.772	5.242	5.826	10.641
2.374	2.580	4.124	3.979	4.786	5.275	5.928	10.702
2.470	2.613	4.144	4.015	4.802	5.316	6.020	10.746
2.536	2.637	4.162	4.042	4.816	5.359	6.140	10.799
2.638	2.674	4.180	4.071	4.832	5.400	6.258	10.844
2.734	2.713	4.200	4.106	4.848	5.440	6.380	10.887
2.838	2.758	4.216	4.133	4.864	5.489	6.518	10.929
2.924	2.797	4.236	4.169	4.876	5.523	6.646	10.962
3.018	2.844	4.252	4.199	4.892	5.578	6.760	11.002
3.108	2.892	4.270	4.232	4.904	5.619		
3.152	2.917	4.290	4.268	4.918	5.668		
3.204	2.947	4.312	4.306	4.932	5.719		
3.258	2.982	4.328	4.333	4.948	5.792		
3.302	3.012	4.346	4.367	4.956	5.821		
3.362	3.056	4.364	4.399	4.962	5.841		
3.410	3.090	4.384	4.441	4.970	5.880		
3.460	3.129	4.402	4.469	4.976	5.913		
3.484	3.152	4.420	4.504	4.982	5.938		
3.508	3.168	4.442	4.544	4.990	5.981		
3.536	3.195	4.460	4.580	4.998	6.040		
3.566	3.224	4.472	4.605	5.004	6.072		
3.596	3.252	4.484	4.626	5.012	6.125		
3.622	3.277	4.498	4.653	5.020	6.179		
3.648	3.304	4.512	4.681	5.038	6.346		

$pK_{a1} = 2.935$, $pK_{a2} = 4.273$, $pK_{a3} = 5.348$

Table AD205. Potentiometric Titration Data for the pK_a Values of Citric Acid in 1.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.97 m $NaClO_4$, pcH = pHr + 0.268.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.944	3.622	3.251	4.550	4.777	4.996	8.914
0.150	1.968	3.642	3.274	4.566	4.809	5.002	9.032
0.280	1.989	3.670	3.308	4.582	4.842	5.008	9.126
0.434	2.014	3.694	3.338	4.596	4.892	5.014	9.209
0.564	2.036	3.720	3.371	4.614	4.913	5.020	9.277
0.702	2.061	3.746	3.405	4.636	4.961	5.026	9.340
0.842	2.087	3.772	3.440	4.654	5.000	5.034	9.412
0.972	2.113	3.796	3.473	4.672	5.043	5.044	9.489
1.116	2.143	3.832	3.525	4.684	5.073	5.056	9.569
1.290	2.179	3.856	3.560	4.700	5.111	5.066	9.627
1.436	2.212	3.880	3.596	4.714	5.146	5.078	9.686
1.554	2.240	3.906	3.637	4.728	5.183	5.102	9.787
1.698	2.276	3.930	3.674	4.742	5.222	5.120	9.852
1.828	2.310	3.952	3.709	4.756	5.260	5.138	9.909
1.950	2.344	3.976	3.748	4.770	5.299	5.162	9.973
2.072	2.379	3.998	3.784	4.782	5.336	5.182	10.024
2.192	2.417	4.020	3.819	4.788	5.361	5.204	10.070
2.306	2.455	4.044	3.860	4.802	5.406	5.252	10.158
2.396	2.485	4.066	3.896	4.814	5.449	5.288	10.214
2.478	2.516	4.092	3.939	4.824	5.487	5.332	10.273
2.558	2.546	4.120	3.987	4.834	5.523	5.406	10.355
2.634	2.578	4.144	4.028	4.840	5.552	5.478	10.423
2.702	2.607	4.162	4.058	4.844	5.572	5.544	10.478
2.780	2.642	4.186	4.101	4.850	5.598	5.644	10.548
2.850	2.675	4.206	4.135	4.856	5.622	5.752	10.612
2.894	2.697	4.224	4.167	4.864	5.659	5.852	10.663
2.942	2.722	4.244	4.201	4.872	5.700	5.960	10.713
2.986	2.746	4.260	4.229	4.880	5.743	6.064	10.754
3.038	2.775	4.278	4.260	4.890	5.800	6.176	10.805
3.090	2.805	4.300	4.300	4.898	5.854	6.294	10.840
3.144	2.839	4.316	4.330	4.906	5.913	6.418	10.876
3.190	2.870	4.334	4.362	4.912	5.960	6.536	10.908
3.242	2.906	4.352	4.395	4.920	6.028	6.684	10.942
3.294	2.944	4.370	4.429	4.928	6.108	6.836	10.976
3.346	2.984	4.388	4.461	4.934	6.180	6.986	11.009
3.402	3.031	4.406	4.494	4.942	6.289		
3.424	3.051	4.424	4.529	4.950	6.435		
3.450	3.074	4.442	4.563	4.956	6.575		
3.478	3.101	4.458	4.594	4.964	6.865		
3.508	3.129	4.476	4.629	4.970	7.241		
3.536	3.157	4.494	4.664	4.976	7.998		
3.568	3.191	4.514	4.704	4.984	8.555		
3.598	3.224	4.532	4.741	4.990	8.769		

$pK_{a1} = 2.947$, $pK_{a2} = 4.237$, $pK_{a3} = 5.244$

Table AD206. Potentiometric Titration Data for the pK_a Values of Citric Acid in 1.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.97 m $NaClO_4$, pcH = pHr + 0.272.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.937	3.718	3.342	4.582	4.800	5.032	9.160
0.182	1.966	3.742	3.373	4.598	4.832	5.050	9.365
0.386	1.998	3.766	3.405	4.612	4.862	5.066	9.493
0.560	2.029	3.788	3.435	4.626	4.892	5.086	9.615
0.694	2.052	3.812	3.468	4.644	4.931	5.114	9.747
0.874	2.086	3.832	3.497	4.658	4.963	5.148	9.866
1.028	2.115	3.852	3.527	4.674	4.998	5.174	9.944
1.170	2.144	3.876	3.561	4.690	5.036	5.202	10.013
1.310	2.174	3.900	3.598	4.706	5.074	5.234	10.081
1.432	2.202	3.924	3.634	4.720	5.108	5.262	10.132
1.556	2.232	3.938	3.656	4.736	5.149	5.304	10.199
1.674	2.260	3.958	3.688	4.756	5.189	5.346	10.259
1.796	2.292	3.976	3.716	4.762	5.219	5.402	10.325
1.920	2.326	4.004	3.763	4.776	5.256	5.470	10.393
2.024	2.356	4.030	3.803	4.786	5.285	5.538	10.452
2.154	2.394	4.052	3.839	4.798	5.320	5.630	10.519
2.258	2.428	4.078	3.883	4.810	5.359	5.730	10.584
2.378	2.469	4.102	3.922	4.822	5.399	5.830	10.639
2.504	2.514	4.120	3.953	4.836	5.446	5.938	10.689
2.584	2.546	4.138	3.982	4.848	5.489	6.074	10.746
2.662	2.578	4.154	4.010	4.860	5.537	6.208	10.795
2.726	2.605	4.174	4.044	4.870	5.579	6.352	10.840
2.810	2.643	4.196	4.083	4.874	5.603	6.494	10.880
2.882	2.678	4.220	4.123	4.882	5.639	6.648	10.922
2.950	2.713	4.238	4.154	4.890	5.679	6.834	10.962
3.040	2.762	4.262	4.196	4.898	5.722	7.048	11.011
3.110	2.803	4.280	4.229	4.904	5.754		
3.148	2.827	4.300	4.264	4.910	5.791		
3.200	2.861	4.318	4.297	4.916	5.827		
3.252	2.897	4.336	4.327	4.922	5.868		
3.300	2.931	4.356	4.364	4.928	5.910		
3.342	2.963	4.378	4.404	4.934	5.958		
3.364	2.998	4.398	4.441	4.940	6.011		
3.422	3.030	4.416	4.476	4.948	6.088		
3.460	3.063	4.436	4.511	4.954	6.160		
3.498	3.099	4.456	4.551	4.962	6.261		
3.540	3.140	4.474	4.584	4.968	6.358		
3.580	3.182	4.490	4.613	4.974	6.475		
3.604	3.207	4.508	4.649	4.980	6.644		
3.630	3.237	4.522	4.678	4.986	6.897		
3.646	3.255	4.538	4.708	4.992	7.372		
3.668	3.280	4.552	4.737	5.000	8.258		
3.692	3.310	4.566	4.766	5.016	8.879		

$pK_{a1} = 2.965$, $pK_{a2} = 4.246$, $pK_{a3} = 5.249$

Table AD207. Potentiometric Titration Data for the pK_a Values of Citric Acid in 3.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 2.97 m $NaClO_4$, pcH = pHr + 0.711.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.538	3.694	2.954	4.520	4.312	4.992	6.132
0.180	1.566	3.720	2.988	4.536	4.343	4.996	6.239
0.318	1.587	3.744	3.020	4.554	4.377	5.000	6.373
0.460	1.612	3.766	3.052	4.572	4.410	5.004	6.532
0.592	1.634	3.792	3.088	4.590	4.445	5.008	6.773
0.426	1.659	3.812	3.117	4.604	4.471	5.012	7.161
0.858	1.684	3.842	3.162	4.620	4.503	5.016	7.644
0.990	1.710	3.858	3.186	4.638	4.538	5.020	8.049
1.126	1.737	3.878	3.217	4.654	4.571	5.024	8.301
1.256	1.765	3.898	3.249	4.672	4.609	5.030	8.543
1.402	1.798	3.918	3.281	4.688	4.643	5.034	8.668
1.534	1.830	3.936	3.311	4.706	4.683	5.038	8.754
1.672	1.864	3.954	3.339	4.724	4.724	5.042	8.831
1.776	1.891	3.972	3.367	4.746	4.777	5.046	8.911
1.892	1.923	3.988	3.397	4.760	4.812	5.052	9.003
2.012	1.957	4.004	3.424	4.776	4.852	5.056	9.064
2.142	1.997	4.018	3.445	4.790	4.891	5.068	9.204
2.274	2.040	4.034	3.473	4.806	4.934	5.078	9.303
2.354	2.069	4.056	3.510	4.818	4.969	5.090	9.394
2.446	2.101	4.072	3.538	4.830	5.006	5.100	9.462
2.538	2.137	4.086	3.563	4.838	5.034	5.110	9.520
2.614	2.168	4.104	3.592	4.848	5.072	5.124	9.585
2.692	2.202	4.122	3.622	4.860	5.113	5.152	9.701
2.786	2.247	4.144	3.660	4.872	5.157	5.178	9.785
2.884	2.295	4.164	3.694	4.882	5.194	5.202	9.853
2.948	2.329	4.182	3.724	4.892	5.238	5.230	9.922
3.018	2.367	4.200	3.755	4.898	5.265	5.256	9.973
3.084	2.407	4.218	3.786	4.904	5.291	5.282	10.021
3.140	2.443	4.238	3.820	4.912	5.336	5.316	10.078
3.194	2.479	4.258	3.853	4.918	5.373	5.348	10.124
3.242	2.511	4.276	3.884	4.926	5.422	5.416	10.209
3.288	2.546	4.296	3.919	4.932	5.463	5.482	10.276
3.336	2.585	4.314	3.949	4.940	5.517	5.550	10.334
3.386	2.627	4.334	3.982	4.944	5.547	5.642	10.402
3.428	2.664	4.354	4.017	4.948	5.613	5.738	10.463
3.498	2.730	4.372	4.048	4.952	5.647	5.840	10.520
3.520	2.752	4.392	4.084	4.956	5.678	5.948	10.570
3.548	2.781	4.410	4.114	4.960	5.713	6.066	10.619
3.572	2.808	4.428	4.146	4.970	5.780	6.202	10.669
3.596	2.835	4.448	4.181	4.976	5.859	6.334	10.712
3.618	2.860	4.466	4.214	4.980	5.922	6.482	10.755
3.642	2.889	4.486	4.251	4.984	5.978	6.674	10.802
3.670	2.923	4.504	4.284	4.988	6.047	6.898	10.851

pK_{a1} = 2.950, pK_{a2} = 4.271, pK_{a3} = 5.178

Table AD208. Potentiometric Titration Data for the pK_a Values of Citric Acid in 3.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 2.97 m $NaClO_4$, pcH = pHr + 0.686.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.533	3.734	3.043	4.532	4.395	4.946	6.042
0.172	1.560	3.762	3.084	4.550	4.434	4.952	6.198
0.306	1.582	3.784	3.115	4.566	4.463	4.956	6.317
0.564	1.627	3.804	3.144	4.584	4.499	4.960	6.500
0.696	1.651	3.826	3.178	4.602	4.533	4.964	6.701
0.838	1.679	3.852	3.218	4.618	4.573	4.968	7.079
0.982	1.708	3.876	3.257	4.634	4.607	4.972	7.692
1.116	1.735	3.894	3.284	4.648	4.635	4.976	8.015
1.258	1.765	3.914	3.317	4.664	4.678	4.980	8.258
1.378	1.792	3.936	3.353	4.680	4.710	4.986	8.523
1.510	1.823	3.956	3.388	4.694	4.740	4.990	8.667
1.642	1.856	3.978	3.422	4.706	4.771	5.006	8.974
1.772	1.890	4.002	3.462	4.724	4.814	5.022	9.189
1.904	1.927	4.022	3.498	4.738	4.858	5.038	9.339
2.014	1.959	4.034	3.517	4.754	4.898	5.056	9.463
2.144	2.000	4.048	3.541	4.768	4.936	5.076	9.574
2.234	2.029	4.060	3.563	4.784	4.982	5.102	9.684
2.314	2.057	4.076	3.590	4.796	5.025	5.136	9.780
2.408	2.091	4.094	3.619	4.800	5.040	5.170	9.878
2.498	2.127	4.110	3.647	4.810	5.076	5.202	9.949
2.586	2.163	4.126	3.674	4.820	5.105	5.236	10.013
2.676	2.202	4.146	3.708	4.830	5.146	5.308	10.123
2.764	2.243	4.166	3.742	4.838	5.177	5.386	10.212
2.854	2.289	4.186	3.765	4.846	5.218	5.456	10.285
2.950	2.341	4.204	3.807	4.856	5.263	5.522	10.342
3.028	2.387	4.222	3.840	4.866	5.310	5.590	10.394
3.088	2.425	4.238	3.866	4.870	5.341	5.704	10.468
3.142	2.461	4.254	3.895	4.874	5.353	5.840	10.543
3.196	2.498	4.274	3.929	4.880	5.385	5.964	10.599
3.250	2.538	4.290	3.957	4.884	5.406	6.106	10.653
3.302	2.579	4.306	3.987	4.888	5.433	6.252	10.702
3.356	2.642	4.322	4.016	4.892	5.462	6.408	10.747
3.404	2.666	4.340	4.046	4.896	5.495	6.558	10.790
3.452	2.712	4.360	4.080	4.898	5.505	6.716	10.824
3.474	2.736	4.378	4.113	4.902	5.535	6.864	10.857
3.496	2.756	4.396	4.146	4.908	5.582	7.018	10.887
3.522	2.782	4.414	4.177	4.914	5.625	7.180	10.916
3.554	2.817	4.426	4.200	4.920	5.680	7.368	10.946
3.588	2.850	4.444	4.232	4.924	5.727	7.582	10.980
3.622	2.897	4.460	4.264	4.928	5.769	7.762	11.009
3.652	2.934	4.482	4.301	4.932	5.817		
3.680	2.971	4.500	4.333	4.938	5.898		
3.706	3.006	4.516	4.363	4.942	5.962		

$pK_{a1} = 2.972$, $pK_{a2} = 4.304$, $pK_{a3} = 5.254$

Table AD209. Potentiometric Titration Data for the pK_a Values of Citric Acid in 5.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 4.97 m $NaClO_4$, pcH = pHr + 1.118.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.111	3.620	2.710	4.346	4.038	4.866	5.939
0.144	1.135	3.640	2.743	4.366	4.073	4.870	6.055
0.286	1.160	3.656	2.768	4.386	4.111	4.874	6.178
0.430	1.183	3.672	2.795	4.404	4.145	4.878	6.326
0.586	1.211	3.688	2.824	4.422	4.180	4.882	6.558
0.748	1.243	3.702	2.849	4.440	4.216	4.886	6.844
0.904	1.274	3.716	2.874	4.460	4.254	4.892	7.389
1.066	1.308	3.730	2.900	4.480	4.293	4.896	7.811
1.218	1.342	3.746	2.932	4.498	4.329	4.900	8.079
1.384	1.382	3.762	2.957	4.516	4.367	4.904	8.255
1.532	1.420	3.776	2.983	4.534	4.403	4.908	8.429
1.664	1.457	3.794	3.016	4.552	4.443	4.916	8.653
1.778	1.490	3.808	3.042	4.570	4.480	4.922	8.777
1.896	1.526	3.824	3.076	4.588	4.522	4.926	8.853
2.028	1.569	3.840	3.104	4.606	4.560	4.930	8.918
2.148	1.610	3.858	3.139	4.624	4.604	4.936	8.999
2.248	1.648	3.872	3.170	4.644	4.653	4.942	9.083
2.370	1.696	3.892	3.205	4.656	4.683	4.960	9.269
2.480	1.744	3.908	3.236	4.668	4.716	4.978	9.406
2.590	1.796	3.926	3.269	4.680	4.756	4.998	9.524
2.670	1.836	3.942	3.300	4.692	4.787	5.018	9.620
2.768	1.889	3.958	3.330	4.700	4.812	5.040	9.703
2.848	1.937	3.976	3.364	4.710	4.843	5.074	9.803
2.928	1.988	3.994	3.397	4.722	4.881	5.108	9.898
2.996	2.034	4.012	3.431	4.730	4.908	5.142	9.970
3.072	2.090	4.032	3.468	4.740	4.944	5.176	10.033
3.116	2.125	4.050	3.500	4.750	4.985	5.254	10.147
3.152	2.155	4.068	3.533	4.760	5.029	5.336	10.239
3.188	2.185	4.084	3.563	4.772	5.085	5.414	10.311
3.226	2.220	4.102	3.596	4.782	5.135	5.528	10.398
3.266	2.258	4.120	3.628	4.790	5.173	5.652	10.476
3.302	2.293	4.136	3.659	4.798	5.217	5.762	10.534
3.344	2.339	4.152	3.688	4.806	5.263	5.898	10.593
3.380	2.380	4.170	3.719	4.814	5.317	6.040	10.648
3.400	2.405	4.188	3.754	4.822	5.377	6.184	10.695
3.428	2.438	4.206	3.784	4.830	5.444	6.350	10.745
3.450	2.465	4.224	3.819	4.836	5.492	6.586	10.801
3.476	2.499	4.242	3.850	4.840	5.534	6.750	10.837
3.500	2.532	4.260	3.884	4.844	5.576	6.920	10.871
3.524	2.563	4.280	3.918	4.848	5.625	7.102	10.904
3.550	2.604	4.298	3.951	4.852	5.681	7.254	10.929
3.578	2.645	4.316	3.983	4.856	5.745	7.400	10.951
3.602	2.682	4.332	4.012	4.862	5.851	7.600	10.981

pK_{a1} = 3.277, pK_{a2} = 4.636, pK_{a3} = 5.565

Table AD210. Potentiometric Titration Data for the pK_a Values of Citric Acid in 5.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 4.97 m $NaClO_4$, pcH = pHr + 1.128.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.107	3.682	2.840	4.530	4.423	6.064	10.644
0.144	1.129	3.706	2.882	4.550	4.466	6.212	10.693
0.276	1.151	3.730	2.925	4.570	4.511	6.366	10.736
0.424	1.178	3.748	2.957	4.592	4.565	6.536	10.779
0.580	1.207	3.768	2.995	4.612	4.612	6.712	10.823
0.734	1.235	3.786	3.028	4.630	4.658	6.882	10.859
0.888	1.268	3.808	3.068	4.648	4.705	7.054	10.888
1.040	1.300	3.828	3.107	4.664	4.750	7.262	10.925
1.174	1.329	3.850	3.148	4.682	4.801	7.518	10.964
1.306	1.362	3.872	3.190	4.700	4.858	7.776	11.004
1.444	1.394	3.892	3.230	4.716	4.913	4.908	8.429
1.588	1.434	3.910	3.262	4.728	4.955	4.916	8.653
1.726	1.472	3.928	3.296	4.736	4.986	4.922	8.777
1.852	1.509	3.944	3.327	4.744	5.018	4.926	8.853
1.992	1.550	3.964	3.365	4.752	5.052	4.930	8.918
2.122	1.600	3.988	3.409	4.760	5.089	4.936	8.999
2.230	1.641	4.004	3.439	4.768	5.126	4.942	9.083
2.328	1.681	4.022	3.471	4.776	5.166	4.960	9.269
2.422	1.719	4.038	3.502	4.784	5.218	4.978	9.406
2.514	1.760	4.052	3.519	4.794	5.284	4.998	9.524
2.596	1.801	4.070	3.562	4.804	5.350	5.018	9.620
2.684	1.847	4.090	3.598	4.814	5.433	5.040	9.703
2.784	1.903	4.110	3.636	4.824	5.528	5.074	9.803
2.884	1.964	4.130	3.673	4.832	5.617	5.108	9.898
2.984	2.032	4.150	3.708	4.840	5.720	5.142	9.970
3.078	2.104	4.166	3.738	4.850	5.897	5.176	10.033
3.144	2.158	4.186	3.774	4.860	6.151	5.254	10.147
3.200	2.208	4.206	3.811	4.870	6.671	5.336	10.239
3.240	2.245	4.224	3.843	4.880	7.519	5.414	10.311
3.280	2.285	4.244	3.878	4.890	8.175	5.528	10.398
3.324	2.332	4.266	3.918	4.900	8.537	5.652	10.476
3.362	2.375	4.284	3.951	4.912	8.811	5.762	10.534
3.400	2.422	4.304	3.987	4.922	9.006	5.898	10.593
3.440	2.471	4.324	4.023	4.954	9.321	6.040	10.648
3.464	2.501	4.344	4.060	4.990	9.533	6.184	10.695
3.484	2.528	4.366	4.100	5.070	9.817	6.350	10.745
3.510	2.565	4.388	4.140	5.148	9.981	6.586	10.801
3.540	2.608	4.408	4.180	5.228	10.112	6.750	10.837
3.568	2.651	4.430	4.221	5.358	10.257	6.920	10.871
3.596	2.694	4.452	4.263	5.492	10.365	7.102	10.904
3.620	2.733	4.472	4.303	5.630	10.453	7.254	10.929
3.640	2.766	4.494	4.349	5.772	10.526	7.400	10.951
3.664	2.808	4.512	4.387	5.920	10.590	7.600	10.981

pK_{a1} = 3.267, pK_{a2} = 4.624, pK_{a3} = 5.562

Table AD211. Potentiometric Titration Data for the pK_a Values of Citric Acid in 7.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 6.97 m $NaClO_4$, pcH = pHr + 1.530.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.714	3.650	2.668	4.444	4.228	4.846	7.720
0.178	0.743	3.664	2.699	4.464	4.269	4.850	7.987
0.324	0.768	3.680	2.733	4.484	4.310	4.854	8.196
0.470	0.795	3.700	2.774	4.500	4.346	4.858	8.346
0.794	0.860	3.720	2.817	4.518	4.386	4.862	8.477
0.962	0.895	3.738	2.855	4.538	4.429	4.866	8.581
1.134	0.935	3.756	2.892	4.556	4.471	4.870	8.695
1.284	0.971	3.770	2.921	4.576	4.522	4.874	8.783
1.428	1.008	3.788	2.959	4.598	4.576	4.878	8.858
1.558	1.044	3.804	2.993	4.618	4.629	4.882	8.923
1.682	1.081	3.820	3.027	4.638	4.686	4.886	8.986
1.812	1.122	3.836	3.059	4.654	4.733	4.890	9.068
1.948	1.168	3.856	3.101	4.668	4.780	4.894	9.112
2.072	1.214	3.876	3.141	4.678	4.813	4.898	9.159
2.210	1.269	3.894	3.178	4.690	4.859	4.902	9.198
2.340	1.327	3.908	3.208	4.702	4.903	4.928	9.418
2.446	1.377	3.924	3.240	4.712	4.945	4.940	9.496
2.522	1.417	3.942	3.277	4.722	4.988	4.950	9.548
2.604	1.463	3.960	3.312	4.734	5.044	4.960	9.594
2.674	1.504	3.976	3.345	4.744	5.096	4.972	9.648
2.736	1.544	3.996	3.383	4.752	5.142	4.984	9.696
2.794	1.583	4.012	3.415	4.756	5.180	4.996	9.738
2.858	1.630	4.032	3.452	4.764	5.232	5.006	9.771
2.924	1.682	4.050	3.476	4.768	5.266	5.018	9.810
2.978	1.728	4.070	3.524	4.772	5.298	5.040	9.870
3.026	1.771	4.088	3.593	4.776	5.333	5.060	9.915
3.078	1.820	4.124	3.626	4.780	5.372	5.084	9.965
3.120	1.862	4.146	3.667	4.784	5.411	5.104	10.001
3.152	1.896	4.164	3.702	4.788	5.456	5.128	10.043
3.188	1.935	4.182	3.734	4.792	5.493	5.160	10.091
3.234	1.988	4.202	3.770	4.796	5.549	5.194	10.135
3.280	2.045	4.220	3.802	4.800	5.595	5.264	10.212
3.324	2.105	4.234	3.829	4.804	5.651	5.334	10.277
3.368	2.168	4.246	3.848	4.808	5.714	5.406	10.335
3.410	2.231	4.264	3.883	4.812	5.780	5.474	10.383
3.448	2.292	4.284	3.923	4.816	5.889	5.554	10.432
3.484	2.352	4.304	3.960	4.820	5.994	5.680	10.497
3.526	2.427	4.324	3.997	4.824	6.169	5.802	10.552
3.550	2.471	4.344	4.035	4.826	6.246	5.920	10.598
3.568	2.505	4.362	4.068	4.830	6.410	6.068	10.652
3.588	2.545	4.382	4.107	4.834	6.640	6.206	10.701
3.606	2.580	4.402	4.146	4.838	6.972	6.348	10.741
3.624	2.617	4.422	4.184	4.842	7.386	6.506	10.785

$pK_{a1} = 3.513$, $pK_{a2} = 4.932$, $pK_{a3} = 5.848$

Table AD212. Potentiometric Titration Data for the pK_a Values of Citric Acid in 7.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 6.97 m $NaClO_4$, pcH = pHr + 1.504.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.739	3.578	2.588	4.260	3.944	4.854	8.980
0.222	0.777	3.604	2.643	4.280	3.980	4.858	9.042
0.378	0.805	3.618	2.670	4.298	4.014	4.864	9.116
0.518	0.832	3.632	2.697	4.318	4.051	4.868	9.165
0.648	0.857	3.648	2.731	4.338	4.090	4.874	9.215
0.800	0.885	3.664	2.765	4.354	4.120	4.892	9.369
0.962	0.922	3.678	2.794	4.370	4.151	4.906	9.465
1.104	0.955	3.690	2.823	4.388	4.186	4.920	9.540
1.250	0.990	3.706	2.857	4.406	4.223	4.936	9.620
1.392	1.026	3.718	2.882	4.424	4.259	4.952	9.684
1.516	1.060	3.732	2.910	4.438	4.288	4.968	9.738
1.636	1.094	3.746	2.941	4.452	4.317	4.984	9.786
1.754	1.130	3.760	2.973	4.470	4.355	5.002	9.833
1.864	1.167	3.774	3.001	4.488	4.394	5.030	9.896
1.992	1.212	3.790	3.037	4.506	4.436	5.064	9.960
2.110	1.256	3.806	3.067	4.524	4.478	5.096	10.014
2.234	1.307	3.818	3.095	4.540	4.518	5.130	10.064
2.350	1.360	3.834	3.128	4.558	4.564	5.162	10.106
2.522	1.446	3.848	3.154	4.572	4.603	5.194	10.142
2.622	1.503	3.864	3.187	4.588	4.644	5.228	10.178
2.712	1.560	3.880	3.220	4.604	4.692	5.300	10.246
2.794	1.616	3.894	3.249	4.620	4.738	5.362	10.298
2.890	1.689	3.908	3.279	4.634	4.793	5.428	10.342
2.946	1.734	3.924	3.310	4.658	4.876	5.502	10.387
3.004	1.786	3.940	3.341	4.674	4.938	5.570	10.420
3.048	1.827	3.956	3.373	4.690	5.009	5.662	10.466
3.086	1.865	3.970	3.399	4.704	5.081	5.766	10.515
3.116	1.896	3.988	3.435	4.720	5.175	5.882	10.563
3.148	1.930	4.006	3.468	4.732	5.256	6.004	10.611
3.184	1.973	4.024	3.503	4.746	5.369	6.124	10.653
3.222	2.017	4.042	3.540	4.762	5.530	6.240	10.693
3.262	2.066	4.056	3.565	4.776	5.740	6.374	10.730
3.302	2.120	4.070	3.590	4.790	6.062	6.510	10.767
3.340	2.175	4.086	3.620	4.804	6.679	6.648	10.801
3.362	2.207	4.102	3.650	4.810	7.211	6.816	10.837
3.390	2.251	4.118	3.684	4.816	7.763	6.990	10.867
3.412	2.284	4.134	3.713	4.822	8.120	7.166	10.901
3.432	2.320	4.150	3.740	4.826	8.342	7.364	10.929
3.454	2.356	4.168	3.772	4.830	8.484	7.568	10.965
3.478	2.398	4.184	3.804	4.834	8.598	7.732	10.994
3.504	2.446	4.204	3.842	4.838	8.686		
3.532	2.498	4.222	3.874	4.842	8.773		
3.554	2.540	4.240	3.907	4.846	8.883		

$pK_{a1} = 3.507$, $pK_{a2} = 4.922$, $pK_{a3} = 5.850$

Table AD213. Potentiometric Titration Data for the pK_a Values of Citric Acid in 9.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 8.97 m $NaClO_4$, pcH = pHr + 2.052.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.234	3.602	3.077	4.256	4.535	4.562	9.266
0.338	0.295	3.614	3.105	4.270	4.578	4.578	9.340
0.604	0.351	3.628	3.136	4.284	4.623	4.590	9.386
0.844	0.405	3.640	3.161	4.302	4.685	4.600	9.427
1.072	0.461	3.652	3.188	4.316	4.738	4.612	9.481
1.302	0.526	3.664	3.217	4.330	4.798	4.624	9.529
1.508	0.590	3.678	3.246	4.342	4.857	4.636	9.575
1.782	0.690	3.690	3.272	4.354	4.916	4.648	9.618
1.968	0.770	3.708	3.311	4.364	4.962	4.670	9.695
2.172	0.875	3.722	3.342	4.376	5.032	4.692	9.765
2.382	1.003	3.734	3.365	4.384	5.082	4.712	9.822
2.504	1.101	3.748	3.397	4.392	5.141	4.732	9.877
2.614	1.201	3.760	3.422	4.400	5.203	4.752	9.927
2.730	1.323	3.772	3.447	4.406	5.257	4.774	9.980
2.856	1.482	3.784	3.470	4.412	5.320	4.798	10.033
2.972	1.659	3.804	3.513	4.418	5.376	4.818	10.070
3.088	1.864	3.822	3.551	4.424	5.447	4.848	10.123
3.196	2.084	3.840	3.588	4.430	5.555	4.874	10.167
3.260	2.231	3.856	3.621	4.436	5.666	4.910	10.217
3.282	2.284	3.876	3.663	4.438	5.708	4.948	10.266
3.298	2.321	3.892	3.696	4.442	5.771	5.006	10.326
3.316	2.368	3.908	3.730	4.446	5.866	5.062	10.381
3.334	2.414	3.926	3.767	4.450	5.979	5.120	10.426
3.354	2.466	3.946	3.809	4.454	6.147	5.184	10.478
3.368	2.502	3.960	3.839	4.458	6.357	5.288	10.542
3.378	2.529	3.980	3.880	4.462	6.696	5.396	10.601
3.388	2.556	4.000	3.923	4.466	7.021	5.510	10.655
3.398	2.581	4.016	3.957	4.470	7.336	5.644	10.712
3.410	2.611	4.030	3.985	4.474	7.609	5.764	10.756
3.420	2.638	4.046	4.021	4.478	7.810	5.874	10.793
3.430	2.665	4.064	4.060	4.482	8.011	5.990	10.831
3.444	2.699	4.080	4.094	4.486	8.218	6.098	10.863
3.458	2.735	4.096	4.130	4.490	8.375	6.228	10.897
3.472	2.770	4.112	4.166	4.494	8.474	6.348	10.925
3.486	2.805	4.126	4.198	4.498	8.584	6.484	10.958
3.500	2.839	4.142	4.235	4.502	8.675	6.616	10.983
3.512	2.868	4.156	4.269	4.506	8.755	6.748	11.019
3.524	2.897	4.170	4.305	4.512	8.850	7.364	10.929
3.536	2.925	4.186	4.341	4.516	8.897	7.568	10.965
3.550	2.959	4.200	4.379	4.522	8.965	7.732	10.994
3.564	2.992	4.216	4.421	4.528	9.043		
3.576	3.020	4.230	4.459	4.534	9.093		
3.588	3.047	4.242	4.496	4.538	9.115		

pK_{a1} = 3.712, pK_{a2} = 5.239, pK_{a3} = 6.309

Table AD214. Potentiometric Titration Data for the pK_a Values of Citric Acid in 9.00 m $NaClO_4$ at 25°C. Initial Volume = 15.0 mL, 0.0150 mmol Citric Acid, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 8.97 m $NaClO_4$, pcH = pHr + 2.043.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.242	3.568	2.973	4.216	4.405	4.628	9.472
0.342	0.305	3.580	2.999	4.232	4.441	4.650	9.557
0.674	0.374	3.592	3.028	4.246	4.472	4.670	9.632
0.976	0.445	3.604	3.054	4.258	4.509	4.692	9.706
1.224	0.511	3.620	3.090	4.270	4.544	4.714	9.775
1.364	0.553	3.636	3.126	4.282	4.587	4.732	9.827
1.488	0.592	3.652	3.161	4.296	4.633	4.752	9.882
1.616	0.635	3.670	3.201	4.310	4.676	4.772	9.931
1.754	0.686	3.688	3.239	4.322	4.719	4.792	9.977
1.896	0.744	3.706	3.278	4.334	4.759	4.814	10.024
2.022	0.801	3.724	3.316	4.344	4.807	4.844	10.081
2.160	0.872	3.742	3.355	4.356	4.856	4.876	10.136
2.296	0.955	3.760	3.392	4.366	4.892	4.910	10.188
2.414	1.032	3.776	3.424	4.374	4.923	4.986	10.283
2.535	1.125	3.792	3.457	4.380	4.970	5.054	10.352
2.654	1.238	3.806	3.484	4.396	5.015	5.124	10.413
2.770	1.367	3.822	3.517	4.404	5.064	5.200	10.470
2.902	1.540	3.836	3.544	4.410	5.103	5.278	10.520
3.032	1.748	3.848	3.568	4.418	5.159	5.360	10.567
3.170	2.014	3.862	3.599	4.426	5.223	5.442	10.609
3.224	2.128	3.878	3.629	4.432	5.270	5.520	10.644
3.252	2.190	3.892	3.658	4.440	5.361	5.640	10.695
3.274	2.242	3.906	3.688	4.450	5.482	5.744	10.734
3.288	2.276	3.920	3.718	4.458	5.612	5.852	10.774
3.303	2.306	3.934	3.746	4.464	5.729	5.956	10.805
3.314	2.343	3.946	3.771	4.470	5.894	6.064	10.841
3.330	2.384	3.962	3.803	4.476	6.100	6.164	10.867
3.344	2.419	3.976	3.831	4.482	6.380	6.290	10.901
3.358	2.454	3.990	3.862	4.488	6.830	6.436	10.936
3.372	2.490	4.006	3.895	4.494	7.289	6.568	10.963
3.384	2.520	4.020	3.923	4.500	7.830	6.710	10.998
3.396	2.551	4.036	3.954	4.506	8.112	6.098	10.863
3.412	2.590	4.052	3.989	4.512	8.337	6.228	10.897
3.424	2.621	4.070	4.027	4.518	8.521	6.348	10.925
3.438	2.656	4.084	4.058	4.524	8.663	6.484	10.958
3.450	2.687	4.100	4.094	4.530	8.797	6.616	10.983
3.464	2.723	4.114	4.125	4.536	8.896	6.748	11.019
3.480	2.762	4.128	4.157	4.542	8.973	7.364	10.929
3.494	2.795	4.142	4.187	4.548	9.033	7.568	10.965
3.510	2.835	4.156	4.219	4.554	9.083	7.732	10.994
3.526	2.873	4.168	4.246	4.570	9.196		
3.540	2.906	4.184	4.285	4.590	9.305		
3.556	2.945	4.200	4.324	4.608	9.388		

$pK_{a1} = 3.741$, $pK_{a2} = 5.254$, $pK_{a3} = 6.315$

Table AD215. Potentiometric Titration Data for the pK_a Values of EDTA in 0.30 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.27 m $NaClO_4$, pcH = pHr + 0.026.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.040	3.058	3.334	3.386	4.851	3.778	8.131
0.124	2.061	3.074	3.363	3.390	4.886	3.786	8.214
0.276	2.090	3.094	3.403	3.394	4.920	3.796	8.297
0.412	2.117	3.108	3.431	3.398	4.954	3.804	8.363
0.534	2.141	3.120	3.455	3.402	4.987	3.814	8.432
0.672	2.171	3.132	3.483	3.408	5.040	3.824	8.498
0.782	2.194	3.144	3.514	3.412	5.071	3.834	8.560
0.918	2.226	3.156	3.545	3.418	5.119	3.846	8.625
1.032	2.253	3.164	3.567	3.424	5.166	3.856	8.678
1.148	2.282	3.174	3.597	3.428	5.198	3.866	8.730
1.270	2.314	3.184	3.629	3.434	5.242	3.874	8.769
1.402	2.350	3.196	3.668	3.438	5.271	3.884	8.816
1.522	2.385	3.208	3.709	3.444	5.313	3.894	8.858
1.646	2.423	3.216	3.742	3.450	5.353	3.904	8.907
1.730	2.451	3.222	3.764	3.456	5.393	3.914	8.953
1.828	2.483	3.230	3.797	3.462	5.431	3.924	8.998
1.936	2.522	3.238	3.830	3.468	5.468	3.934	9.039
2.014	2.552	3.244	3.858	3.474	5.504	3.944	9.084
2.066	2.573	3.254	3.906	3.480	5.536	3.954	9.125
2.130	2.600	3.262	3.943	3.486	5.572	3.966	9.175
2.186	2.625	3.270	3.988	3.490	5.596	3.976	9.218
2.250	2.654	3.278	4.033	3.496	5.630	3.988	9.266
2.310	2.714	3.286	4.082	3.504	5.673	3.996	9.299
2.368	2.738	3.294	4.133	3.508	5.695	4.006	9.341
2.432	2.770	3.298	4.161	3.514	5.726	4.016	9.381
2.472	2.791	3.304	4.203	3.520	5.756	4.026	9.426
2.518	2.815	3.308	4.231	3.526	5.788	4.036	9.467
2.558	2.840	3.314	4.273	3.532	5.819	4.046	9.507
2.604	2.869	3.318	4.302	3.540	5.860	4.058	9.555
2.650	2.899	3.322	4.333	3.548	5.900	4.070	9.605
2.694	2.930	3.326	4.362	3.554	5.931	4.086	9.662
2.740	2.965	3.332	4.407	3.566	5.990	4.102	9.727
2.766	2.987	3.336	4.439	3.578	6.050	4.120	9.796
2.796	3.015	3.340	4.470	3.588	6.098		
2.826	3.040	3.344	4.500	3.598	6.149		
2.858	3.073	3.348	4.535	3.608	6.202		
2.888	3.104	3.354	4.582	3.618	6.256		
2.920	3.139	3.358	4.614	3.626	6.300		
2.950	3.175	3.362	4.647	3.738	7.495		
2.972	3.204	3.366	4.681	3.748	7.686		
2.994	3.233	3.370	4.715	3.758	7.865		
3.016	3.266	3.376	4.764	3.768	8.011		
3.040	3.302	3.380	4.798	3.778	8.131		

Table AD215. Continued.

NaOH, mL	pHr
4.134	9.847
4.150	9.898
4.166	9.948
4.180	9.988
4.196	10.033
4.210	10.069
4.240	10.139
4.286	10.240
4.348	10.338
4.402	10.411
4.454	10.476
4.514	10.534
4.582	10.599
4.646	10.653
4.714	10.702
4.814	10.759
4.904	10.804
4.992	10.846
5.098	10.889
5.244	10.945

$pK_{a1} = 2.133$, $pK_{a2} = 2.792$, $pK_{a3} = 5.943$, $pK_{a4} = 9.044$

Table AD216. Potentiometric Titration Data for the pK_a Values of EDTA in 0.30 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 0.27 m $NaClO_4$, pcH = pHr + 0.040.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.042	3.090	3.409	3.462	5.449	3.860	8.750
0.128	2.065	3.100	3.424	3.470	5.488	3.870	8.796
0.258	2.091	3.110	3.447	3.478	5.543	3.878	8.836
0.380	2.116	3.120	3.471	3.484	5.591	3.888	8.886
0.514	2.143	3.130	3.494	3.490	5.624	3.896	8.917
0.660	2.174	3.140	3.516	3.498	5.663	3.904	8.952
0.790	2.203	3.152	3.553	3.504	5.696	3.912	8.988
0.908	2.230	3.162	3.578	3.510	5.729	3.920	9.022
1.040	2.262	3.174	3.617	3.516	5.762	3.928	9.056
1.162	2.293	3.190	3.665	3.524	5.803	3.938	9.096
1.298	2.329	3.204	3.717	3.540	5.883	3.946	9.130
1.412	2.361	3.216	3.759	3.550	5.933	3.954	9.164
1.524	2.394	3.228	3.806	3.558	5.975	3.962	9.197
1.680	2.443	3.242	3.877	3.566	6.015	3.970	9.231
1.758	2.468	3.250	3.912	3.574	6.055	3.978	9.265
1.858	2.502	3.260	3.961	3.582	6.096	3.986	9.297
1.932	2.531	3.268	4.006	3.590	6.138	3.994	9.330
2.018	2.563	3.278	4.063	3.600	6.191	4.004	9.378
2.098	2.595	3.286	4.113	3.610	6.245	4.012	9.406
2.182	2.632	3.296	4.177	3.618	6.293	4.020	9.441
2.268	2.671	3.304	4.234	3.628	6.350	4.030	9.478
2.348	2.711	3.310	4.278	3.636	6.399	4.038	9.510
2.410	2.744	3.318	4.335	3.644	6.452	4.048	9.552
2.454	2.769	3.326	4.396	3.654	6.522	4.056	9.584
2.490	2.790	3.334	4.462	3.662	6.586	4.064	9.618
2.532	2.818	3.342	4.517	3.672	6.668	4.074	9.657
2.574	2.843	3.348	4.570	3.682	6.762	4.082	9.688
2.620	2.874	3.354	4.616	3.690	6.857	4.090	9.721
2.666	2.905	3.360	4.666	3.698	6.959	4.100	9.759
2.712	2.942	3.366	4.715	3.706	7.082	4.108	9.788
2.764	2.985	3.374	4.781	3.714	7.218	4.116	9.818
2.792	3.011	3.380	4.834	3.720	7.338	4.126	9.852
2.832	3.049	3.388	4.900	3.728	7.519	4.136	9.888
2.864	3.081	3.396	4.969	3.736	7.686	4.146	9.920
2.892	3.111	3.402	5.019	3.744	7.819	4.154	9.946
2.920	3.144	3.410	5.079	3.752	7.950	4.164	9.976
2.950	3.180	3.416	5.128	3.758	8.027	4.174	10.007
2.976	3.216	3.422	5.174	3.764	8.096	4.204	10.083
3.000	3.249	3.430	5.234	3.478	5.543		
3.032	3.298	3.438	5.290	3.484	5.591		
3.054	3.337	3.442	5.321	3.490	5.624		
3.070	3.366	3.446	5.349	3.498	5.663		
3.080	3.388	3.454	5.399	3.504	5.696		

Table AD216. Continued.

NaOH, mL	pHr
4.234	10.153
4.266	10.216
4.296	10.269
4.324	10.319
4.354	10.365
4.382	10.404
4.444	10.477
4.516	10.553
4.588	10.616
4.658	10.671
4.730	10.722
4.818	10.774
4.938	10.837
5.040	10.881
5.144	10.923
5.204	10.947
5.272	10.971
5.332	10.992
5.384	11.009
5.444	11.035

$pK_{a1} = 2.011$, $pK_{a2} = 2.714$, $pK_{a3} = 5.965$, $pK_{a4} = 9.054$

Table AD217. Potentiometric Titration Data for the pK_a Values of EDTA in 2.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.10 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 1.97 m $NaClO_4$, pcH = pHr + 0.461.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.597	3.130	3.001	3.466	5.188	3.916	8.067
0.142	1.622	3.144	3.034	3.474	5.242	3.924	8.104
0.282	1.649	3.160	3.075	3.482	5.289	3.934	8.152
0.412	1.674	3.176	3.121	3.488	5.328	3.942	8.188
0.512	1.694	3.190	3.165	3.494	5.364	3.954	8.237
0.636	1.720	3.204	3.211	3.500	5.400	3.964	8.281
0.748	1.744	3.224	3.285	3.508	5.449	3.974	8.326
0.852	1.766	3.238	3.343	3.514	5.481	3.986	8.375
0.972	1.794	3.254	3.423	3.520	5.514	3.996	8.419
1.090	1.822	3.270	3.514	3.526	5.548	4.006	8.461
1.216	1.854	3.286	3.618	3.532	5.583	4.016	8.505
1.342	1.886	3.290	3.645	3.538	5.616	4.026	8.595
1.442	1.913	3.294	3.675	3.548	5.668	4.036	8.631
1.546	1.943	3.298	3.710	3.554	5.699	4.044	8.667
1.656	1.977	3.302	3.766	3.560	5.732	4.052	8.714
1.750	2.007	3.306	3.792	3.568	5.772	4.062	8.761
1.824	2.033	3.312	3.837	3.574	5.803	4.072	8.796
1.914	2.064	3.318	3.888	3.580	5.835	4.080	8.844
2.014	2.101	3.324	3.945	3.588	5.876	4.090	8.894
2.092	2.131	3.330	4.002	3.598	5.924	4.110	8.932
2.162	2.161	3.334	4.047	3.606	5.966	4.108	8.982
2.230	2.192	3.338	4.078	3.614	6.006	4.128	9.032
2.292	2.219	3.344	4.138	3.624	6.056	4.136	9.073
2.370	2.258	3.350	4.195	3.634	6.107	4.146	9.124
2.432	2.290	3.356	4.247	3.642	6.148	4.154	9.165
2.498	2.327	3.360	4.284	3.650	6.191	4.164	9.216
2.570	2.370	3.364	4.321	3.658	6.232	4.174	9.264
2.634	2.413	3.370	4.374	3.668	6.287	4.182	9.301
2.678	2.444	3.376	4.429	3.680	6.355	4.192	9.348
2.728	2.483	3.382	4.483	3.686	6.391	4.200	9.383
2.776	2.522	3.390	4.556	3.694	6.441	4.210	9.428
2.828	2.568	3.396	4.622	3.706	6.521	4.222	9.476
2.876	2.616	3.402	4.674	3.716	6.586	4.232	9.511
2.922	2.665	3.408	4.727	3.728	6.682	4.212	9.549
2.948	2.697	3.416	4.797	3.740	6.780		
2.974	2.730	3.422	4.851	3.752	6.886		
2.998	2.763	3.426	4.886	3.758	6.942		
3.026	2.805	3.432	4.936	3.766	7.020		
3.056	2.854	3.436	4.969	3.870	7.836		
3.074	2.886	3.440	5.001	3.882	7.900		
3.088	2.912	3.446	5.048	3.894	7.961		
3.102	2.940	3.452	5.090	3.904	8.010		
3.116	2.969	3.460	5.149	3.916	8.067		

Table AD217. Continued.

NaOH, mL	pHr	NaOH, mL	pHr
4.252	9.582	5.618	10.664
4.264	9.623	5.794	10.710
4.274	9.652	6.008	10.754
4.284	9.681	6.260	10.804
4.320	9.770	6.528	10.845
4.356	9.844	6.766	10.882
4.384	9.899	7.006	10.918
4.420	9.958	7.294	10.949
4.450	10.002	7.650	11.010
4.482	10.047		
4.520	10.091		
4.558	10.133		
4.678	10.236		
4.764	10.299		
4.908	10.384		
5.026	10.442		
5.136	10.494		
5.238	10.533		
5.364	10.578		
5.480	10.616		

$pK_{a1} = 1.971$, $pK_{a2} = 2.509$, $pK_{a3} = 6.337$, $pK_{a4} = 8.755$

Table AD218. Potentiometric Titration Data for the pK_a Values of EDTA in 2.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 1.97 m $NaClO_4$, pcH = pHr + 0.457.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.593	3.268	3.260	3.584	5.629	3.638	5.917
0.162	1.619	3.280	3.305	3.590	5.663	3.650	5.977
0.308	1.646	3.288	3.341	3.596	5.695	3.658	6.020
0.504	1.683	3.296	3.378	3.602	5.727	3.670	6.086
0.738	1.732	3.304	3.419	3.608	5.761	3.680	6.137
0.960	1.779	3.314	3.476	3.618	5.814	4.078	8.610
1.128	1.820	3.322	3.526	3.628	5.866	4.102	8.716
1.326	1.868	3.330	3.576	3.638	5.917	4.116	8.781
1.418	1.894	3.336	3.625	3.650	5.977	4.134	8.867
1.518	1.921	3.346	3.693	3.658	6.020	4.150	8.946
1.642	1.958	3.352	3.752	3.670	6.086	4.172	9.052
1.760	1.995	3.360	3.811	3.680	6.137	4.188	9.134
1.876	2.032	3.368	3.877	3.688	6.181	4.202	9.206
1.960	2.060	3.374	3.930	3.698	6.234	4.218	9.285
2.062	2.099	3.382	4.002	3.708	6.286	4.234	9.364
2.154	2.135	3.390	4.075	3.720	6.351	4.248	9.429
2.254	2.178	3.396	4.129	3.728	6.396	4.262	9.492
2.338	2.216	3.404	4.200	3.736	6.442	4.276	9.550
2.428	2.260	3.412	4.274	3.746	6.504	4.292	9.610
2.518	2.308	3.422	4.360	3.760	6.594	4.308	9.667
2.606	2.360	3.428	4.410	3.772	6.679	4.326	9.725
2.670	2.401	3.434	4.461	3.782	6.763	4.342	9.772
2.734	2.446	3.442	4.532	3.788	6.813	4.358	9.818
2.780	2.481	3.448	4.579	3.796	6.883	4.380	9.872
2.818	2.511	3.456	4.653	3.804	6.955	4.408	9.932
2.858	2.548	3.462	4.710	3.814	7.053	4.438	9.987
2.906	2.592	3.468	4.766	3.826	7.169	4.466	10.036
2.930	2.618	3.474	4.904	3.834	7.248	4.494	10.079
2.958	2.649	3.482	4.963	3.844	7.342	4.592	10.197
2.990	2.688	3.488	5.011	3.856	7.452	4.694	10.293
3.016	2.720	3.494	5.059	3.864	7.523	4.794	10.368
3.040	2.752	3.502	5.119	3.876	7.613	4.894	10.436
3.066	2.790	3.510	5.179	3.886	7.685	5.002	10.496
3.098	2.840	3.516	5.216	3.896	7.751	5.102	10.546
3.126	2.888	3.524	5.272	3.910	7.836	5.204	10.587
3.156	2.945	3.530	5.311	3.918	7.884	5.304	10.626
3.172	2.980	3.534	5.335	3.926	7.925	5.400	10.661
3.190	3.023	3.540	5.374	3.934	7.966	5.518	10.698
3.204	3.061	3.546	5.412	3.596	5.695	5.646	10.736
3.224	3.113	3.554	5.458	3.602	5.727	5.836	10.783
3.232	3.136	3.562	5.504	3.608	5.761	6.024	10.825
3.244	3.171	3.570	5.550	3.618	5.814	6.192	10.858
3.254	3.205	3.578	5.594	3.628	5.866	6.358	10.889

$pK_{a1} = 1.851$, $pK_{a2} = 2.482$, $pK_{a3} = 6.352$, $pK_{a4} = 8.806$

Table AD219. Potentiometric Titration Data for the pK_a Values of EDTA in 4.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.010 mmol EDTA, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 3.97 m $NaClO_4$, pcH = pHr + 0.802.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.279	3.182	3.077	3.446	5.317	3.912	8.205
0.140	1.303	3.190	3.122	3.452	5.356	3.924	8.258
0.364	1.345	3.198	3.171	3.460	5.407	3.938	8.320
0.526	1.379	3.206	3.225	3.468	5.459	3.952	8.384
0.668	1.408	3.216	3.298	3.474	5.500	3.964	8.440
0.804	1.439	3.224	3.365	3.480	5.539	3.980	8.514
0.960	1.473	3.234	3.455	3.488	5.592	3.992	8.574
1.108	1.510	3.242	3.538	3.496	5.645	4.004	8.633
1.230	1.542	3.252	3.650	3.502	5.683	4.018	8.705
1.364	1.578	3.258	3.720	3.508	5.723	4.030	8.769
1.492	1.615	3.262	3.768	3.516	5.773	4.042	8.835
1.618	1.653	3.268	3.843	3.524	5.821	4.054	8.904
1.746	1.694	3.272	3.891	3.534	5.880	4.066	8.975
1.882	1.742	3.276	3.939	3.540	5.917	4.078	9.043
2.016	1.793	3.280	3.986	3.548	5.965	4.092	9.124
2.138	1.843	3.286	4.051	3.556	6.010	4.104	9.193
2.230	1.885	3.290	4.095	3.564	6.055	4.116	9.256
2.304	1.922	3.296	4.159	3.570	6.089	4.126	9.309
2.374	1.959	3.302	4.217	3.578	6.133	4.142	9.384
2.436	1.994	3.306	4.255	3.584	6.167	4.156	9.444
2.500	2.033	3.312	4.311	3.592	6.211	4.168	9.493
2.556	2.069	3.318	4.363	3.598	6.242	4.180	9.538
2.624	2.118	3.324	4.413	3.606	6.286	4.192	9.581
2.686	2.164	3.328	4.448	3.614	6.330	4.206	9.625
2.748	2.218	3.332	4.481	3.620	6.365	4.226	9.683
2.796	2.263	3.338	4.532	3.628	6.411	4.248	9.737
2.844	2.313	3.344	4.581	3.638	6.467	4.272	9.792
2.892	2.370	3.350	4.629	3.648	6.527	4.298	9.842
2.942	2.438	3.354	4.660	3.654	6.564	4.324	9.890
2.966	2.476	3.360	4.710	3.668	6.655	4.354	9.938
2.994	2.524	3.366	4.760	3.680	6.738	4.400	10.001
3.020	2.570	3.372	4.808	3.690	6.808	4.450	10.061
3.042	2.614	3.378	4.856	3.700	6.882		
3.068	2.671	3.384	4.902	3.712	6.976		
3.092	2.732	3.390	4.945	3.722	7.055		
3.104	2.768	3.396	4.989	3.734	7.154		
3.128	2.843	3.402	5.033	3.746	7.251		
3.140	2.885	3.408	5.071	3.756	7.328		
3.146	2.910	3.418	5.138	3.856	7.940		
3.154	2.945	3.422	5.164	3.866	7.991		
3.162	2.979	3.428	5.205	3.874	8.031		
3.168	3.008	3.434	5.241	3.890	8.103		
3.174	3.035	3.440	5.279	3.900	8.149		

$pK_{a1} = 2.184$, $pK_{a2} = 2.455$, $pK_{a3} = 6.740$, $pK_{a4} = 8.982$

Table AD220. Potentiometric Titration Data for the pK_a Values of EDTA in 4.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 3.97 m $NaClO_4$, pcH = pHr + 0.811.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.266	3.248	3.508	3.544	5.867	4.052	8.820
0.176	1.294	3.256	3.542	3.554	5.925	4.068	8.912
0.376	1.331	3.262	3.662	3.564	5.981	4.086	9.011
0.576	1.371	3.268	3.735	3.572	6.027	4.104	9.115
0.830	1.425	3.274	3.800	3.580	6.073	3.648	6.443
1.084	1.485	3.280	3.866	3.596	6.159	3.660	6.516
1.310	1.544	3.286	3.933	3.622	6.292	3.678	6.627
1.464	1.587	3.292	4.005	3.634	6.363	3.692	6.726
1.588	1.624	3.300	4.086	3.648	6.443	3.708	6.842
1.736	1.672	3.310	4.185	3.660	6.516	3.728	6.996
1.870	1.718	3.316	4.214	3.678	6.627	3.744	7.130
2.030	1.778	3.322	4.292	3.692	6.726	3.758	7.243
2.168	1.837	3.332	4.379	3.708	6.842	3.770	7.339
2.262	1.881	3.338	4.428	3.728	6.996	3.776	7.388
2.342	1.921	3.344	4.477	3.744	7.130	4.274	9.758
2.434	1.972	3.348	4.509	3.758	7.243	4.296	9.806
2.518	2.022	3.354	4.557	3.770	7.339	4.330	9.865
2.592	2.072	3.360	4.604	3.776	7.388	4.362	9.915
2.686	2.142	3.368	4.667	3.784	7.447	4.392	9.957
2.776	2.219	3.374	4.714	3.792	7.505	4.428	10.003
2.870	2.317	3.384	4.800	3.800	7.556	4.500	10.076
2.972	2.452	3.390	4.853	3.808	7.608	4.572	10.143
3.020	2.533	3.398	4.913	3.816	7.659	4.686	10.223
3.046	2.586	3.404	4.958	3.824	7.707	4.788	10.283
3.074	2.648	3.414	5.027	3.836	7.764	4.896	10.345
3.102	2.719	3.424	5.093	3.846	7.819	5.018	10.401
3.116	2.760	3.432	5.145	3.854	7.866	5.138	10.449
3.136	2.824	3.442	5.209	3.864	7.917	5.304	10.512
3.154	2.890	3.450	5.261	3.876	7.974	5.458	10.559
3.172	2.964	3.460	5.322	3.890	8.039	5.640	10.609
3.178	2.992	3.468	5.374	3.906	8.112	5.880	10.665
3.182	3.014	3.474	5.415	3.920	8.175	6.028	10.696
3.190	3.057	3.482	5.467	3.934	8.237	6.228	10.734
3.200	3.113	3.490	5.522	3.948	8.301	6.466	10.772
3.208	3.163	3.498	5.575	3.962	8.367	6.840	10.822
3.216	3.217	3.504	5.614	3.974	8.422	7.210	10.866
3.224	3.277	3.510	5.654	3.984	8.471	7.546	10.906
3.230	3.326	3.520	5.716	4.000	8.546	7.792	10.936
3.236	3.386	3.528	5.766	4.016	8.629	8.152	11.017
3.242	3.444	3.536	5.817	4.034	8.723		

$pK_{a1} = 2.097$, $pK_{a2} = 2.398$, $pK_{a3} = 6.720$, $pK_{a4} = 8.960$

Table AD221. Potentiometric Titration Data for the pK_a Values of EDTA in 4.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 3.97 m $NaClO_4$, pcH = pHr + 0.806.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.275	3.058	2.904	3.310	5.048	3.732	7.941
0.138	1.300	3.068	2.947	3.316	5.089	3.744	8.008
0.268	1.326	3.080	3.001	3.322	5.127	3.754	8.062
0.400	1.350	3.088	3.042	3.326	5.153	3.766	8.124
0.614	1.397	3.094	3.075	3.332	5.192	3.778	8.191
0.878	1.457	3.100	3.114	3.338	5.229	3.790	8.255
1.068	1.503	3.108	3.167	3.344	5.268	3.800	8.309
1.232	1.547	3.116	3.223	3.352	5.316	3.810	8.366
1.358	1.583	3.120	3.253	3.358	5.352	3.822	8.433
1.484	1.620	3.126	3.306	3.364	5.391	3.832	8.490
1.606	1.658	3.132	3.356	3.370	5.428	3.842	8.548
1.754	1.709	3.138	3.412	3.376	5.469	3.852	8.611
1.886	1.758	3.144	3.473	3.384	5.521	3.860	8.662
1.972	1.793	3.148	3.519	3.390	5.559	3.870	8.726
2.056	1.828	3.152	3.562	3.396	5.598	3.880	8.793
2.134	1.863	3.158	3.634	3.402	5.637	3.894	8.887
2.218	1.904	3.162	3.686	3.408	5.678	3.904	8.957
2.310	1.953	3.168	3.760	3.414	5.718	3.914	9.030
2.356	1.981	3.174	3.833	3.422	5.770	3.926	9.108
2.418	2.018	3.180	3.906	3.428	5.811	3.934	9.163
2.468	2.050	3.184	3.956	3.436	5.861	3.946	9.237
2.522	2.089	3.188	4.006	3.444	5.912	3.956	9.295
2.576	2.131	3.194	4.073	3.452	5.961	3.966	9.350
2.630	2.176	3.200	4.135	3.458	5.999	3.978	9.410
2.684	2.224	3.206	4.196	3.464	6.034	3.992	9.474
2.712	2.253	3.210	4.238	3.476	6.104	4.004	9.523
2.742	2.284	3.214	4.282	3.486	6.163		
2.768	2.313	3.220	4.330	3.496	6.220		
2.796	2.346	3.226	4.379	3.506	6.279		
2.822	2.380	3.232	4.431	3.516	6.336		
2.850	2.419	3.236	4.464	3.526	6.397		
2.880	2.463	3.244	4.531	3.536	6.458		
2.906	2.507	3.250	4.581	3.550	6.545		
2.932	2.554	3.256	4.632	3.558	6.596		
2.950	2.591	3.262	4.681	3.570	6.687		
2.962	2.618	3.268	4.732	3.582	6.777		
2.974	2.645	3.272	4.768	3.588	6.826		
2.988	2.680	3.278	4.812	3.600	6.927		
3.000	2.711	3.282	4.844	3.698	7.733		
3.012	2.746	3.286	4.875	3.704	7.773		
3.026	2.787	3.292	4.921	3.712	7.824		
3.048	2.863	3.304	5.007	3.720	7.872		

$pK_{a1} = 1.963$, $pK_{a2} = 2.475$, $pK_{a3} = 6.718$, $pK_{a4} = 8.964$

Table AD222. Potentiometric Titration Data for the pK_a Values of EDTA in 4.00 m $NaClO_4$ at 25°C. Initial Volume = 10.0 mL, 0.0100 mmol EDTA, 0.15 mmol Excess $HClO_4$, Titrant = 0.030 M NaOH in 3.97 m $NaClO_4$, pcH = pHr + 0.854.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.245	3.212	4.208	3.592	6.815	4.982	10.457
0.284	1.286	3.220	4.280	3.600	6.878	5.148	10.518
0.546	1.343	3.228	4.352	3.608	6.950	5.286	10.560
0.786	1.393	3.236	4.418	3.620	7.060	5.436	10.603
1.026	1.450	3.244	4.484	3.632	7.166	6.932	10.871
1.246	1.509	3.250	4.538	3.646	7.296	7.064	10.891
1.454	1.566	3.258	4.600	3.670	7.494	7.180	10.904
1.578	1.605	3.268	4.683	3.684	7.593	7.304	10.919
1.696	1.659	3.274	4.733	3.696	7.676	7.424	10.933
1.852	1.716	3.280	4.778	3.714	7.790	7.532	10.946
1.950	1.755	3.288	4.842	3.730	7.882	7.666	10.961
2.030	1.788	3.296	4.905	3.746	7.969	7.808	10.973
2.122	1.831	3.304	4.962	3.764	8.063	7.966	10.999
2.234	1.886	3.312	5.017	3.782	8.156		
2.340	1.944	3.320	5.070	3.802	8.258		
2.442	2.009	3.330	5.137	3.820	8.353		
2.518	2.061	3.338	5.190	3.840	8.461		
2.596	2.121	3.346	5.240	3.864	8.602		
2.666	2.183	3.354	5.291	3.886	8.737		
2.740	2.257	3.362	5.341	3.914	8.927		
2.806	2.335	3.372	5.404	3.936	9.076		
2.884	2.445	3.380	5.460	3.956	9.205		
2.928	2.523	3.388	5.513	3.974	9.301		
2.966	2.607	3.398	5.579	3.996	9.403		
3.010	2.716	3.410	5.658	4.024	9.520		
3.032	2.786	3.418	5.711	4.052	9.607		
3.060	2.893	3.428	5.780	4.068	9.653		
3.084	3.004	3.440	5.860	4.086	9.700		
3.098	3.081	3.452	5.928	4.102	9.738		
3.106	3.131	3.460	5.980	4.126	9.793		
3.118	3.212	3.472	6.050	4.146	9.834		
3.128	3.292	3.484	6.120	4.172	9.879		
3.140	3.402	3.498	6.200	4.200	9.923		
3.154	3.543	3.508	6.258	4.236	9.973		
3.166	3.684	3.520	6.327	4.282	10.027		
3.172	3.761	3.536	6.421	4.376	10.121		
3.180	3.864	3.548	6.497	4.492	10.209		
3.186	3.937	3.558	6.562	4.618	10.289		
3.196	4.047	3.570	6.652	4.744	10.355		
3.204	4.132	3.584	6.752	4.858	10.407		

pK_{a1} = 2.030, pK_{a2} = 2.625, pK_{a3} = 6.699, pK_{a4} = 8.964

Table Th1. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 0.3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.03 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.921	100.7	102.9	6914.0	750.0
2	0.00858	2.914	103.5	109.0	5416.9	2251.6
3	0.01716	2.908	101.2	116.0	3623.5	3801.3
4	0.02575	2.912	100.8	102.4	2287.9	5151.2
5	0.03433	2.910	108.3	97.3	1758.9	5731.1
6	0.04291	2.908	98.5	105.8	1399.3	6262.4
7	0.05149	2.901	97.6	103.9	953.2	6511.4
8	0.06007	2.900	110.5	106.7	771.6	6915.4

$\log \beta_{102} = 7.47\pm0.03$

Table Th2. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 0.3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.03 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.914	76.6	74.5	761.6	1626.6
2	0.00515	2.905	81.6	70.7	817.0	1757.7
3	0.00858	2.903	74.7	77.8	649.9	1812.9
4	0.01201	2.900	73.4	70.1	610.5	2109.5
5	0.01373	2.896	72.3	73.5	508.7	2228.4
6	0.01545	2.896	74.1	73.9	432.8	1911.8
7	0.01716	2.888	71.7	67.9	401.5	2049.3
8	0.01888	2.886	70.6	65.5	402.5	2213
10	0.02060	2.896	73.8	70.5	449.8	2704.9

$\log \beta_{101} = 4.41\pm0.02$

Table Th3 Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.733	107.0	97.7	3954.1	3642.7
2	0.00858	2.716	97.0	95.2	3655.0	3733.5
3	0.01716	2.710	106.4	93.5	3208.2	4412.8
4	0.02575	2.701	100.0	101.9	2409.8	5530.8
5	0.03433	2.696	100.8	100.3	1409.7	5606.7
6	0.04291	2.694	100.2	97.8	1436.0	7057.0
7	0.05149	2.684	101.1	101.8	985.6	6615.7
8	0.06007	2.681	98.4	99.2	730.3	6773.2

$\log \beta_{102} = 6.56\pm0.02$

Table Th4. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.724	92.4	101.9	3135.0	2264.6
2	0.00172	2.714	83.8	94.7	5937.1	4355.5
3	0.00515	2.713	93.9	85.0	3378.6	4208.5
4	0.01201	2.716	79.8	100.2	2415.6	5169.0
5	0.01545	2.709	92.0	92.2	2322.5	5258.0
6	0.01888	2.707	95.9	83.7	2037.0	5641.8
7	0.02231	2.706	97.1	91.2	1561.8	6188.6

$\log \beta_{101} = 3.85\pm0.03$

Table Th5. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.05 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.525	103.3	84.6	6150.3	1422.6
2	0.00858	2.506	98.9	108.5	6028.2	1719.0
3	0.01716	2.494	102.8	103.9	5671.8	2130.6
4	0.02575	2.486	85.9	103.5	4539.7	2939.3
5	0.03433	2.493	91.7	97.9	3947.0	3715.3
6	0.04291	2.484	102.6	102.6	3074.5	4557.4
7	0.05149	2.489	107.1	102.3	2489.4	5059.0
8	0.06007	2.479	99.0	97.7	1933.5	5650.5

$\log \beta_{102} = 6.85\pm0.02$

Table Th6. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.05 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.495	99.5	100.1	4732.5	2957.8
2	0.00172	2.489	96.3	101.9	3380.0	4389.0
3	0.00515	2.482	94.7	100.9	3138.6	4401.2
4	0.00858	2.479	98.7	100.6	2653.4	4726.8
5	0.01201	2.479	99.7	96.0	2528.1	5374.2
6	0.01545	2.481	97.7	98.0	2096.2	5444.7
8	0.02231	2.475	92.8	95.7	1686.3	5759.1

$\log \beta_{101} = 3.92\pm0.03$

Table Th7. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 7.1×10^{-7} M, [DBM] = 0.07 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.316	99.1	101.8	6452.9	1122.4
2	0.00858	2.313	103.5	103.0	6477.8	1183.6
3	0.01716	2.288	108.3	105.9	5735.3	1884.6
4	0.02575	2.282	104.0	102.8	4988.5	2467.1
5	0.03433	2.276	111.5	100.6	4418.9	3449.7
6	0.04291	2.267	108.4	105.0	3153.6	3793.6
7	0.05149	2.256	118.0	111.9	2886.0	4807.3
8	0.06007	2.254	106.5	100.7	2060.8	4989.5

log β_{102} = 7.19±0.02

Table Th8. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 7.1×10^{-7} M, [DBM] = 0.07 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.285	99.5	100.1	2729.4	637.8
2	0.00172	2.270	96.3	101.9	2228.8	846.9
3	0.00515	2.267	94.7	100.9	2342.1	1373.1
4	0.00858	2.259	98.7	100.6	1700.5	1359.9
5	0.01201	2.258	99.7	96.0	1982.6	1591.7
6	0.01545	2.256	97.7	98.0	1475.5	1664.6
7	0.01888	2.249	92.8	95.7	1526.1	2103.4
8	0.02231	2.245	105.7	96.9	1348.4	2196.1

log β_{101} = 4.26±0.03

Table Th9. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 4 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 7.1×10^{-7} M, [DBM] = 0.08 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.129	105.0	100.7	6526.5	1181.3
2	0.00858	2.122	99.2	96.1	6411.1	1339.2
3	0.01716	2.120	97.1	101.6	5987.8	1762.9
4	0.02575	2.111	93.7	108.4	5432.1	2502.2
5	0.03433	2.114	103.1	110.5	4753.6	3143.3
6	0.04291	2.122	103.9	105.7	3576.0	3582.2
7	0.05149	2.101	105.2	100.9	3558.8	4035.2
8	0.06007	2.101	99.3	99.4	2805.2	4738.4

log β_{102} = 7.30±0.03

Table Th10. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 4 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.075 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.001716	2.103	94.1	88.6	1779.6	1046.0
2	0.005149	2.098	99.1	88.6	1352.0	955.1
3	0.008582	2.096	93.9	91.9	1676.2	1748.9
4	0.012015	2.096	95.1	85.5	1280.8	1835.0
5	0.016747	2.082	91.9	89.5	1337.5	1991.5
6	0.018881	2.078	96.9	89.5	1279.3	2345.9

$\log \beta_{101} = 4.29\pm0.03$

Table Th11. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.125 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.928	136.5	103.7	6526.5	1181.3
2	0.00858	1.920	100.4	103.0	6411.1	1339.2
3	0.01716	1.923	107.2	110.0	5987.8	1762.9
4	0.02575	1.918	95.3	107.6	5432.1	2502.2
5	0.03433	1.907	97.5	107.4	4753.6	3143.3
6	0.04291	1.902	100.8	113.4	3576.0	3582.2
7	0.05149	1.897	110.3	109.4	3558.8	4035.2
8	0.06007	1.898	104.1	108.1	2805.2	4738.4

$\log \beta_{102} = 7.66\pm0.03$

Table Th12. Solvent Extraction Data for Apparent Stability Constants of Thorium with Acetate in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.08 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.905	89.6	94.4	2908.0	4058.0
2	0.00344	1.915	90.4	96.2	682.1	415.4
3	0.00516	1.921	87.8	98.1	939.0	617.0
4	0.00860	1.923	92.1	102.7	987.8	807.5
5	0.01032	1.924	96.2	96.7	1282.8	1122.3
6	0.01893	1.936	73.8	87.7	800.8	1102.2

$\log \beta_{101} = 4.69\pm0.03$

Table Th13. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 0.3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.03 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.912	54.7	61.1	930.8	2554.0
2	0.00025	2.901	61.4	53.6	931.0	2679.2
3	0.00050	2.905	69.4	60.6	853.6	2822.6
4	0.00074	2.908	55.7	55.9	806.9	2861.7
5	0.00099	2.911	57.2	55.9	749.7	3020.0
6	0.00123	2.915	58.8	55.7	569.1	3214.6
7	0.00147	2.913	60.6	59.2	514.3	3289.2
8	0.00172	2.921	52.1	56.0	417.4	3268.7
9	0.00196	2.919	58.5	55.9	401.9	3333.3

$\log \beta_{101} = 3.85 \pm 0.03$ $\log \beta_{102} = 7.08 \pm 0.05$

Table Th14. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 1 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.03 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.722	56.2	56.2	1966.4	2201.6
2	0.000249	2.701	55.3	54.2	1723.0	2327.0
3	0.000742	2.667	54.8	54.9	1151.1	2517.4
4	0.001231	2.641	52.1	55.1	935.5	2791.7
5	0.001474	2.629	50.2	50.9	755.9	2986.8
6	0.001715	2.628	58.9	53.3	719.2	3155.3

$\log \beta_{101} = 3.83 \pm 0.03$ $\log \beta_{102} = 6.97 \pm 0.07$

Table Th15. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 2 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.511	56.5	58.7	1809.7	1947.8
2	0.00025	2.480	53.5	51.0	1654.8	2276.0
3	0.00050	2.477	58.7	55.1	1337.8	2312.4
4	0.00074	2.420	63.1	54.8	1190.3	2548.9
5	0.00099	2.398	51.2	58.3	1162.0	2783.6
6	0.00123	2.383	49.9	55.6	938.8	2891.3
7	0.00147	2.372	54.2	54.5	952.1	3116.1
8	0.00172	2.360	55.3	58.8	805.2	3057.6
9	0.00196	2.350	57.3	56.4	674.3	3181.1

$\log \beta_{101} = 3.83 \pm 0.02$

TableTh16. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.504	69.1	60.5	784.8	3053.6
2	0.00121	2.484	65.1	58.4	543.2	3392.4
3	0.00241	2.474	54.2	58.1	130.6	3508.0
4	0.00361	2.463	50.8	55.3	169.8	3728.5
5	0.00480	2.447	60.0	56.9	135.9	3966.2
6	0.00599	2.437	61.6	59.7	114.6	3858.8
7	0.00716	2.429	56.9	60.9	93.0	3871.5
8	0.00834	2.419	58.3	58.9	88.2	4019.3
9	0.00951	2.410	56.8	57.6	80.8	4041.9

$\log \beta_{101} = 3.80\pm0.02$

Table Th17. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.513	52.9	62.0	874.5	3531.9
2	0.00121	2.501	58.7	54.7	388.7	3864.9
3	0.00241	2.491	50.0	54.3	295.1	3641.5
4	0.00361	2.481	60.8	58.2	198.6	3959.5
5	0.00480	2.475	50.1	59.1	151.3	3899.4
6	0.00599	2.470	51.4	57.4	108.7	3915.6
7	0.00716	2.468	60.1	58.7	102.6	4003.4
8	0.00834	2.471	57.0	55.3	99.2	4130.9
9	0.00951	2.471	54.1	56.4	79.5	4195.7

$\log \beta_{101} = 3.77\pm0.02$ $\log \beta_{102} = 6.43\pm0.08$

Table Th18. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.252	54.4	56.8	1073.4	2584.2
2	0.00025	3.259	57.4	64.1	991.2	2737.0
3	0.00099	3.262	54.1	54.1	700.9	2974.3
4	0.00123	3.265	59.6	56.7	652.1	3025.4
5	0.00147	3.269	55.4	59.7	616.0	3085.0
6	0.00172	3.271	55.3	54.7	522.0	3222.7
7	0.00196	3.272	58.6	58.3	512.0	3324.3

$\log \beta_{101} = 3.80\pm0.03$

Table Th19. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.324	57.6	58.0	982.2	2962.8
2	0.00121	2.300	53.1	53.3	667.0	3372.9
3	0.00241	2.314	56.5	61.6	412.2	3656.4
4	0.00361	2.310	66.8	55.9	288.7	3581.9
5	0.00480	2.283	61.6	55.2	237.0	3850.7
6	0.00599	2.287	52.7	63.6	174.0	3815.6
7	0.00716	2.309	58.3	52.3	145.3	3986.8
8	0.00834	2.230	52.4	55.6	130.2	3941.9
9	0.00951	2.229	58.1	61.6	108.6	3882.7

$\log \beta_{101} = 3.91\pm0.02$ $\log \beta_{102} = 6.61\pm0.05$

Table Th20. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.00121	2.301	56.9	58.2	804.9	3263.1
2	0.00241	2.298	58.3	56.8	484.6	3679.6
3	0.00361	2.295	52.8	51.5	367.4	3739.6
4	0.00480	2.291	56.6	59.8	276.6	4013.9
5	0.00599	2.292	59.2	54.7	221.0	3929.3
6	0.00716	2.286	64.4	56.2	164.9	3860.7
7	0.00834	2.289	51.1	60.4	114.2	4120.7
8	0.00951	2.283	56.1	57.4	108.3	4108.8

$\log \beta_{101} = 4.16\pm0.01$

Table Th21. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 4 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.07 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.116	53.3	54.9	1855.3	1980.1
2	0.00025	2.104	55.5	53.5	1391.5	2073.1
3	0.00074	2.159	58.8	57.4	1095.1	2672.5
4	0.00099	2.086	60.1	61.3	1073.5	2731.6
5	0.00147	2.067	58.1	55.0	910.0	2795.5
6	0.00172	2.067	60.2	50.6	755.3	2728.2
7	0.00196	2.065	51.8	61.2	635.8	2828.0

$\log \beta_{101} = 4.17\pm0.03$

Table Th22. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 4 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.07 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.104	57.2	56.5	1308.1	2384.3
2	0.00121	2.093	53.3	55.7	919.9	3171.7
3	0.00241	2.084	54.9	56.5	622.7	3471.5
4	0.00361	2.074	56.7	52.7	482.6	3473.8
5	0.00480	2.068	54.8	50.5	352.9	3599.6
6	0.00599	2.054	56.6	57.1	295.3	3784.6
7	0.00716	2.052	56.3	58.0	231.8	3780.7
8	0.00834	2.048	55.0	58.6	194.3	3839.4
9	0.00951	2.048	52.6	53.2	162.6	3923.9

$\log \beta_{101} = 4.15 \pm 0.02$ $\log \beta_{102} = 6.91 \pm 0.03$

Table Th23. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 5 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.09 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.956	56.8	54.8	2195.2	1553.3
2	0.00025	1.948	54.0	55.5	1936.1	1909.8
3	0.00050	1.941	55.2	57.5	1817.1	2178.1
4	0.00074	1.928	56.7	53.9	1687.2	2144.5
5	0.00099	1.921	57.1	59.0	1627.6	2236.9
6	0.00123	1.916	57.3	56.7	1436.4	2384.8
8	0.00172	1.967	59.7	61.2	1216.8	2597.0
9	0.00196	1.904	60.3	61.4	1177.2	2586.1

$\log \beta_{101} = 4.28 \pm 0.02$

Table Th24. Solvent Extraction Data for Apparent Stability Constants of Thorium with Lactate in 5 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.09 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.888	55.6	60.8	1806.7	2195.6
2	0.00121	1.876	55.9	57.3	1469.4	2296.7
3	0.00241	1.876	55.8	53.5	1180.6	2845.0
4	0.00361	1.875	55.1	52.0	952.8	3047.2
5	0.00480	1.873	54.7	51.1	773.2	3360.9
6	0.00599	1.866	55.9	56.8	633.3	3301.1
7	0.00716	1.865	67.5	52.8	536.2	3584.4
8	0.00834	1.859	55.3	64.0	395.0	3429.6

log β_{101} = 4.11±0.04 log β_{102} = 7.30±0.04

Table Th25. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 0.3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.025 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.925	64.6	66.1	493.4	3145.4
2	2.48×10^{-6}	2.928	70.0	63.9	116.0	3758.2
3	4.96×10^{-6}	2.903	62.6	60.6	85.3	4030.8
4	7.42×10^{-6}	2.908	66.1	80.9	78.2	3937.4
5	1.47×10^{-5}	2.958	75.2	74.7	79.5	4068.6

log β_{102} = 13.24±0.02

Table Th26. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 0.3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.03 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.915	77.8	77.7	940.5	2870.5
2	3.08×10^{-7}	2.908	74.3	72.4	904.2	2933.7
4	9.21×10^{-7}	2.908	66.6	68.0	611.8	3249.0
5	1.22×10^{-6}	2.909	70.3	71.0	534.5	3402.9
6	1.52×10^{-6}	2.903	72.0	68.4	393.4	3526.0
7	1.82×10^{-6}	2.904	76.2	69.7	350.7	3524.8
8	2.12×10^{-6}	2.908	74.2	66.8	346.8	3603.6

log β_{101} = 7.03±0.04 log β_{102} = 13.63±0.04

Table Th27. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 0.3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.0325 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.909	75.2	66.4	1247.5	2497.5
2	2.48×10^{-6}	2.905	67.5	69.0	280.6	3694.8
3	4.96×10^{-6}	2.900	73.6	71.8	146.3	3912.9
4	7.42×10^{-6}	2.894	68.6	64.8	120.9	3897.0
5	9.88×10^{-6}	2.893	67.6	69.6	103.1	3909.7
6	1.23×10^{-5}	2.894	70.5	73.1	94.6	3960.6
8	1.72×10^{-5}	2.894	71.3	68.3	83.9	3981.3

$\log \beta_{102} = 13.20\pm0.06$

Table Th28. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 0.3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.0325 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.715	75.2	66.4	1247.5	2497.5
2	3.09×10^{-6}	2.719	67.5	69.0	280.6	3694.8
3	6.15×10^{-6}	2.725	73.6	71.8	146.3	3912.9
4	9.20×10^{-6}	2.728	68.6	64.8	120.9	3897.0
5	1.23×10^{-5}	2.726	67.6	69.6	103.1	3909.7
6	1.53×10^{-5}	2.731	70.5	73.1	94.6	3960.6
8	2.12×10^{-5}	2.708	71.3	68.3	83.9	3981.3

$\log \beta_{102} = 13.01\pm0.06$

Table Th29. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.040 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.722	71.7	64.5	2945.1	928.6
2	3.08×10^{-7}	2.715	71.8	75.4	2572.4	1369.2
3	6.15×10^{-7}	2.715	70.7	70.5	2418.4	1653.7
4	9.20×10^{-7}	2.718	68.2	66.4	1919.0	1861.0
5	1.22×10^{-6}	2.718	66.9	71.2	1818.9	2024.5
6	1.52×10^{-6}	2.718	67.9	69.4	1708.6	2233.9
7	1.82×10^{-6}	2.720	71.2	69.6	1053.2	1980.7
8	2.12×10^{-6}	2.722	67.6	69.2	816.4	1789.8

$\log \beta_{101} = 7.07\pm0.02$

Table Th30. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 1 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.040 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.709	70.6	71.4	1413.0	2397.4
2	2.48×10^{-6}	2.702	73.2	74.0	302.0	3709.3
3	4.96×10^{-6}	2.698	76.4	72.9	151.3	3771.1
4	9.87×10^{-6}	2.698	65.7	72.1	93.8	3840.1
5	1.95×10^{-5}	2.694	70.5	73.4	76.8	3858.0

log β_{102} = 13.37±0.04

Table Th31. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 1 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.040 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.688	66.8	71.8	2202.3	1677.9
2	3.08×10^{-6}	2.681	75.3	70.6	453.3	3619.9
3	6.15×10^{-6}	2.682	65.7	72.6	196.6	3905.0
4	9.21×10^{-6}	2.685	64.5	68.4	128.4	3846.9
5	1.22×10^{-5}	2.682	64.0	73.4	94.3	3947.8
6	1.53×10^{-5}	2.685	64.7	63.5	83.3	4028.7
7	2.13×10^{-5}	2.677	67.8	75.5	78.8	3920.9

log β_{102} = 13.48±0.04

Table Th32. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 2 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.050 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.487	79.9	69.9	1475.1	2225.6
2	2.49×10^{-6}	2.472	77.0	72.1	384.5	3556.9
3	4.96×10^{-6}	2.472	74.2	74.6	207.4	3689.5
4	7.43×10^{-6}	2.475	77.3	73.0	140.9	3815.0
5	9.88×10^{-6}	2.475	69.6	73.1	118.0	3945.8
6	1.23×10^{-5}	2.472	73.5	80.4	98.3	3858.0
7	1.47×10^{-5}	2.476	75.3	76.9	88.0	3874.6
8	1.72×10^{-5}	2.476	73.8	73.4	84.7	3882.6
9	1.96×10^{-5}	2.478	71.5	80.4	81.8	4048.5

log β_{102} = 13.32±0.05

Table Th33. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.050 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.511	70.1	68.5	1700.2	2232.3
2	6.15×10^{-7}	2.504	67.6	63.9	1307.3	2655.5
3	9.20×10^{-7}	2.504	66.6	75.0	1146.6	2725.5
4	1.22×10^{-6}	2.507	61.0	74.3	967.5	3000.1
5	1.52×10^{-6}	2.504	68.0	71.8	767.0	3159.2
6	1.82×10^{-6}	2.500	72.2	71.6	678.3	3163.1
7	2.12×10^{-6}	2.497	71.5	69.5	599.3	3349.8

$\log \beta_{101} = 6.98\pm0.04$ $\log \beta_{102} = 13.24\pm0.05$

Table Th34. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.050 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.473	79.0	65.5	2211.4	1748.5
2	3.08×10^{-6}	2.473	71.3	68.5	472.4	3552.3
3	6.15×10^{-6}	2.476	68.6	73.2	218.9	3873.9
4	9.21×10^{-6}	2.478	66.9	76.3	129.7	3843.6
5	1.23×10^{-5}	2.481	64.8	73.7	108.5	3948.8
6	1.53×10^{-5}	2.480	63.9	72.6	87.0	4035.9
7	1.83×10^{-5}	2.481	68.0	66.9	81.4	3931.4

$\log \beta_{102} = 13.49\pm0.05$

Table Th35. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.065 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.212	56.5	64.9	3285.9	508.5
2	6.15×10^{-7}	2.211	61.8	59.0	2674.6	868.0
3	1.22×10^{-6}	2.235	69.4	65.8	2162.0	1070.2
4	1.83×10^{-6}	2.238	64.9	61.9	2086.3	1399.0

$\log \beta_{101} = 7.13\pm0.01$

Table Th36. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.0625 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.284	65.0	71.0	1519.8	2155.5
2	2.48×10^{-6}	2.286	72.2	76.5	264.3	3213.0
3	4.96×10^{-6}	2.288	65.2	75.0	127.9	3094.2
4	7.42×10^{-6}	2.287	70.2	70.5	101.0	3293.5
5	9.87×10^{-6}	2.293	71.1	75.9	88.6	3394.5
6	1.47×10^{-5}	2.299	70.5	74.4	73.5	2317.5
7	1.71×10^{-5}	2.300	77.6	68.6	80.2	2206.5

log β_{102} = 13.69±0.03

Table Th37. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.050 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.465	69.0	72.1	1988.1	5632.9
2	3.07×10^{-7}	2.466	67.2	70.5	1639.9	6270.5
3	6.14×10^{-7}	2.463	66.7	65.8	1490.3	6339.4
4	9.19×10^{-7}	2.467	73.2	76.5	1318.6	6502.6
5	1.22×10^{-6}	2.463	80.8	68.2	1190.4	6674.6
6	1.52×10^{-6}	2.469	73.8	69.2	1045.6	6872.3
7	1.82×10^{-6}	2.469	72.1	69.9	916.1	6849.5
8	2.12×10^{-6}	2.469	74.7	71.8	822.2	6868.3

Table Th38. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 3.5×10^{-7} M, [DBM] = 0.065 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.469	63.2	59.4	1107.2	2834.2
2	3.08×10^{-6}	2.470	75.3	69.5	238.7	3744.4
3	6.16×10^{-6}	2.464	62.5	62.7	129.5	3947.5
4	1.23×10^{-5}	2.470	66.9	74.2	84.3	3950.3
5	1.52×10^{-5}	2.470	64.5	68.3	76.9	4008.9
6	1.82×10^{-5}	2.470	64.8	72.5	73.5	3972.3
7	2.12×10^{-5}	2.472	59.0	91.0	63.9	3992.0

log β_{102} = 13.36±0.06

Table Th39. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 4 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.080 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.056	68.7	66.4	3009.5	891.2
2	3.08×10^{-7}	2.059	66.9	71.9	2818.8	1038.7
3	6.15×10^{-7}	2.060	70.7	71.6	2680.0	1068.6
4	9.20×10^{-7}	2.065	66.5	72.6	2534.6	1345.8
5	1.22×10^{-6}	2.069	66.2	65.0	2358.5	1467.3
6	1.57×10^{-6}	2.068	62.4	60.3	2320.6	1644.3
7	1.82×10^{-6}	2.078	71.9	58.3	2074.5	1869.0
8	2.12×10^{-6}	2.082	65.6	64.2	1909.8	1973.4

$\log \beta_{101} = 7.26\pm0.03$

Table Th40. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 4 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.075 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.132	74.4	66.1	1391.5	2153.8
2	2.48×10^{-6}	2.129	74.3	71.3	338.8	3412.2
3	4.96×10^{-6}	2.123	75.8	73.7	161.0	3079.1
4	7.42×10^{-6}	2.116	72.9	69.2	112.0	3187.0
5	9.87×10^{-6}	2.120	68.8	73.0	89.4	3411.6
6	1.23×10^{-6}	2.109	68.2	76.6	76.8	2785.8
8	1.71×10^{-5}	2.113	72.8	69.3	79.3	3922.7

$\log \beta_{102} = 13.95\pm0.04$

Table Th41. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.113 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	3.08×10^{-7}	1.882	65.8	67.5	2840.9	673.9
2	6.15×10^{-7}	1.878	64.0	65.3	1879.2	704.9
3	9.20×10^{-7}	1.878	74.2	65.8	2246.9	1044.3
4	1.22×10^{-6}	1.882	67.8	60.7	1645.2	1005.4
5	1.52×10^{-6}	1.884	73.6	54.8	1926.7	1299.9
6	1.82×10^{-6}	1.885	59.9	69.4	1783.6	1329.2
7	2.12×10^{-6}	1.887	60.4	63.5	1679.6	1539.9

$\log \beta_{101} = 7.47\pm0.02$

Table Th42. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.113 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.873	71.2	73.1	2320.8	1481.4
2	2.48×10^{-6}	1.870	71.7	69.5	601.2	3337.1
3	4.96×10^{-6}	1.870	73.2	73.9	275.5	3359.6
4	7.42×10^{-6}	1.868	71.7	84.7	176.1	3674.7
5	9.87×10^{-6}	1.869	78.6	78.8	135.7	2648.9
6	1.23×10^{-5}	1.864	66.0	74.6	108.0	4117.0
7	1.47×10^{-5}	1.864	69.8	70.1	94.0	3889.3
8	1.71×10^{-5}	1.863	73.1	72.0	78.9	3924.4

$\log \beta_{102} = 13.91\pm0.09$

Table Th43. Solvent Extraction Data for Apparent Stability Constants of Thorium with Oxalate in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.113 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.828	69.2	59.0	2030.1	1693.7
2	3.1×10^{-6}	1.804	69.0	71.4	476.3	3508.6
3	6.2×10^{-6}	1.805	61.9	63.0	225.1	3762.6
4	9.2×10^{-6}	1.814	64.4	70.6	143.6	3949.1
5	1.2×10^{-5}	1.818	65.4	68.8	101.4	3911.2
6	1.5×10^{-5}	1.801	68.8	60.8	87.9	3846.9
7	1.8×10^{-5}	1.805	64.3	63.9	79.5	4079.5
8	2.1×10^{-5}	1.808	62.6	62.6	71.0	4075.3

$\log \beta_{101} = 14.02\pm0.04$

Table Th44. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 0.1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.025 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.044	88.4	96.2	1209.6	5588.4
2	2.49×10^{-6}	3.047	73.3	95.3	488.2	7208.6
3	4.97×10^{-6}	3.053	93.3	86.7	291.3	9955.7
4	7.44×10^{-6}	3.057	99.3	102.4	226.3	7869.1
5	9.90×10^{-6}	3.049	102.8	94.9	204.5	7733.4
6	1.23×10^{-5}	3.050	101.8	83.3	176.6	7346.7
7	1.48×10^{-5}	3.067	89.3	99.7	122.8	7390.9
8	1.72×10^{-5}	3.118	94.1	96.8	122.1	7317.0

$\log \beta_{101} = 10.46\pm0.03$ $\log \beta_{102} = 19.71\pm0.04$

Table Th45. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 0.3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 7.1×10^{-7} M, [DBM] = 0.03 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.928	69.4	72.5	785.5	3167.9
2	3.98×10^{-7}	2.927	77.8	81.8	742.9	3093.6
3	7.94×10^{-7}	2.940	66.8	68.5	715.3	3129.6
4	1.18×10^{-6}	2.956	66.8	74.6	580.5	3369.5
5	1.58×10^{-6}	2.951	69.6	66.8	524.6	3363.1
6	1.97×10^{-6}	2.969	66.7	61.6	473.0	3391.0
7	2.35×10^{-6}	2.964	65.1	62.0	443.8	3360.9
8	2.74×10^{-6}	2.966	62.0	68.7	428.0	3433.3

log β_{101} = 9.67±0.03

Table Th46. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 0.3 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 7.1×10^{-7} M, [DBM] = 0.03 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.915	84.1	70.6	2159.1	4956.4
2	2.49×10^{-6}	2.913	80.4	98.6	752.1	6883.8
3	4.97×10^{-6}	2.908	80.8	78.7	486.5	7105.2
4	7.44×10^{-6}	2.909	93.5	98.6	373.4	7195.9
5	9.90×10^{-6}	2.920	80.4	89.7	248.8	7226.5
6	1.23×10^{-5}	2.922	80.4	80.5	210.2	7523.5
7	1.47×10^{-5}	2.926	85.3	84.4	182.5	7401.0
8	1.72×10^{-5}	2.934	93.5	77.3	175.4	7626.4

log β_{101} = 9.80±0.04 log β_{101} = 18.72±0.04

Table Th47. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 1 m NaCl at 25°C. [$^{230}Th^{4+}$] ~ 7.1×10^{-7} M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.760	69.0	67.7	1787.6	1999.9
2	3.98×10^{-7}	2.756	64.9	68.2	1421.2	2493.3
3	7.94×10^{-7}	2.754	66.6	62.7	1405.1	2460.6
4	1.19×10^{-6}	2.764	63.3	62.8	1224.6	2663.9
5	1.58×10^{-6}	2.775	72.4	58.6	1155.3	2745.2
6	1.97×10^{-6}	2.784	69.6	70.5	984.1	2931.9
7	2.36×10^{-6}	2.774	66.0	74.1	894.2	2947.8
8	2.74×10^{-6}	2.779	69.0	72.8	875.5	3113.7

log β_{101} = 9.56±0.03

Table Th48. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.723	82.2	82.2	4778.5	3192.1
2	2.49×10^{-6}	2.725	82.2	82.2	2772.6	5060.2
3	4.97×10^{-6}	2.727	82.2	82.2	1634.2	6232.9
4	7.44×10^{-6}	2.729	82.2	82.2	949.3	6522.8
5	9.90×10^{-6}	2.738	82.2	82.2	739.9	7120.3
6	1.23×10^{-5}	2.736	82.2	82.2	539.2	7026.0
7	1.47×10^{-5}	2.734	82.2	82.2	463.9	7388.8
8	1.71×10^{-5}	2.730	82.2	82.2	289.6	7480.6

$\log \beta_{102} = 18.28\pm0.03$

Table Th49. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.579	86.0	79.7	3163.9	4515.9
2	2.49×10^{-6}	2.507	81.0	85.4	2393.2	3999.6
3	4.97×10^{-6}	2.509	85.4	80.5	1629.1	4346.4
5	9.90×10^{-6}	2.509	82.6	80.2	1229.4	5415.9
6	1.23×10^{-5}	2.514	80.0	84.5	978.9	4866.1
7	1.47×10^{-5}	2.517	80.9	91.5	782.5	4696.3
8	1.71×10^{-5}	2.516	79.4	85.1	667.8	4864.4
9	1.96×10^{-5}	2.532	87.6	92.5	529.5	4798.8

$\log \beta_{102} = 17.45\pm0.04$

Table Th50. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.534	82.2	82.2	5205.5	1633.7
2	2.49×10^{-6}	2.541	82.2	82.2	4149.2	2540.6
3	4.97×10^{-6}	2.548	82.2	82.2	3790.3	2885.2
4	7.44×10^{-6}	2.557	82.2	82.2	2970.6	4099.6
5	9.90×10^{-6}	2.563	82.2	82.2	2837.5	4195.6
6	1.23×10^{-5}	2.573	82.2	82.2	2233.6	5115.8
7	1.48×10^{-5}	2.574	82.2	82.2	1945.8	5118.0
8	1.72×10^{-5}	2.577	82.2	82.2	1570.1	5897.3

$\log \beta_{101} = 9.30\pm0.04$

Table Th51. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.282	72.0	82.8	993.4	1389.7
2	2.49×10^{-6}	2.293	67.6	68.6	472.2	1487.3
3	4.96×10^{-6}	2.299	66.2	69.0	406.7	2118.7
4	7.42×10^{-6}	2.307	75.6	69.8	309.9	1751.6
5	1.23×10^{-5}	2.309	69.0	71.8	219.6	1797.9
6	1.71×10^{-5}	2.318	65.8	79.8	176.7	1958.4

$\log \beta_{101} = 9.55\pm0.02$

Table Th52. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.275	95.1	80.6	5348.7	2437.4
2	2.48×10^{-6}	2.270	80.7	81.4	4816.6	2962.0
3	9.87×10^{-6}	2.268	86.5	85.2	3524.9	4324.4
4	1.47×10^{-5}	2.269	75.3	81.2	2717.9	5133.1
5	1.72×10^{-5}	2.275	96.7	88.7	2451.1	5161.9
6	1.95×10^{-5}	2.276	72.0	91.1	2120.5	5680.2
7	2.19×10^{-5}	2.280	81.0	96.0	2013.5	5896.8

$\log \beta_{102} = 17.33\pm0.04$

Table Th53. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 4 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 3.5\times10^{-7}$ M, [DBM] = 0.075 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.114	67.0	64.1	1753.7	2168.0
2	3.98×10^{-7}	2.113	71.3	68.4	1159.9	2792.5
3	7.94×10^{-7}	2.110	74.1	73.0	1023.7	2888.8
4	1.18×10^{-6}	2.124	74.9	72.6	932.0	3095.5
5	1.97×10^{-6}	2.123	72.0	69.7	792.7	3104.3
6	2.75×10^{-6}	2.124	76.4	66.6	650.2	3264.1
7	3.89×10^{-6}	2.135	69.5	75.9	517.0	3434.4

$\log \beta_{101} = 10.07\pm0.02$

Table Th54. Solvent Extraction Data for Apparent Stability Constants of Thorium with Citrate in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7\times10^{-7}$ M, [DBM] = 0.04 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.918	37.8	37.8	4489.5	1976.2
2	1.91×10^{-6}	1.913	37.8	37.8	4175.8	2713.0
3	3.83×10^{-6}	1.919	37.8	37.8	2995.0	3919.0
4	5.73×10^{-6}	1.929	37.8	37.8	2203.0	4633.7
5	7.63×10^{-6}	1.938	37.8	37.8	1795.0	5043.1
6	9.52×10^{-6}	1.942	37.8	37.8	1444.4	5398.7
7	1.14×10^{-5}	1.948	37.8	37.8	1156.6	5598.8

$\log \beta_{101} = 10.18\pm0.03$ $\log \beta_{102} = 19.12\pm0.04$

Table Th55. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 0.3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.025 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.905	98.0	79.1	1149.7	6523.1
2	4.91×10^{-8}	2.898	99.2	90.0	976.1	6400.0
3	9.81×10^{-8}	2.894	83.3	92.4	712.2	6902.8
4	1.47×10^{-7}	2.897	89.1	87.4	644.5	7133.3
6	2.43×10^{-7}	2.902	96.1	91.9	644.2	7878.0
7	2.91×10^{-7}	2.901	86.5	88.9	557.8	7421.0
8	3.86×10^{-7}	2.903	83.0	84.0	444.4	7345.6
9	4.81×10^{-7}	2.903	94.1	90.7	376.4	8644.4

$\log \beta_{101} = 16.15\pm0.04$ $\log \beta_{102} = 31.65\pm0.07$

Table Th56. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 0.3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.025 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.898	98.0	79.1	1149.7	6523.1
2	4.91×10^{-8}	2.896	99.2	90.0	976.1	6400.0
3	1.47×10^{-7}	2.902	83.3	92.4	712.2	6902.8
4	1.95×10^{-7}	2.911	89.1	87.4	644.5	7133.3
5	2.43×10^{-7}	2.910	86.5	88.9	557.8	7421.0
6	3.39×10^{-7}	2.912	83.0	84.0	444.4	7345.6
7	4.81×10^{-7}	2.923	94.1	90.7	376.4	8644.4

$\log \beta_{101} = 16.32\pm0.03$ $\log \beta_{102} = 31.81\pm0.04$

Table Th57. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.035 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.734	82.2	78.6	1311.1	6429.2
2	4.91×10^{-8}	2.734	96.0	86.0	1260.0	6525.9
3	9.80×10^{-8}	2.724	76.4	98.4	1191.5	6559.6
4	1.47×10^{-7}	2.731	84.5	84.9	903.2	6797.9
5	1.95×10^{-7}	2.725	92.7	80.1	788.9	6977.0
6	2.46×10^{-7}	2.722	86.8	87.7	737.0	6974.1
7	2.95×10^{-7}	2.724	93.6	85.8	682.1	7048.2
8	3.94×10^{-7}	2.740	90.1	83.6	632.4	7381.5

$\log \beta_{101} = 15.37\pm0.03$

Table Th58. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 1 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.025 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.742	82.2	78.6	1311.1	6429.2
2	9.81×10^{-8}	2.745	96.0	86.0	1260.0	6525.9
3	1.46×10^{-7}	2.749	76.4	98.4	1191.5	6559.6
4	1.95×10^{-7}	2.751	84.5	84.9	903.2	6797.9
5	2.43×10^{-7}	2.756	92.7	80.1	788.9	6977.0
6	2.95×10^{-7}	2.758	93.6	85.8	682.1	7048.2
7	3.45×10^{-7}	2.764	90.1	83.6	632.4	7381.5

$\log \beta_{101} = 15.58\pm0.03$ $\log \beta_{102} = 30.77\pm0.07$

Table Th59. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.045 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.500	77.1	84.5	1350.7	6402.2
2	4.91×10^{-8}	2.498	90.8	90.7	1248.8	6692.4
3	1.47×10^{-7}	2.509	85.4	78.5	1091.1	6782.9
4	1.95×10^{-7}	2.504	89.7	86.4	860.3	6723.9
5	2.46×10^{-7}	2.507	80.5	88.0	738.3	7270.4
6	3.94×10^{-7}	2.504	89.2	75.0	569.8	7250.7
7	4.93×10^{-7}	2.504	88.6	79.6	542.3	7438.7

$\log \beta_{101} = 15.55\pm0.03$

Table Th60. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 2 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.045 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.511	77.1	84.5	1350.7	6402.2
2	9.80×10^{-8}	2.515	90.8	90.7	1248.8	6692.4
3	1.47×10^{-7}	2.513	85.4	78.5	1091.1	6782.9
4	1.96×10^{-7}	2.521	89.7	86.4	860.3	6723.9
5	2.46×10^{-7}	2.524	80.5	88.0	738.3	7270.4
6	3.45×10^{-7}	2.522	89.2	75.0	569.8	7250.7
7	3.94×10^{-7}	2.529	88.6	79.6	542.3	7438.7

$\log \beta_{102} = 30.97\pm0.06$

Table Th61. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 3 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.065 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.294	86.3	78.4	2440.7	5505.4
2	4.91×10^{-8}	2.288	84.0	76.3	2307.7	5618.4
3	9.80×10^{-8}	2.284	88.8	86.5	2111.0	5586.9
4	1.47×10^{-7}	2.289	79.3	86.4	1680.6	6005.7
6	2.46×10^{-7}	2.297	83.2	76.2	1678.3	6257.6
7	2.96×10^{-7}	2.298	85.9	79.2	1470.0	6457.9
8	3.94×10^{-7}	2.307	82.8	86.2	1186.1	6722.1
9	4.96×10^{-7}	2.312	84.0	90.2	1007.9	6941.5

$\log \beta_{101} = 15.73\pm0.03$ $\log \beta_{102} = 30.99\pm0.02$

Table Th62. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 4 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.085 M in Toluene.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.112	86.9	92.6	4153.6	3792.0
2	4.91×10^{-8}	2.097	85.0	88.1	3979.9	3976.9
3	9.80×10^{-8}	2.099	85.5	76.2	3508.5	3857.7
4	1.47×10^{-7}	2.107	84.6	85.0	3638.3	4678.7
5	1.95×10^{-7}	2.105	86.4	78.3	3200.7	4875.1
6	2.96×10^{-7}	2.108	94.8	85.4	2841.1	5400.7
7	3.94×10^{-7}	2.121	85.6	77.1	2003.6	5192.2
8	4.93×10^{-7}	2.124	82.0	78.0	1499.0	5660.9

$\log \beta_{101} = 16.18\pm0.03$ $\log \beta_{102} = 32.08\pm0.05$

Table Th63. Solvent Extraction Data for Apparent Stability Constants of Thorium with EDTA in 5 m NaCl at 25°C. $[^{230}Th^{4+}] \sim 7.1\times10^{-7}$ M, [DBM] = 0.125 M in Toluene.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	1.904	95.9	81.7	3143.5	4057.3
3	9.80×10^{-8}	1.888	78.3	105.4	2824.9	4266.3
4	1.47×10^{-7}	1.893	85.0	99.0	2490.8	4806.7
5	1.95×10^{-7}	1.897	78.2	110.1	2519.6	5352.7
7	2.96×10^{-7}	1.908	86.3	99.6	1948.8	5030
8	3.94×10^{-7}	1.911	82.3	108.9	1566.5	5876.4
9	4.93×10^{-7}	1.919	81.5	106.6	1264.8	6535.6

$\log \beta_{101} = 16.94\pm0.05$ $\log \beta_{102} = 33.21\pm0.05$

Table U1. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.995	68.9	69.7	1833.8	1328.6
2	0.00495	3.004	63.9	72.4	1978.3	1255.2
3	0.00989	3.014	66.4	72.3	1931.3	1337.8
4	0.0148	3.020	68.2	70.4	1746.2	1322.8
5	0.0198	3.022	70.7	74.5	1828.3	1483.1
6	0.0396	3.032	70.0	67.2	1662.6	1596.3
7	0.0594	3.035	74.4	87.7	1877.4	1126.4
8	0.0792	3.032	72.7	75.0	1234.1	1877.8
9	0.0990	3.034	92.1	70.6	1616.4	1518.4

log β_{101} = 2.64±0.04

Table U2. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.129	70.2	85.0	1998.1	867.4
2	0.00495	3.072	69.1	68.6	2347.7	793.4
3	0.00990	3.064	71.7	63.1	2398.2	861.3
4	0.0148	3.055	78.1	69.1	2315.4	890.5
5	0.0198	3.048	66.8	75.3	1716.8	1041.3
6	0.0396	3.032	69.3	71.3	1886.8	1257.2
7	0.0594	3.025	71.9	73.4	1692.1	1402.1
8	0.0792	3.019	71.1	68.3	1415.2	1668.9
9	0.0989	3.016	78.6	76.3	1220.1	1993.8

log β_{101} = 2.55±0.14

Table U3. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.113	68.8	68.4	1955.0	1147.4
2	0.00488	3.066	66.5	70.7	1692.8	1196.3
3	0.00976	3.102	65.3	72.1	1622.5	1070.6
4	0.0146	3.061	70.0	66.6	2014.6	1205.1
5	0.0195	3.052	68.3	72.9	1641.3	1280.8
6	0.0390	3.027	73.8	72.8	1521.8	1518.2
7	0.0586	3.031	69.7	68.1	1266.5	1713.8
8	0.0781	3.020	69.4	68.7	1039.0	2139.3
9	0.0976	2.972	74.2	67.7	907.6	2056.7

$\log \beta_{101} = 2.26 \pm 0.04$

Table U4. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.096	76.4	71.8	1446.5	1053.6
2	0.00488	3.065	72.2	74.4	1907.0	1412.9
3	0.00976	3.049	69.6	68.1	1844.1	1448.6
4	0.0146	3.040	74.7	78.4	2009.2	1432.1
5	0.0195	3.040	72.9	81.6	1654.5	1526.0
6	0.0390	3.031	76.4	76.3	1531.7	1775.9
7	0.0586	3.019	73.4	72.5	1262.5	2098.8
8	0.0781	3.011	84.6	71.1	1174.2	2152.0
9	0.0976	3.001	73.2	68.9	893.2	2246.8

$\log \beta_{101} = 2.37 \pm 0.06$

Table U5. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.122	99.7	75.3	2599.9	688.5
2	0.00479	3.045	89.5	84.4	2602.5	791.4
3	0.00958	3.031	83.0	77.6	2467.5	929.0
4	0.0144	3.025	107.9	78.5	2389.3	1015.0
5	0.0192	3.020	101.3	88.8	2206.9	1120.4
6	0.0383	3.016	91.8	92.3	1994.3	1335.6
7	0.0575	3.014	107.3	80.2	1642.0	1697.2
8	0.0767	3.011	79.0	81.1	1110.0	2775.5
9	0.0958	3.010	85.4	78.2	1057.6	1937.4

log β_{101} = 2.62±0.03

Table U6. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.145	64.2	69.7	2442.1	694.3
2	0.00479	3.037	60.8	76.5	2360.6	802.9
3	0.00958	3.025	72.4	69.2	2293.9	802.2
4	0.0144	3.019	68.1	71.8	2225.0	904.3
5	0.0192	3.015	69.4	67.3	2101.2	963.5
6	0.0383	3.008	68.0	80.1	1928.2	1216.8
7	0.0575	3.007	71.1	64.6	1592.6	1640.3
8	0.0767	3.006	78.7	71.5	1259.9	1901.7
9	0.0958	3.002	67.0	65.9	839.9	1824.4

log β_{101} = 2.43±0.06   log β_{102} = 5.12±0.02

Table U7. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.125	108.3	86.1	2771.5	569.5
2	0.00470	3.041	99.2	99.8	2834.8	536.1
3	0.00941	3.043	89.8	110.5	2758.6	591.6
4	0.0141	3.042	86.9	80.0	2772.3	619.1
5	0.0188	3.054	78.9	95.4	2664.8	680.9
6	0.0188	3.054	83.8	79.4	2646.9	708.8
7	0.0376	3.050	79.8	80.0	2358.3	899.3
8	0.0564	3.045	97.8	108.4	1989.3	1237.3
9	0.0753	3.042	80.1	95.1	1748.2	1638.1
10	0.0941	3.041	95.7	104.4	1495.1	1701.1

log β_{101} = 2.46±0.07   log β_{102} = 4.80±0.08

Table U8. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.228	68.2	66.1	2971.4	505.5
2	0.00470	3.095	75.3	66.6	2730.7	674.1
3	0.00941	3.075	64.9	64.7	2658.4	775.5
4	0.0141	3.071	66.9	61.7	1702.9	1600.3
5	0.0188	3.060	67.7	63.3	2111.3	1085.2
6	0.0376	3.055	70.0	63.6	1452.8	1897.0
7	0.0564	3.055	61.6	65.6	1828.8	4310.4
8	0.0753	3.051	61.5	62.2	640.1	2581.3
9	0.0941	3.051	73.5	72.6	427.3	2808.8

log β_{101} = 3.22±0.07   log β_{102} = 5.71±0.06

Table U9. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.108	87.0	92.8	2889.1	378.2
2	0.00184	3.034	82.9	93.8	2591.9	380.7
3	0.00460	3.035	80.5	106.7	2858.2	481.0
4	0.00920	3.005	100.4	84.9	2909.9	486.1
5	0.0184	3.000	92.2	106.3	2621.1	659.5
6	0.0368	2.997	84.0	77.6	2370.5	935.2
7	0.0552	2.992	87.6	84.1	1859.7	1421.7
8	0.0736	2.989	90.9	93.2	1417.9	1867.5
9	0.0920	2.991	81.9	85.4	1080.7	2216.2

log β_{101} = 2.75±0.03 log β_{102} = 5.37±0.01

Table U10. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.012	62.7	69.6	3150.9	441.0
2	0.00460	3.024	72.2	64.7	3065.1	501.1
3	0.00920	3.019	71.1	61.1	2908.5	602.5
4	0.0138	3.015	83.3	66.6	2576.2	682.6
5	0.0184	3.012	65.9	71.8	2322.5	774.2
6	0.0368	3.008	62.6	67.4	1975.5	1470.7
7	0.0552	3.005	69.7	66.9	1413.2	2046.4
8	0.0736	3.007	67.0	70.5	856.7	2434.0
9	0.0920	3.005	69.0	65.7	557.4	2810.4

log β_{101} = 3.44±0.03 log β_{102} = 6.08±0.06

Table U11. Solvent Extraction Data for Apparent Stability Constants of Uranium with Acetate in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.743	60.4	64.8	2552.3	1015.4
2	0.00450	2.947	64.5	73.8	2973.0	658.1
3	0.00899	2.988	58.7	84.9	3019.0	640.8
4	0.0135	2.999	64.6	68.0	3010.6	694.4
5	0.0180	3.014	70.8	84.2	2736.1	826.8
6	0.0360	3.019	67.8	72.6	2208.9	1436.6
7	0.0540	3.021	67.9	75.0	1611.0	1930.8
8	0.0719	3.024	67.8	66.2	1033.0	2470.1
9	0.0899	3.024	71.3	63.4	638.7	2667.6

log β_{101} = 3.14±0.04

Table U12. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.894	55.1	49.2	2075.8	1650.1
2	0.00493	2.944	51.8	57.3	1974.6	1668.6
3	0.00987	2.964	54.4	58.9	1840.3	1839.6
4	0.0148	2.977	57.0	52.7	1673.0	1979.7
5	0.0197	2.992	58.2	54.5	1269.4	1911.9
6	0.0395	3.012	55.0	52.1	1092.1	2525.5
7	0.0592	3.026	57.8	54.5	851.5	2730.7
8	0.0789	3.039	53.7	58.0	651.9	2961.3
9	0.0987	3.055	52.0	53.1	536.3	3161.1

$\log \beta_{101} = 2.60\pm0.01$

Table U13. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.890	54.8	53.5	1762.2	1868.9
2	0.00488	2.975	51.4	55	2015.9	1612.6
3	0.00976	3.014	53.6	57.7	1876.9	1854
4	0.0146	3.030	66.9	60.9	1682.9	2072.7
5	0.0195	3.041	57.3	50.4	1544.5	2106
6	0.0390	3.061	49.8	55.5	1143.6	2565
7	0.0585	3.072	53.6	57.2	831.6	2910.5
8	0.0781	3.077	59.7	56.3	713.5	3035
9	0.0976	3.081	53.3	58.8	520	3261.6

$\log \beta_{101} = 2.36\pm0.02$

Table U14. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.170	53.5	55.9	1875.2	421.5
2	0.0109	3.096	60.1	55.3	1700.9	695.0
3	0.0218	3.092	53.3	56.3	1425.6	922.4
4	0.0328	3.091	57.3	53.1	1233.4	1067.5
5	0.0437	3.091	52.1	50.6	1080.7	1150.4
6	0.0556	3.091	58.3	52.2	934.6	1277.2
7	0.0655	3.091	53.7	54.1	777.5	1431.3
8	0.0874	3.095	52.8	58.8	589.6	1627.4
9	0.109	3.098	54.7	60.8	457.6	1766.0

$\log \beta_{101} = 2.30\pm0.01$ $\log \beta_{102} = 3.71\pm0.02$

Table U15. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.071	58.0	60.5	1891.9	459.7
2	0.00546	3.060	56.6	56.9	1728.5	606.1
3	0.0109	3.058	51.0	55.7	1627.9	729.8
4	0.0164	3.056	54.6	57.3	1502.0	793.1
5	0.0218	3.056	57.5	54.2	1364.3	978.6
6	0.0437	3.055	55.1	50.7	935.6	1333.8
7	0.0655	3.056	49.7	47.6	701.9	1574.8
8	0.0874	3.058	53.7	52.7	532.1	1800.9
9	0.109	3.060	52.4	49.8	411.9	1928.2

$\log \beta_{101} = 2.60\pm0.02$ $\log \beta_{102} = 3.87\pm0.04$

Table U16. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.067	59.0	57.3	1983.8	422.8
2	0.00466	3.080	51.4	51.6	1958.6	426.5
3	0.00931	3.078	53.6	51.3	1861.6	542.0
4	0.0140	3.078	54.3	59.9	1778.8	635.7
5	0.0186	3.076	59.5	57.4	1661.6	741.6
6	0.0372	3.080	55.8	55.2	1321.5	1092.1
7	0.0559	3.081	55.0	52.1	1108.4	1280.3
8	0.0745	3.083	52.1	52.9	863.0	1520.2
9	0.0931	3.085	54.2	54.9	701.2	1669.3

$\log \beta_{101} = 2.48\pm0.02$

Table U17. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.132	53.7	53.0	2009.9	399.8
2	0.00466	3.082	51.5	55.9	1971.8	454.3
3	0.00931	3.089	59.3	53.3	1882.3	527.0
4	0.0140	3.086	50.7	50.8	1711.0	665.2
5	0.0186	3.083	52.6	54.3	1693.5	596.9
6	0.0372	3.084	50.3	48.3	1260.7	1150.2
7	0.0559	3.084	59.2	53.7	934.4	1435.4
8	0.0745	3.087	49.1	52.0	714.1	1621.2
9	0.0931	3.089	55.4	51.9	592.4	1800.5

$\log \beta_{101} = 2.98\pm0.03$

Table U18. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.051	50.6	50.7	2114.5	254.8
2	0.00458	3.046	52.9	57.4	2029.8	337.0
3	0.00916	3.047	50.3	56.7	1891.5	456.7
4	0.0137	3.045	58.6	56.3	1827.1	566.7
5	0.0183	3.044	60.9	55.3	1744.4	633.0
6	0.0367	3.044	57.6	53.0	1409.7	958.6
7	0.0550	3.045	50.7	56.7	1170.7	1187.2
8	0.0733	3.047	50.7	56.9	928.4	1450.1
9	0.0916	3.048	51.2	60.8	726.6	1646.3

$\log \beta_{101} = 2.58\pm0.01$

Table U19. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 4 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.245	52.6	57.3	2079.7	219.5
2	0.00458	3.069	49.1	53.6	1938.8	321.2
3	0.00916	3.065	54.2	55.8	1873.6	394.2
4	0.0137	3.063	57.5	51.9	1837.0	460.0
5	0.0183	3.064	53.7	55.5	1717.9	539.4
6	0.0367	3.064	56.9	57.6	1416.7	853.8
7	0.0550	3.063	54.3	60.6	1104.9	1148.1
8	0.0733	3.068	55.9	49.3	911.7	1389.5
9	0.0916	3.069	51.5	54.0	759.9	1575.9

log β_{101} = 2.42±0.03

Table U20. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 5 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.361	55.8	58.9	2869.4	205.2
2	0.00449	3.025	52.4	62.8	2720.9	396.4
3	0.00899	2.994	54.5	56.7	2605.3	528.0
4	0.0135	2.992	57.1	51.6	4737.8	1270.6
5	0.0180	2.987	58.1	59.2	4637.8	1572.1
6	0.0359	2.987	59.2	56.5	1912.4	1149.7
7	0.0539	2.987	57.7	56.1	1510.1	1556.6
8	0.0719	2.990	53.3	55.6	1178.3	2013.3
9	0.0899	2.996	58.4	49.5	937.9	2124.0

log β_{101} = 2.63±0.01

Table U21. Solvent Extraction Data for Apparent Stability Constants of Uranium with Lactate in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.093	54.5	60.2	2842.5	246.8
2	0.00449	3.003	58.9	58.3	2775.5	391.6
3	0.00899	2.994	55.8	51.5	2638.6	533.3
4	0.0135	2.994	55.3	56.2	2514.0	676.9
5	0.0180	2.993	55.7	51.5	2401.7	757.7
6	0.0359	2.998	56.6	56.6	1986.5	1221.8
7	0.0539	3.000	56.5	59.0	1566.4	1656.4
8	0.0719	3.001	61.0	57.6	1316.6	1925.1
9	0.0899	3.011	58.2	58.8	993.8	2291.7

log β_{101} = 2.65±0.01

Table U22. Solvent Extraction Data for Apparent Stability Constants of Uranium with Oxalate in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.027	52.6	54.5	1481.1	996.6
2	5.08×10^{-6}	3.011	57.0	62.7	1013.9	1479.2
3	1.02×10^{-5}	3.017	59.0	60.1	876.5	1674.4
4	1.52×10^{-5}	3.034	57.0	54.8	735.1	1753.2
5	2.03×10^{-5}	3.045	53.5	56.8	567.9	1879.3
6	4.06×10^{-5}	3.047	51.7	59.8	348.8	2116.3
7	6.61×10^{-5}	3.053	58.2	56.9	242.9	2231.9
8	8.12×10^{-5}	3.079	61.0	64.5	201.8	2321.7
9	1.02×10^{-4}	3.100	61.6	69.8	169.5	2379.5

log β_{101} = 5.94±0.01   log β_{102} = 10.13±0.06

Table U23. Solvent Extraction Data for Apparent Stability Constants of Uranium with Oxalate in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.115	54.3	51.7	1422.5	1037.3
2	5.01×10^{-6}	3.095	60.1	56.7	1239.5	1210.8
3	1.00×10^{-5}	3.097	60.3	58.9	1149.7	1460.3
4	1.50×10^{-5}	3.076	61.5	59.4	784.0	1682.6
5	2.00×10^{-5}	3.084	56.3	57.9	693.0	1702.0
6	4.00×10^{-5}	3.122	53.9	54.6	482.7	2136.6
7	6.01×10^{-5}	3.078	58.1	53.2	333.2	2215.1
8	8.01×10^{-5}	3.054	57.0	55.7	229.7	2238.0
9	1.00×10^{-4}	3.052	58.3	57.0	215.6	2427.6

log β_{101} = 5.92±0.01

Table U24. Solvent Extraction Data for Apparent Stability Constants of Uranium with Oxalate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.142	54.1	56.6	1546.8	309.6
2	4.92×10^{-6}	3.142	63.2	66.2	1785.3	664.0
3	9.83×10^{-6}	3.126	58.8	58.4	1547.8	908.7
4	1.48×10^{-5}	3.059	57.4	53.7	1208.8	1302.4
5	1.97×10^{-5}	3.149	50.7	54.4	1134.9	1255.6
6	3.93×10^{-5}	3.089	51.6	59.4	622.4	1879.2
7	5.90×10^{-5}	3.119	58.3	54.5	459.4	1908.4
8	7.86×10^{-5}	3.098	56.2	57.0	299.4	1810.9
9	9.83×10^{-5}	3.152	55.3	55.7	253.0	2005.9

log β_{101} = 5.89±0.01   log β_{102} = 10.21±0.08

Table U25. Solvent Extraction Data for Apparent Stability Constants of Uranium with Oxalate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.365	57.3	62.2	1760.1	205.5
2	4.80×10^{-6}	3.222	59.4	54.3	1922.7	523.5
3	9.59×10^{-6}	3.185	62.9	54.2	1743.3	794.9
4	1.44×10^{-5}	3.176	56.9	54.7	1261.1	833.7
5	1.92×10^{-5}	3.127	57.2	55.5	1200.8	1256.7
6	3.84×10^{-5}	3.158	55.8	63.2	706.5	1471.8
7	5.76×10^{-5}	3.108	59.4	54.1	378.0	1469.8
8	7.67×10^{-5}	3.094	57.4	55.5	272.0	1783.3
9	9.59×10^{-5}	3.111	56.0	59.5	201.0	1529.4

$\log \beta_{101} = 6.61\pm0.02$ $\log \beta_{102} = 10.98\pm0.07$

Table U26. Solvent Extraction Data for Apparent Stability Constants of Uranium with Oxalate in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.067	66.0	60.9	1885.1	243.0
2	4.72×10^{-6}	3.125	56.2	54.9	2016.6	493.4
3	9.44×10^{-6}	3.189	54.8	63.2	1773.8	645.6
4	1.42×10^{-5}	3.207	58.5	58.8	1664.4	875.2
5	1.89×10^{-5}	3.197	80.8	62.4	1436.7	1104.2
6	2.36×10^{-5}	3.199	63.5	59.1	1201.8	1221.3
7	2.83×10^{-5}	3.168	51.8	61.8	1184.4	1406.1
8	3.30×10^{-5}	3.206	61.1	61.8	967.3	1446.7
9	3.78×10^{-5}	3.254	61.7	58.5	922.7	1456.3

$\log \beta_{101} = 6.70\pm0.01$

Table U27. Solvent Extraction Data for Apparent Stability Constants of Uranium with Oxalate in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.067	66.0	60.9	1885.1	243.0
2	4.72×10^{-6}	3.125	56.2	54.9	2016.6	493.4
3	9.44×10^{-6}	3.189	54.8	63.2	1773.8	645.6
4	1.42×10^{-5}	3.207	58.5	58.8	1664.4	875.2
5	1.89×10^{-5}	3.197	80.8	62.4	1436.7	1104.2
6	2.36×10^{-5}	3.199	63.5	59.1	1201.8	1221.3
7	2.83×10^{-5}	3.168	51.8	61.8	1184.4	1406.1
8	3.30×10^{-5}	3.206	61.1	61.8	967.3	1446.7
9	3.78×10^{-5}	3.254	61.7	58.5	922.7	1456.3

$\log \beta_{101} = 5.82\pm0.02$

Table U28. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.027	49.8	54.4	1550.4	835.0
2	9.85×10^{-6}	3.020	57.7	55.0	1608.5	894.6
3	1.97×10^{-5}	3.022	50.4	60.3	1492.9	835.0
4	2.96×10^{-5}	3.026	52.3	55.4	1523.9	843.8
5	3.94×10^{-5}	3.038	59.3	56.9	1421.4	913.0
6	7.88×10^{-5}	3.067	56.9	56.8	1410.3	880.6
7	1.18×10^{-4}	3.076	52.7	55.0	1287.4	1022.2
8	1.58×10^{-4}	3.097	51.3	51.3	1248.6	1067.8
9	1.97×10^{-4}	3.124	50.8	51.0	1314.9	997.2

$\log \beta_{101} = 7.19\pm0.04$

Table U29. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.037	51.3	49.6	1555.2	707.9
2	9.70×10^{-6}	3.039	52.1	58.7	1535.2	791.1
3	1.94×10^{-5}	3.036	52.6	54.4	1509.2	863.3
4	2.91×10^{-5}	3.041	55.7	53.1	1454.3	894.8
5	3.88×10^{-5}	3.047	51.0	59.5	1429.4	1019.2
6	7.76×10^{-5}	3.053	55.8	52.7	1218.5	1168.4
7	1.16×10^{-4}	3.072	54.6	54.9	2126.9	2425.9
8	1.55×10^{-4}	3.079	54.4	51.7	942.4	1338.5
9	1.94×10^{-4}	3.097	53.6	52.1	743.5	1693.1

$\log \beta_{101} = 7.03\pm0.01$

Table U30. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.100	57.2	56.2	1842.3	996.0
2	9.87×10^{-6}	3.094	63.9	68.5	1601.5	1238.9
3	1.97×10^{-5}	3.090	55.5	55.3	1408.7	1443.8
4	2.96×10^{-5}	3.085	77.2	62.7	1288.4	1479.4
5	3.95×10^{-5}	3.076	49.5	56.2	1309.4	1542.6
6	7.89×10^{-5}	3.049	59.4	59.1	984.5	1799.3
7	1.18×10^{-4}	3.021	58.6	75.7	826.2	1973.9
8	1.58×10^{-4}	3.001	61.1	59.4	854.6	2008.3
9	1.97×10^{-4}	2.996	60.3	58.8	880.9	2039.1

$\log \beta_{101} = 7.30\pm0.01$

Table U31. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 2 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.143	58.7	51.6	1652.0	361.8
2	9.49×10^{-6}	3.130	54.9	58.1	1651.2	637.6
3	1.90×10^{-5}	3.111	55.2	54.1	1311.9	1015.3
4	2.85×10^{-5}	3.106	52.6	62.0	1255.2	1037.7
5	3.80×10^{-5}	3.094	57.9	56.9	920.6	1449.1
6	7.59×10^{-5}	3.078	58.1	52.5	761.4	1613.4
7	1.14×10^{-5}	3.058	55.0	55.6	607.5	1705.8
8	1.52×10^{-5}	3.053	60.4	52.9	506.3	1832.5
9	1.90×10^{-5}	3.064	59.9	51.3	574.6	1718.7

$\log \beta_{101} = 7.09\pm0.02$

Table U32. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 2 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = $1.28\text{x}10\times10^{-5}$ M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.334	58.7	65.8	2715.5	289.5
2	9.71×10^{-6}	3.332	54.7	59.5	1982.9	855.0
3	1.94×10^{-5}	3.294	59.1	59.6	1645.8	1186.7
4	2.91×10^{-5}	3.285	63.5	59.1	1372.4	1515.2
5	3.88×10^{-5}	3.303	61.9	54.8	1081.1	1779.7
6	7.76×10^{-5}	3.285	58.8	55.1	784.9	2007.1
7	1.17×10^{-4}	3.250	61.7	55.3	727.5	2169.9
8	1.55×10^{-4}	3.199	56.0	53.9	547.8	2292.4
9	1.94×10^{-4}	3.172	51.6	56.7	545.3	2371.9

$\log \beta_{101} = 6.92\pm0.02$

Table U33. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.154	59.0	51.6	1773.2	1280.7
2	9.00×10^{-6}	3.107	53.7	78.7	1361.6	1775.3
3	1.80×10^{-5}	3.103	59.4	51.4	1032.4	1931.2
4	2.70×10^{-5}	3.094	56.5	52.3	688.4	2334.4
5	3.60×10^{-5}	3.094	54.7	55.8	564.7	2481.3
6	7.20×10^{-5}	3.082	65.3	87.7	401.4	2762.6
7	1.08×10^{-4}	3.074	62.6	99.1	343.1	2770.9
8	1.44×10^{-4}	3.060	56.8	74.6	249.0	2912.6
9	1.80×10^{-4}	3.067	63.5	64.1	264.7	2877.0

log β_{101} = 7.40±0.02

Table U34. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.177	63.6	63.1	1634.2	1334.7
2	9.00×10^{-6}	3.141	69.4	64.2	1239.7	1737.2
3	1.80×10^{-5}	3.134	62.0	63.1	766.5	2354.0
4	2.70×10^{-5}	3.141	61.0	59.2	669.8	2360.6
5	3.60×10^{-5}	3.137	65.0	60.0	474.7	2579.0
6	4.50×10^{-5}	3.127	53.9	58.0	456.4	2654.6
7	7.20×10^{-5}	3.118	58.9	58.6	300.3	2817.6
8	1.08×10^{-4}	3.113	62.0	62.1	231.8	2908.2
9	5.40×10^{-5}	3.131	65.6	64.2	289.7	2794.2

log β_{101} = 7.80±0.02

Table U35. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.062	54.8	55.2	1588.9	379.3
2	1.86×10^{-5}	3.051	58.2	104.8	1186.0	1273.5
3	3.72×10^{-5}	3.065	57.0	54.3	748.5	1631.2
4	5.58×10^{-5}	3.071	51.9	53.2	646.9	1762.4
5	7.44×10^{-5}	3.055	57.2	57.0	530.6	1780.7
6	9.30×10^{-5}	3.060	56.3	55.6	497.1	1902.7
7	1.12×10^{-4}	3.060	57.9	56.3	373.8	1921.8
8	1.49×10^{-4}	3.075	57.5	61.3	306.5	2035.9
9	1.86×10^{-4}	3.075	57.6	55.6	274.0	2088.7

$\log \beta_{101} = 7.54\pm0.01$

Table U36. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 2.31×10^{-4} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.126	30.2	52.2	2958.2	72.0
2	9.23×10^{-6}	3.034	28.2	30.6	3293.3	64.8
3	1.85×10^{-5}	3.057	27.6	27.8	3373.1	55.8
4	2.77×10^{-5}	3.054	27.4	30.4	3344.4	107.4
5	3.69×10^{-5}	3.059	54.6	25.8	3206.7	119.1
6	7.38×10^{-5}	3.116	25.2	21.6	2904.5	255.8
7	1.11×10^{-4}	3.135	24.8	26.2	2914.2	290.1
8	1.48×10^{-4}	3.163	23.2	26.0	2806.9	387.0
9	1.85×10^{-4}	3.184	27.2	24.6	2717.8	608.0

$\log \beta_{101} = 7.34\pm0.02$

Table U37. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 2.31×10^{-4} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.021	27.6	22.0	3211.2	34.1
2	9.23×10^{-6}	3.077	22.0	20.8	3288.2	43.9
3	1.85×10^{-5}	3.033	24.6	20.8	3152.9	61.7
4	2.77×10^{-5}	3.066	29.2	28.0	3137.5	98.3
5	3.69×10^{-5}	3.075	25.2	22.8	3207.1	83.7
6	7.38×10^{-5}	3.103	25.4	26.6	3187.2	160.4
7	1.11×10^{-4}	3.127	21.6	22.0	2810.8	249.5
8	1.48×10^{-4}	3.161	26.4	25.6	2754.3	374.4
9	1.85×10^{-4}	3.186	24.4	22.4	2594.8	495.4

$\log \beta_{101} = 7.15\pm0.02$

Table U38. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.068	55.8	49.5	2115.8	1035.0
2	9.42×10^{-6}	3.058	53.8	52.9	1609.6	1486.1
3	1.88×10^{-5}	3.054	54.4	54.4	1094.5	2183.2
4	2.83×10^{-5}	3.063	55.5	57.7	1116.2	2041.6
5	3.77×10^{-5}	3.054	58.1	54.8	920.6	2343.4
6	7.54×10^{-5}	3.046	52.0	53.5	556.8	2645.6
7	1.13×10^{-4}	3.041	56.2	57.4	329.6	2992.7
8	1.51×10^{-4}	3.037	57.3	57.8	449.3	2783.3
9	1.88×10^{-4}	3.043	48.2	54.6	340.0	2968.7

$\log \beta_{101} = 7.15\pm0.02$

Table U39. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.100	57.6	62.5	2321.1	729.3
2	8.55×10^{-6}	3.085	66.4	78.4	1670.7	1361.3
3	1.71×10^{-5}	3.067	65.1	61.8	1433.5	1623.2
4	2.57×10^{-5}	3.053	60.9	71.0	1339.9	1708.2
5	3.42×10^{-5}	3.031	77.4	62.5	944.2	2295.0
6	6.84×10^{-5}	2.986	67.7	59.8	892.4	2321.3
7	1.03×10^{-4}	2.947	59.5	59.0	974.2	2009.2
8	1.39×10^{-4}	2.903	61.9	61.4	589.2	2476.2
9	1.71×10^{-4}	2.878	62.5	75.0	654.5	2424.8

$\log \beta_{101} = 7.39\pm0.04$

Table U40. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = $1.38\times10\times10^{-5}$ M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	5.501	62.1	60.5	2204.8	947.6
2	8.55×10^{-6}	3.284	59.3	61.8	1380.6	1731.6
3	1.71×10^{-5}	3.208	59.1	59.6	1150.1	1964.8
4	2.57×10^{-5}	3.192	54.4	57.6	1427.1	1653.4
5	3.42×10^{-5}	3.186	58.6	62.8	1205.1	1872.0
6	4.28×10^{-5}	3.174	63.1	57.4	609.1	2426.7
7	5.13×10^{-5}	3.195	68.1	63.4	720.0	2369.8
8	6.84×10^{-5}	3.164	72.6	62.3	542.8	2569.6
9	1.03×10^{-4}	3.149	64.4	62.3	380.9	2690.4

$\log \beta_{101} = 7.23\pm0.03$

Table U41. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.118	60.5	58.9	2041.3	693.4
2	8.69×10^{-6}	3.109	61.2	54.0	1716.8	1349.2
3	1.74×10^{-5}	3.106	56.6	59.3	1125.8	1961.1
4	2.61×10^{-5}	3.104	69.4	57.4	1133.7	1863.7
5	3.48×10^{-5}	3.086	59.8	63.9	882.3	2178.4
6	4.35×10^{-5}	3.076	71.1	66.5	766.9	2265.7
7	5.21×10^{-5}	3.085	61.2	66.1	522.2	2615.2
8	6.95×10^{-5}	3.077	58.0	69.3	508.4	2615.0
9	1.04×10^{-4}	3.075	60.2	61.7	323.9	2771.2

$\log \beta_{101} = 7.22\pm0.03$

Table U42. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.443	49.5	53.9	4742.4	535.6
2	9.42×10^{-6}	3.460	53.5	50.7	799.7	2435.3
3	1.88×10^{-5}	3.475	49.0	50.5	342.2	2921.9
4	2.83×10^{-5}	3.491	52.2	57.5	211.4	3090.3
5	3.77×10^{-5}	3.455	47.8	53.5	124.4	3036.3
6	4.71×10^{-5}	3.473	54.9	53.2	113.8	3062.2
7	5.65×10^{-5}	3.517	54.0	52.4	100.9	3165.6
8	7.54×10^{-5}	3.479	51.0	55.9	83.1	3151.1
9	9.42×10^{-5}	3.514	53.8	54.1	69.8	3181.8
10	1.13×10^{-4}	3.475	48.0	52.5	63.9	3193.9
11	1.32×10^{-4}	3.550	55.5	49.4	68.5	3127.4
12	1.51×10^{-4}	3.538	50.4	51.7	66.2	3185.6
13	1.88×10^{-4}	3.511	46.8	49.7	59.3	3195.6

$\log \beta_{101} = 7.10\pm0.20$

Table U43. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.5×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.536	48.7	55.8	3000.5	359.0
2	1.88×10^{-5}	3.536	54.4	51.1	582.7	2785.1
3	3.77×10^{-5}	3.536	52.8	51.1	385.9	3059.1
4	5.65×10^{-5}	3.514	63.9	56.9	289.5	3078.6
5	7.54×10^{-5}	3.530	50.2	52.5	157.9	2980.3
6	1.13×10^{-4}	3.495	53.3	51.7	153.9	3385.3
7	1.51×10^{-4}	3.473	54.4	86.6	99.3	3472.1
8	1.88×10^{-4}	3.497	54.1	53.6	72.0	1917.3

$\log \beta_{101} = 7.14\pm0.05$

Table U44. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.534	47.8	51.1	790.8	535.6
2	9.42×10^{-6}	2.530	54.7	53.7	763.7	2435.3
3	1.88×10^{-5}	2.560	52.0	49.1	771.4	2921.9
4	3.77×10^{-5}	2.505	47.6	52.9	677.1	3090.3
5	5.65×10^{-5}	2.497	47.0	50.4	712.9	3036.3
6	7.54×10^{-5}	2.535	54.6	56.3	620.7	3062.2
7	9.42×10^{-5}	2.485	51.9	52.1	635.6	3165.6
8	1.13×10^{-4}	2.527	53.1	50.5	553.7	3151.1
9	1.51×10^{-4}	2.505	58.1	54.6	593.2	3181.8
10	1.88×10^{-4}	2.518	49.2	69.5	437.4	3193.9

$\log \beta_{101} = 6.90\pm0.15$

Table U45. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.5×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.953	47.0	35.1	3106.2	52.3
2	9.42×10^{-6}	3.780	54.6	47.4	1891.9	1286.1
3	1.88×10^{-5}	3.788	47.3	34.7	1057.7	2105.5
4	5.65×10^{-5}	3.730	35.9	37.1	264.7	2794.1
5	7.54×10^{-5}	3.706	43.5	41.7	224.8	2830.6
6	9.42×10^{-5}	3.666	48.4	70.6	206.2	2820.9
7	1.51×10^{-4}	3.592	34.2	29.2	128.9	3088.4
8	1.48×10^{-4}	3.638	31.3	35.7	108.8	2789.1

$\log \beta_{101} = 6.83\pm0.02$

Table U46. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.401	37.9	32.3	3155.5	3220.6
2	9.42×10^{-6}	3.360	34.6	34.7	2819.5	3122.5
3	1.88×10^{-5}	3.383	39.6	36.2	2466.0	3131.5
4	3.77×10^{-5}	3.363	35.9	35.2	1658.4	3104.3
5	5.65×10^{-5}	3.344	38.5	37.2	967.9	3098.0
6	7.54×10^{-5}	3.360	35.1	31.9	638.9	2963.7
7	9.42×10^{-5}	3.330	35.9	36.8	482.2	2966.6
8	1.13×10^{-4}	3.329	33.7	39.9	351.4	3094.0
9	1.41×10^{-5}	3.379	33.7	33.8	206.1	3069.2
10	1.88×10^{-4}	3.370	50.9	34.3	122.7	2999.9

$\log \beta_{101} = 7.18\pm0.10$

Table U47. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.725	37.9	35.3	1379.3	1771.2
2	8.56×10^{-6}	2.752	36.3	31.5	1109.7	1978.7
3	1.71×10^{-5}	2.738	32.1	29.7	947.1	1563.4
4	3.43×10^{-5}	2.732	38.2	34.4	1103.3	2400.2
5	5.14×10^{-5}	2.731	34.5	37.6	880.6	2177.3
6	6.85×10^{-5}	2.749	36.4	28.4	715.2	2305.3
7	8.56×10^{-5}	2.747	36.3	30.7	536.9	2518.4
8	1.03×10^{-4}	2.750	33.0	33.7	497.2	2609.9
9	1.37×10^{-4}	2.762	38.8	31.5	447.1	2676.2
10	1.71×10^{-4}	2.752	31.1	36.4	365.2	2720.1

$\log \beta_{101} = 7.25\pm0.05$

Table U48. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1.0	0.0	3.787	33.4	37.0	3135.6	55.5
2.0	1.71×10^{-5}	3.742	34.6	31.5	1369.0	1814.4
3.0	3.43×10^{-5}	3.738	34.9	37.3	843.1	2312.4
4.0	5.14×10^{-5}	3.683	35.1	34.3	643.6	2460.1
5.0	6.85×10^{-5}	3.706	32.9	32.4	373.3	2800.5
6.0	8.56×10^{-5}	3.708	35.3	35.9	332.5	2746.4
7.0	1.03×10^{-4}	3.726	32.9	30.8	278.8	2809.9
8.0	1.37×10^{-4}	3.698	33.2	34.1	203.3	2876.2
9.0	1.71×10^{-4}	3.678	34.2	29.2	167.7	2544.1

$\log \beta_{101} = 7.09\pm0.15$

Table U49. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.114	45.7	41.4	2235.3	861.3
2	8.55×10^{-6}	3.04	46.5	41.9	1736	1335.8
3	1.71×10^{-5}	3.027	51.3	43.9	1028	2074.2
4	2.57×10^{-5}	3.043	41.7	42.2	843.8	2232.7
5	5.13×10^{-5}	3.038	50.6	49.4	533.7	2579.1
6	6.84×10^{-5}	3.024	41.2	43.5	454.4	2703.4
7	8.55×10^{-5}	3.033	37.9	40.7	353.6	2770.5
8	1.03×10^{-4}	3.027	41.2	33.4	316.2	2781
9	1.20×10^{-4}	3.024	36.5	34.6	231.6	2912.3
10	1.37×10^{-4}	3.028	43.1	43	249.2	2822.8
11	1.71×10^{-4}	3.042	41.5	40.9	171.7	2941.7

log β_{101} = 7.60±0.30

Table U50. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.183	46.0	41.5	2275.2	733.7
2	0.0	3.184	33.9	44.5	2372.2	693.7
3	1.71×10^{-5}	3.151	38.6	42.1	1095.6	1978.8
4	1.71×10^{-5}	3.172	41.1	48.5	1096.5	1979.2
5	3.42×10^{-5}	3.190	40.3	32.8	684.0	2401.1
6	5.13×10^{-5}	3.197	42.4	40.0	408.7	2671.5
7	6.84×10^{-5}	3.201	43.0	41.7	318.4	2795.7
8	8.55×10^{-5}	3.178	51.0	44.9	267.9	2855.2
9	1.03×10^{-4}	3.191	38.1	43.9	203.7	2976.2
10	1.37×10^{-4}	3.193	34.7	46.0	111.5	3052.3
11	1.71×10^{-4}	3.188	40.4	34.5	90.4	3051.3
12	1.71×10^{-4}	3.188	40.3	47.0	110.6	3002.1

log β_{101} = 7.40±0.15

Table U51. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.000	47.5	39.6	2178.2	733.7
2	8.55×10^{-6}	3.010	43.5	46.3	1564.6	693.7
3	1.71×10^{-5}	2.978	34.6	43.1	1445.3	1978.8
4	3.42×10^{-5}	2.998	36.0	41.1	744.3	1979.2
5	5.13×10^{-5}	2.992	41.4	48.2	735.9	2401.1
6	6.84×10^{-5}	3.016	42.0	47.2	432.8	2671.5
7	8.55×10^{-5}	3.015	49.8	46.7	404.9	2795.7
8	1.03×10^{-4}	3.015	39.1	32.4	310.9	2855.2
9	1.37×10^{-4}	2.975	46.7	36.4	222.8	2976.2
10	1.71×10^{-4}	2.989	40.6	38.2	139.7	3052.3

$\log \beta_{101} = 7.50\pm0.05$

Table U52. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.189	56.8	54.9	2030.4	262.1
2	9.12×10^{-6}	3.137	62.6	56.6	1596.5	680.4
3	1.82×10^{-5}	3.088	60.1	57.8	1255.2	1007.2
4	2.74×10^{-5}	3.078	64.0	59.5	1041.2	1232.1
5	3.65×10^{-5}	3.067	56.7	55.8	1013.6	1261.9
6	7.30×10^{-5}	3.078	53.4	54.0	657.6	1618.2
7	1.09×10^{-4}	3.065	55.1	49.2	431.1	1836.5
8	1.46×10^{-4}	3.057	58.4	55.9	522.9	1805.1
9	1.82×10^{-4}	3.094	51.6	50.1	447.1	1920.1

$\log \beta_{101} = 6.94\pm0.12$

Table U53. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 4 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.107	54.4	64.8	2772.2	370.3
2	8.46×10^{-6}	3.106	64.4	66.6	1749.1	1309.5
3	1.69×10^{-5}	3.078	63.5	56.1	1188.6	1947.9
4	2.54×10^{-5}	3.114	69.4	59.1	755.3	2324.9
5	3.38×10^{-5}	3.104	61.8	59.9	668.9	2411.0
6	4.23×10^{-5}	3.093	60.7	86.6	532.4	2549.9
7	5.07×10^{-5}	3.091	63.2	56.1	474.8	2700.1
8	6.76×10^{-5}	3.086	65.2	62.0	379.4	2762.4
9	1.02×10^{-4}	3.102	81.2	60.3	306.8	3026.4

log β_{101} = 7.31±0.01

Table U54. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 5 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.062	54.9	51.5	2053.2	312.1
2	3.58×10^{-6}	3.080	51.8	54.5	1422.0	939.3
3	8.95×10^{-6}	3.067	54.2	52.8	867.8	1520.5
4	1.25×10^{-5}	3.074	53.4	55.7	671.1	1729.0
5	1.79×10^{-5}	3.078	57.1	62.9	498.3	1869.2
6	2.69×10^{-5}	3.114	50.1	53.4	364.5	2028.9
7	3.58×10^{-5}	3.136	52.5	55.1	296.1	2080.2
8	7.16×10^{-5}	3.128	50.6	57.6	199.6	2209.9
9	1.07×10^{-4}	3.146	52.5	52.9	180.3	2207.1

log β_{101} = 6.98±0.02

Table U55. Solvent Extraction Data for Apparent Stability Constants of Uranium with Citrate in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.191	62.4	64.9	2602.2	489.6
2	8.33×10^{-6}	3.200	60.3	58.8	1102.1	1936.3
3	1.67×10^{-5}	3.133	60.8	63.1	547.9	2488.1
4	2.50×10^{-5}	3.138	56.5	56.8	494.0	2563.2
5	3.33×10^{-5}	3.147	54.2	55.1	381.6	2711.3
6	4.16×10^{-5}	3.200	60.1	67.2	315.4	2420.6
7	5.00×10^{-5}	3.189	56.8	58.9	237.9	2820.2
8	6.66×10^{-5}	3.156	56.4	64.2	188.1	2852.6
9	9.99×10^{-5}	3.191	61.1	54.2	109.9	2977.2

log β_{101} = 7.12±0.01

Table U56. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.193	96.2	101.4	1805.1	1410.1
2	2.98×10^{-5}	3.175	103.1	100.3	1959.0	1340.3
3	7.45×10^{-5}	3.157	102.5	102.8	1884.5	1378.5
4	1.49×10^{-4}	3.152	93.4	102.4	1672.6	1567.8
5	2.98×10^{-4}	3.151	99.0	101.2	1582.8	1741.0
6	5.96×10^{-4}	3.142	95.2	93.9	1058.5	2225.6
7	8.94×10^{-4}	3.136	101.4	95.5	909.8	2351.6
8	1.19×10^{-4}	3.125	202.6	101.7	784.2	2613.0
9	1.49×10^{-3}	3.102	109.3	102.5	643.9	2702.5

log β_{101} = 12.08±0.02

Table U57. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.013	135.8	96.8	2056.0	1230.4
2	1.49×10^{-5}	2.980	134.0	92.6	2076.1	1095.0
3	2.98×10^{-5}	2.976	91.8	122.6	1911.9	1272.9
4	7.45×10^{-5}	2.975	120.6	130.0	1840.6	1356.3
5	1.49×10^{-4}	2.970	90.4	84.4	2022.0	1286.4
6	2.98×10^{-4}	2.971	95.8	95.4	1496.1	1408.5
7	5.96×10^{-4}	2.965	87.4	109.0	1330.2	1803.6
8	8.94×10^{-4}	2.958	91.6	92.0	1217.4	1984.1
9	1.19×10^{-3}	2.951	98.8	97.4	958.6	2250.4
10	1.49×10^{-3}	2.949	114.8	86.8	872.0	2158.8

$\log \beta_{101} = 12.16\pm0.02$

Table U58. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	4.021	33.4	39.7	877.6	120.2
2	0.0001	3.981	37.4	35.5	820.3	195.2
3	0.0002	3.997	37.0	36.4	795.3	232.9
4	0.0003	4.008	36.9	39.6	696.0	301.9
5	0.0004	4.010	35.8	36.1	652.2	337.2
6	0.0006	4.011	44.3	39.2	623.6	382.7
7	0.0008	4.011	37.6	36.3	502.1	483.8
8	0.001	4.018	36.2	39.6	491.9	505.2

$\log \beta_{101} = 10.65\pm0.02$

Table U59. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.139	37.8	42.2	512.5	487.3
2	0.0001	3.134	37.8	39.2	424.1	586.2
3	0.0002	3.131	39.5	37.3	395.1	621.1
4	0.0003	3.137	39.6	37.4	335.4	685.5
5	0.0004	3.144	37.9	34.6	287.3	704.3
6	0.0006	3.151	35.8	38.0	259.7	723.5
7	0.0008	3.155	40.8	52.1	271.9	1005.7
8	0.001	3.159	37.7	38.9	206.3	791.9

$\log \beta_{101} = 11.96\pm0.01$

Table U60. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.356	37.3	38.1	2259.3	234.7
2	0.0001	3.315	38.8	39.0	2138.7	369.0
3	0.0002	3.353	37.8	37.8	2074.0	421.6
4	0.0003	3.339	40.2	41.2	1771.1	668.2
5	0.0004	3.338	39.6	32.3	2162.4	337.9
6	0.0005	3.334	37.3	40.4	1528.4	882.6
7	0.0006	3.333	131.4	38.5	1963.5	567.5
8	0.0007	3.330	35.5	40.1	1702.7	737.8
9	0.0008	3.320	40.6	37.7	2218.2	301.1
10	0.001	3.316	47.7	43.0	2056.1	447.2

$\log \beta_{101} = 11.71\pm0.08$

Table U61. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.807	36.1	36.0	740.1	84.2
2	0.0001	3.870	35.7	34.6	754.3	96.3
3	0.0002	3.870	35.3	41.1	766.3	100.6
4	0.0003	3.880	37.0	35.6	704.2	102.0
5	0.0004	3.858	41.1	42.9	654.4	159.7
6	0.0005	3.845	40.4	39.6	650.6	148.4
7	0.0006	3.849	34.6	34.4	605.7	205.9
8	0.0007	3.874	38.2	36.9	617.0	186.1
9	0.001	3.833	35.5	35.5	581.0	248.9

$\log \beta_{101} = 10.93\pm0.03$

Table U62. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.420	36.9	39.0	1983.0	242.6
2	0.0001	2.446	38.3	41.9	1911.8	234.5
3	0.0002	2.452	35.4	35.5	1898.3	245.4
4	0.0003	2.447	36.7	36.7	1563.2	213.8
5	0.0004	2.443	39.3	37.8	1662.3	242.3
6	0.0005	2.446	38.1	38.3	1470.4	228.3
7	0.0006	2.430	37.5	39.0	1866.1	311.7
8	0.0008	2.445	39.0	34.0	1808.9	326.8
9	0.001	2.447	34.0	36.3	1901.3	366.5

log β_{101} = 12.995±0.01

Table U63. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.092	34.7	34.0	1526.2	796.4
2	0.0001	2.094	37.8	41.0	1545.1	828.0
3	0.0002	2.090	38.2	40.4	1503.7	860.7
4	0.0003	2.098	36.9	34.4	1495.8	844.7
5	0.0004	2.082	40.7	40.1	1460.8	912.4
6	0.0005	2.097	36.0	38.3	1495.9	892.4
7	0.0006	2.095	34.7	37.4	1474.8	912.1
8	0.0008	2.105	40.2	33.9	1468.4	903.7
9	0.001	2.109	37.4	31.7	1454.1	944.2

log β_{101} = 13.49±0.01

Table U64. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.256	39.7	37.1	5075.8	1471.4
2	0.0001	2.241	38.5	39.6	4905.9	1551.5
3	0.0002	2.248	39.4	39.8	4896.8	1548.8
4	0.0003	2.254	69.0	53.2	4864.6	1537.7
5	0.0004	2.253	41.5	36.9	4956.6	1590.7
6	0.0006	2.246	35.6	38.0	4782.5	1637.9
7	0.0008	2.249	38.1	38.2	4683.8	1660.9
8	0.001	2.241	37.7	40.1	4666.1	1753.1

$\log \beta_{101} = 12.97\pm0.01$

Table U65. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.452	34.5	37.9	5227.5	826.9
2	0.0001	2.441	38.5	35.8	5487.8	972.9
3	0.0002	2.444	40.0	33.1	5425.5	996.2
4	0.0003	2.431	33.3	33.7	5301.0	1049.9
5	0.0004	2.441	39.0	39.3	5256.0	1061.7
6	0.0006	2.448	40.9	43.7	5215.0	1081.7
7	0.0008	2.447	38.5	37.4	5226.2	1130.9
8	0.001	2.441	36.9	36.1	5178.6	1223.2

$\log \beta_{101} = 12.71\pm0.02$

Table U66. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	4.112	35.6	36.9	2608.8	214.7
2	2.50×10^{-5}	4.133	36.9	37.8	2272.5	208.2
3	5.00×10^{-5}	4.156	37.4	37.1	2565.6	222.0
4	7.50×10^{-5}	4.231	47.2	33.4	2624.8	210.6
5	1.00×10^{-4}	4.243	36.6	38.5	2591.5	225.4
6	1.25×10^{-4}	4.265	40.1	41.3	2565.7	229.9
7	1.50×10^{-4}	4.276	38.1	33.8	2628.6	240.2
8	2.00×10^{-4}	4.297	41.1	35.2	2579.2	305.5
9	2.50×10^{-4}	4.270	37.2	35.5	2587.6	230.0

$\log \beta_{101} = 9.99\pm0.02$

Table U67. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.829	38.6	38.3	2547.6	237.3
2	0.0001	2.798	33.5	38.4	2554.0	275.8
3	0.0002	2.789	37.4	34.7	2540.6	298.2
4	0.0003	2.801	37.5	38.0	2442.0	281.5
5	0.0004	2.808	37.2	36.5	2585.9	305.1
6	0.0006	2.817	34.0	36.6	2631.0	320.9
7	0.0008	2.825	39.5	40.0	2475.9	323.1
8	0.001	2.815	40.2	37.1	2468.7	350.7

$\log \beta_{101} = 11.91\pm0.02$

Table U68. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 0.3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.691	34.2	35.4	2513.2	315.2
2	0.0001	3.685	37.7	35.6	2353.8	456.8
3	0.0002	3.679	43.3	38.2	2232.8	540.0
4	0.0003	3.675	36.7	41.5	2149.2	623.0
5	0.0004	3.674	35.4	38.7	2050.8	716.4
6	0.0006	3.678	39.8	34.8	1875.1	862.5
7	0.0008	3.679	71.5	32.7	1814.2	958.6
8	0.001	3.681	38.0	39.5	1724.5	1051.8

log β_{101} = 10.88±0.01

Table U69. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	1.960	32.5	32.5	415.6	2680.0
2	0.0004	1.989	32.5	32.5	362.2	2712.2
3	0.0008	1.986	32.5	32.5	334.3	2780.4
4	0.0012	1.964	32.5	32.5	292.0	2839.9
5	0.0016	1.984	32.5	32.5	328.0	2795.0
6	0.0024	2.008	32.5	32.5	265.9	2804.7
7	0.0032	1.969	32.5	32.5	621.9	2495.3
8	0.004	2.012	32.5	32.5	315.2	2768.2

log β_{101} = 13.06±0.04

Table U70. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.113	104.8	93.8	1727.6	1459.5
2	2.94×10^{-5}	3.089	125.0	149.8	1797.6	1544.8
3	7.35×10^{-5}	3.081	99.0	93.4	1811.4	1493.0
4	1.47×10^{-5}	3.069	156.8	116.6	1668.3	1637.9
5	2.94×10^{-4}	3.098	96.6	119.4	1612.5	1856.1
6	5.88×10^{-4}	3.052	157.0	99.8	1244.9	2019.5
7	8.82×10^{-4}	3.040	100.6	103.6	952.9	2309.7
8	1.18×10^{-3}	3.025	95.4	106.0	911.2	2310.2
9	1.47×10^{-3}	3.012	99.4	96.2	783.9	2544.5

$\log \beta_{101} = 11.40\pm0.02$

Table U71. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.165	29.9	30.4	740.1	2393.2
2	0.0001	2.167	30.7	31.0	692.0	2453.8
3	0.0002	2.168	28.2	32.1	719.0	2419.2
4	0.0003	2.172	26.6	32.8	699.6	2466.4
5	0.0004	2.173	31.0	34.0	677.8	2194.3
6	0.0006	2.183	34.5	31.8	764.1	2572.1
7	0.0008	2.190	31.2	31.1	691.8	2415.5
8	0.001	2.208	32.5	32.5	664.4	2495.5

$\log \beta_{101} = 12.449\pm0.05$

Table U72. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.523	27.2	30.3	1859.9	1424.2
2	0.0001	2.556	33.2	34.8	1890.9	1350.3
3	0.0002	2.521	34.0	29.1	1736.4	1475.0
4	0.0003	2.517	32.7	29.8	1673.0	1540.9
5	0.0004	2.502	31.2	31.0	1634.1	1593.7
6	0.0006	2.500	28.7	33.1	1515.0	1706.6
7	0.0008	2.506	30.7	29.8	1410.3	1780.0
8	0.001	2.481	30.5	31.4	1293.9	1903.3

$\log \beta_{101} = 12.135\pm0.01$

Table U73. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.791	32.2	31.2	3039.1	712.5
2	0.0001	2.783	27.6	31.5	2921.4	781.4
3	0.0002	2.779	35.7	34.9	2878.2	850.4
4	0.0003	2.782	26.6	29.1	2742.6	899.0
5	0.0004	2.780	34.0	34.9	2737.4	1008.5
6	0.0006	2.785	30.2	32.7	2304.3	965.8
7	0.0008	2.786	30.6	31.8	1267.6	620.6
8	0.001	2.791	30.1	30.5	1238.9	637.0

$\log \beta_{101} = 11.757\pm0.01$

Table U74. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.887	32.5	32.5	2466.7	657.4
2	0.0001	2.874	32.5	32.5	2154.6	674.4
3	0.0002	2.873	32.5	32.5	2019.8	707.7
4	0.0003	2.821	32.5	32.5	1977.1	2867.5
5	0.0004	2.863	32.5	32.5	1874.3	820.9
6	0.0005	2.885	32.5	32.5	2361.4	1070.9
7	0.0006	2.873	32.5	32.5	1805.0	834.3
8	0.0008	2.851	32.5	32.5	1718.1	978.0
9	0.001	2.897	32.5	32.5	1852.0	954.5

log β_{101} = 11.46±0.02

Table U75. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

**			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.174	30.9	33.8	3072.9	224.9
2	0.0001	3.160	31.4	38.4	2976.6	270.1
3	0.0002	3.176	32.8	32.2	2377.3	220.6
4	0.0003	3.171	31.2	28.0	2938.0	285.8
5	0.0004	3.169	31.7	34.9	2931.8	275.6
6	0.0005	3.172	43.3	30.8	2991.9	280.4
7	0.0006	3.176	35.0	35.9	2911.7	290.6
8	0.0007	3.173	27.7	32.8	2942.1	291.7
9	0.0008	3.175	32.9	35.1	2963.2	293.4
10	0.001	3.174	53.8	32.6	2928.3	302.7

log β_{101} = 11.029±0.04

Table U76. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.502	34.1	31.7	3509.3	253.6
2	0.0001	3.505	31.7	32.0	3648.0	276.8
3	0.0002	3.501	35.1	33.8	3509.0	289.1
4	0.0003	3.506	34.8	34.2	3531.0	302.1
5	0.0004	3.529	30.0	32.3	3543.2	288.1
6	0.0006	3.518	32.5	33.7	3500.9	295.7
7	0.0008	3.537	32.4	31.6	3507.8	290.0
8	0.001	3.553	36.3	31.3	3493.9	307.0

log β_{101} = 9.726±0.03

Table U77. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.982	34.1	34.9	571.0	2490.1
2	0.0001	2.909	29.8	37.4	393.4	2725.8
3	0.0002	2.926	29.5	35.8	413.7	2780.0
4	0.0003	2.929	39.1	47.2	366.1	2673.6
5	0.0004	2.940	34.8	31.7	364.7	2689.9
6	0.0005	2.934	31.7	29.9	352.0	2770.7
7	0.0006	2.931	34.1	37.4	297.2	2723.2
8	0.0008	2.922	33.2	35.3	257.9	2726.8
9	0.001	2.950	32.6	30.5	236.3	2919.5

log β_{101} = 11.488±0.014

Table U78. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.334	33.1	27.4	2775.0	207.9
2	0.0001	3.286	36.5	30.8	2982.9	263.6
3	0.0002	3.292	27.6	39.1	2915.1	275.2
4	0.0003	3.291	37.6	30.0	2952.4	279.2
5	0.0004	3.299	31.1	28.5	2948.1	279.7
6	0.0005	3.290	31.2	32.3	2986.1	299.3
7	0.0006	3.299	34.5	35.8	2939.4	294.8
8	0.0008	3.292	34.6	32.8	2871.1	303.9
9	0.001	3.325	32.5	34.5	2894.9	300.8

log β_{101} = 10.11±0.01

Table U79. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.765	33.7	36.1	2730.1	192.2
2	0.0001	3.719	33.8	31.6	2932.1	252.1
3	0.0002	3.747	35.8	32.7	2631.6	239.3
4	0.0003	3.768	29.3	34.0	2880.2	256.3
5	0.0004	3.804	30.3	32.0	2699.0	243.5
6	0.0005	3.826	33.9	35.6	2925.1	262.0
7	0.0006	3.829	31.2	30.9	2994.0	262.6
8	0.0008	3.818	32.3	32.3	2864.7	282.2
9	0.001	3.837	35.0	30.6	2934.2	268.6

log β_{101} = 9.689 ±0.03

Table U80. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.059	31.6	41.3	2992.7	728.3
2	0.0001	4.059	32.1	33.6	2622.4	1165.5
3	0.0002	4.062	31.9	32.8	2461.1	1277.8
4	0.0003	4.063	30.5	34.5	2219.4	1552.6
5	0.0004	4.064	35.1	34.9	2201.0	1605.9
6	0.0005	4.078	61.6	35.3	2085.9	1694.0
7	0.0006	4.082	31.3	35.2	1821.9	1905.9
8	0.0007	4.080	34.3	35.7	1780.5	1945.2
9	0.0008	4.091	36.5	32.0	1683.4	2104.0
10	0.001	4.083	33.0	31.4	1544.0	2185.6

log β_{101} = 9.66 ±0.01

Table U81. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.446	52.7	35.1	3334.4	432.3
2	0.0001	2.421	41.5	40.2	3260.9	498.0
3	0.0002	2.430	48.1	37.4	3206.5	484.8
4	0.0003	2.412	37.3	40.8	3196.7	546.9
5	0.0004	2.455	36.3	36.2	3165.8	482.5
6	0.0005	2.452	39.3	33.0	3198.7	506.7
7	0.0006	2.429	40.4	37.0	3148.8	576.3
8	0.0008	2.452	36.9	32.7	3147.9	609.9
9	0.001	2.462	42.8	34.9	3156.5	631.7

log β_{101} = 12.2±0.02

Table U82. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 1 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.289	52.7	35.1	2695.9	512.0
2	0.0001	2.278	41.5	40.2	3524.7	720.8
3	0.0002	2.320	48.1	37.4	3131.6	602.6
4	0.0003	2.318	37.3	40.8	3027.0	592.0
5	0.0004	2.269	36.3	36.2	3004.4	703.0
6	0.0005	2.322	39.3	33.0	3039.9	597.3
7	0.0006	2.297	40.4	37.0	3078.1	683.4
8	0.0008	2.308	36.9	32.7	3047.7	717.9
9	0.001	2.323	42.8	34.9	2895.6	665.1

$\log \beta_{101} = 12.29\pm0.02$

Table U83. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.111	97.0	98.0	3583.0	928.7
2	2.88×10^{-5}	3.086	96.8	100.4	3342.4	1042.2
3	7.20×10^{-5}	3.054	97.2	102.6	3405.3	1047.3
4	1.44×10^{-4}	3.028	110.4	112.4	5575.4	2293.0
5	2.88×10^{-4}	3.036	126.8	121.2	3079.8	1371.8
6	5.76×10^{-4}	3.045	161.6	10.6	2696.7	1829.4
7	8.64×10^{-4}	3.028	104.0	105.8	2264.5	2262.6
8	1.15×10^{-3}	3.003	112.8	115.8	2139.6	2253.2
9	1.44×10^{-3}	3.004	128.2	118.4	2085.5	2376.6

$\log \beta_{101} = 11.12\pm0.02$

Table U84. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.005	37.9	52.5	295.8	2019.2
2	0.0001	2.002	40.7	33.8	446.2	2243.2
3	0.0003	2.000	37.3	34.5	327.3	2391.3
4	0.0006	2.012	36.1	40.9	293.4	2308.6
5	0.0008	2.009	29.9	38.1	291.6	2472.8
6	0.001	2.010	30.9	40.2	225.8	2103.8

log β_{101} = 12.77±0.05

Table U85. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.001	3.026	39.5	35.7	1604.8	1007.9
2	0.0008	3.029	35.7	34.8	1536.0	709.1
3	0.0006	3.027	35.5	32.9	1778.8	789.0
4	0.0004	3.025	39.0	37.3	1827.3	867.5
5	0.0003	3.015	35.9	36.7	2180.1	530.1
6	0.0002	3.010	38.7	35.8	2125.2	506.3
7	0.0001	3.015	34.9	38.8	2042.3	614.1
8	0.0	3.000	38.2	35.1	2212.7	496.9

log β_{101} = 11.08±0.06

Table U86. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.463	35.4	34.1	2437.6	258.1
2	0.0001	3.488	34.8	37.3	2406.5	265.1
3	0.0002	3.468	36.2	40.4	2327.4	388.0
4	0.0003	3.482	35.9	36.7	2265.8	377.3
5	0.0004	3.504	34.7	34.5	2243.4	385.1
6	0.0006	3.501	38.1	37.4	2216.8	403.1
7	0.0008	3.510	40.3	36.8	2133.7	467.0
8	0.001	3.516	33.5	38.5	2125.9	509.1

log β_{101} = 9.96±0.02

Table U87. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	1.912	37.7	32.8	1521.3	783.3
2	0.0001	1.923	40.0	35.5	1551.4	795.8
3	0.0002	1.901	35.5	34.8	1475.3	837.8
4	0.0003	1.912	30.8	37.6	1515.0	850.8
5	0.0004	1.896	33.5	35.6	1460.6	884.6
6	0.0006	1.915	35.3	35.7	1491.1	853.2
7	0.0008	1.905	34.0	34.2	1433.7	897.0
8	0.001	1.923	36.3	35.0	1476.6	860.8

log β_{101} = 12.52±0.04

Table U88. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.652	37.7	38.7	2839.1	964.8
2	0.0001	3.653	43.3	43.2	2462.2	1269.1
3	0.0002	3.654	43.3	50.6	2171.7	1552.1
4	0.0003	3.652	43.1	44.4	1971.7	1823.2
5	0.0004	3.650	38.7	37.4	1979.8	1820.8
6	0.0005	3.656	39.1	34.5	1816.1	1947.5
7	0.0006	3.659	39.7	41.3	1765.8	2036.9
8	0.0008	3.660	35.7	40.3	1328.7	2047.1
9	0.001	3.658	35.5	35.5	1382.9	2437.9

log β_{101} = 10.06±0.01

Table U89. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.625	35.2	36.6	2490.5	230.0
2	0.0001	2.612	40.7	36.7	2354.1	316.2
3	0.0002	2.608	34.4	37.5	2422.8	351.3
4	0.0003	2.606	40.1	39.1	2296.5	393.3
5	0.0004	2.605	38.6	38.8	2307.5	468.4
6	0.0005	2.598	38.5	37.5	2295.3	469.9
7	0.0006	2.610	30.2	38.4	2243.7	486.7
8	0.0008	2.618	38.7	36.2	2193.2	524.8
9	0.001	2.621	39.5	35.1	2094.3	610.8

log β_{101} = 11.905±0.02

Table U90. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.754	35.2	35.3	1631.6	72.1
2	0.0001	3.806	35.1	36.1	1576.5	65.3
3	0.0002	3.799	34.1	33.9	1657.3	87.6
4	0.0003	3.818	33.3	34.8	2053.4	102.0
5	0.0004	3.808	36.9	34.2	1543.8	109.5
6	0.0006	3.812	36.7	35.2	1539.1	152.7
7	0.0008	3.812	32.2	36.3	1525.6	120.9
8	0.001	3.827	37.2	34.0	1905.9	206.2

$\log \beta_{101} = 9.789 \pm 0.04$

Table U91. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 2 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.601	37.0	37.2	2611.3	323.9
2	0.0001	3.599	32.5	35.6	1978.4	283.4
3	0.0002	3.625	38.7	40.9	2342.8	372.9
4	0.0003	3.585	35.9	37.3	2357.3	422.0
5	0.0004	3.573	37.5	38.7	2237.1	478.6
6	0.0006	3.605	35.8	31.6	1962.4	389.7
7	0.0008	3.609	37.0	36.4	2131.0	550.7
8	0.001	3.614	29.1	33.8	1817.8	527.6

$\log \beta_{101} = 9.86 \pm 0.02$

Table U92. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.28x10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.233	99.6	87.8	2659.5	622.2
2	2.82×10^{-5}	3.155	354.4	114.4	2814.3	562.1
3	7.05×10^{-5}	3.111	100.0	108.6	2642.3	633.4
4	1.41×10^{-4}	3.102	129.2	99.8	2612.5	722.1
5	2.82×10^{-4}	3.099	98.8	203.4	2437.5	836.2
6	5.64×10^{-4}	3.109	127.6	108.4	2178.2	1156.2
7	7.05×10^{-4}	3.107	194.0	184.6	1993.3	1170.5
8	8.46×10^{-4}	3.095	91.6	93.0	1853.5	1386.3
9	1.13×10^{-3}	3.096	92.2	136.8	1673.8	1649.2
10	1.41×10^{-3}	3.081	93.0	96.8	1616.0	1647.8

log β_{101} = 10.83±0.02

Table U93. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.38x10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.408	60.2	56.0	2160.5	997.5
2	1.46×10^{-4}	3.061	56.6	57.6	1938.6	1342.9
3	2.93×10^{-4}	3.063	58.8	59.9	1671.9	1484.0
4	4.39×10^{-4}	3.151	64.2	60.9	1552.7	1568.7
5	5.86×10^{-4}	3.072	52.5	55.3	1413.5	1806.8
6	7.32×10^{-4}	3.093	50.6	51.7	1269.6	1909.6
7	8.78×10^{-4}	3.095	47.5	50.8	1299.1	1979.8
8	1.17×10^{-3}	3.089	52.7	56.7	1345.3	2011.2
9	1.46×10^{-3}	3.099	64.7	60.7	2078.4	1687.2

log β_{101} = 10.78±0.01

Table U94. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.551	34.9	29.0	3238.0	213.3
2	7.00×10^{-5}	2.521	29.9	30.8	3247.1	101.1
3	1.40×10^{-4}	2.508	31.2	29.1	3303.2	102.6
4	2.80×10^{-4}	2.515	29.8	30.3	3248.4	104.3
5	5.60×10^{-4}	2.539	28.2	33.4	3150.6	111.1
6	8.40×10^{-4}	2.543	29.4	32.1	3148.7	124.9
7	1.12×10^{-3}	2.558	33.2	33.0	3160.8	127.3
8	1.40×10^{-3}	2.571	34.2	29.5	3172.7	138.9

$\log \beta_{101} = 11.26\pm0.01$

Table U95. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.770	3231.3	30.5	74.5	31.5
2	7.00×10^{-5}	3.624	3249.9	35.3	98.5	33.4
3	1.40×10^{-4}	3.535	3242.2	33.4	99.2	36.6
4	2.10×10^{-4}	3.580	3227.7	31.1	100.4	30.4
5	2.80×10^{-4}	3.546	3241.2	31.2	113.0	35.5
6	4.20×10^{-4}	3.566	3199.9	31.0	110.7	27.6
7	5.60×10^{-4}	3.537	3163.9	31.5	145.9	30.2
8	8.40×10^{-4}	3.532	3096.4	32.1	174.5	34.3
9	1.12×10^{-3}	3.555	3108.4	27.5	201.5	34.9
10	1.40×10^{-3}	3.514	2994.6	31.4	238.9	31.7

$\log \beta_{101} = 9.88\pm0.01$

Table U96. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.702	37.2	31.8	2945.5	306.4
2	1.40×10^{-4}	3.572	35.3	32.0	2387.7	701.2
3	2.80×10^{-4}	3.586	33.5	24.8	2350.1	758.4
4	4.20×10^{-4}	3.570	30.6	34.2	2340.7	940.8
5	5.60×10^{-4}	3.586	32.8	33.0	2069.1	1060.5
6	7.00×10^{-4}	3.577	33.7	34.4	1977.2	1257.4
7	8.40×10^{-4}	3.568	35.0	33.2	2046.8	1330.2
8	1.12×10^{-3}	3.568	30.6	30.5	1712.1	1490.3
9	1.40×10^{-3}	3.569	33.0	30.8	1507.9	1630.8

$\log \beta_{101} = 10.03 \pm 0.01$

Table U97. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.530	32.5	36.0	853.6	2355.7
2	7.00×10^{-5}	2.502	31.3	31.0	582.2	2426.2
3	1.40×10^{-4}	2.505	33.6	27.5	608.6	2557.9
4	2.80×10^{-4}	2.504	30.1	31.6	536.9	2650.7
5	4.20×10^{-4}	2.494	33.7	32.8	508.7	2702.8
6	5.60×10^{-4}	2.529	32.9	31.3	564.1	2763.6
7	8.40×10^{-4}	2.537	32.5	31.1	374.1	2815.9
8	1.12×10^{-3}	2.493	33.4	31.3	316.4	2871.6
9	1.40×10^{-3}	2.551	32.2	34.5	298.8	2791.7

$\log \beta_{101} = 11.70 \pm 0.02$

Table U98. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.001	56.8	56.1	1429.7	1940.6
2	1.40×10^{-4}	1.998	57.6	52.2	1246.3	2067.6
3	2.80×10^{-4}	1.994	60.0	61.0	1192.4	2047.9
4	4.20×10^{-4}	1.997	51.9	60.3	1197.6	2104.7
5	5.60×10^{-4}	2.043	59.6	58.1	1200.5	2184.2
6	8.40×10^{-4}	2.001	54.8	52.7	1120.6	2148.5
7	1.12×10^{-3}	2.006	56.5	57.0	1003.1	2286.8
8	1.40×10^{-3}	2.011	58.5	57.4	1015.9	2271.8

log β_{101} = 12.25±0.02

Table U99. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 2.31×10^{-4} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.544	77.1	58.7	2772.1	627.5
2	1.40×10^{-4}	2.544	60.1	57.5	2626.7	736.6
3	2.80×10^{-4}	2.544	56.6	54.9	2736.7	725.3
4	4.20×10^{-4}	2.537	55.8	54.3	2449.9	915.9
5	5.60×10^{-4}	2.534	55.9	50.4	2439.4	936.8
6	8.40×10^{-4}	2.534	76.4	91.4	2186.7	1158.9
7	1.40×10^{-3}	2.534	81.5	55.0	2005.0	1365.4

log β_{101} = 11.71±0.02

Table U100. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	3.733	59.8	58.5	3064.6	205.3
2	1.40×10^{-4}	3.696	63.1	60.9	2629.6	603.4
3	2.80×10^{-4}	3.738	56.4	63.7	2475.7	780.2
4	4.20×10^{-4}	3.701	56.7	58.9	2081.8	1158.0
5	5.60×10^{-4}	3.716	63.5	59.8	2097.3	1198.3
6	7.00×10^{-4}	3.692	57.8	57.4	1869.1	1364.0
7	8.40×10^{-4}	3.707	10.0	57.1	1891.9	1325.4
8	1.12×10^{-3}	3.658	75.8	59.6	1667.1	1580.7
9	1.40×10^{-3}	3.685	56.6	68.7	2034.8	1293.6

$\log \beta_{101} = 10.02\pm0.02$

Table U101. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.291	53.6	52.5	1953.3	1263.0
2	1.18×10^{-4}	2.288	50.9	54.5	1957.0	1387.2
3	2.35×10^{-4}	2.290	56.8	54.7	1834.9	1490.7
4	3.53×10^{-4}	2.294	58.2	56.2	1627.9	1698.5
5	4.70×10^{-4}	2.291	54.0	57.0	1601.9	1737.7
6	7.06×10^{-4}	2.298	51.6	55.4	1515.0	1815.3
7	9.41×10^{-4}	2.305	57.1	50.8	1383.2	1932.2
8	1.18×10^{-3}	2.313	49.4	51.1	1321.5	2065.3

$\log \beta_{101} = 12.10\pm0.02$

Table U102. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane. **

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.770	30.5	31.5	3231.3	74.5
2	7.00×10^{-5}	3.624	35.3	33.4	3249.9	98.5
3	1.40×10^{-4}	3.535	33.4	36.6	3242.2	99.2
4	2.10×10^{-4}	3.580	31.1	30.4	3227.7	100.4
5	2.80×10^{-4}	3.546	31.2	35.5	3241.2	113.0
6	4.20×10^{-4}	3.566	31.0	27.6	3199.9	110.7
7	5.60×10^{-4}	3.537	31.5	30.2	3163.9	145.9
8	8.40×10^{-4}	3.532	32.1	34.3	3096.4	174.5
9	1.12×10^{-3}	3.555	27.5	34.9	3108.4	201.5
10	1.40×10^{-3}	3.514	31.4	31.7	2994.6	238.9

$\log \beta_{101} = 9.884 \pm 0.01$

Table U103. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane. **

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.327	38.2	36.2	2131.4	223.9
2	0.0001	3.399	37.8	34.7	2419.1	280.9
3	0.0002	3.397	48.0	34.6	2402.0	294.4
4	0.0003	3.491	33.1	40.1	2500.1	257.0
5	0.0004	3.491	35.7	33.5	2392.6	307.0
6	0.0005	3.505	30.2	35.9	2332.8	371.3
7	0.0006	3.492	38.4	39.7	2286.3	412.2
8	0.001	3.502	35.2	38.1	2145.1	498.9

$\log \beta_{101} = 9.91 \pm 0.02$

Table U104. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. $[^{233}UO_2{}^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.439	153.5	111.6	3014.1	366.6
2	1.38×10^{-5}	3.319	116.9	97.4	2944.8	388.3
3	2.76×10^{-5}	3.335	100.5	97.7	2897.5	428.0
4	6.90×10^{-5}	3.254	109.2	218.5	2929.4	569.4
5	1.38×10^{-4}	3.185	94.1	151.2	2706.3	597.6
6	2.76×10^{-4}	3.306	101.4	95.8	2617.4	736.7
7	5.52×10^{-4}	3.113	92.2	115.3	2349.5	999.8
8	8.28×10^{-4}	3.090	412.8	213.6	2458.3	1296.9
9	1.10×10^{-4}	3.104	112.8	99.1	1768.5	1313.2
10	1.38×10^{-4}	3.084	172.4	153.3	1687.4	1503.7

log β_{101} = 11.04±0.01

Table U105. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. $[^{233}UO_2{}^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	4.066	86.0	114.4	3104.5	362.0
2	2.75×10^{-5}	3.361	112.0	94.0	2845.3	401.9
3	6.90×10^{-5}	3.209	84.8	111.8	2825.1	493.5
4	9.66×10^{-5}	3.235	90.0	90.2	2376.2	485.9
5	1.38×10^{-4}	3.251	83.0	93.8	2724.0	590.6
6	2.76×10^{-4}	3.184	91.4	86.2	2427.7	688.9
7	5.52×10^{-4}	3.131	92.8	117.2	2316.3	1066.0
8	8.28×10^{-4}	3.116	94.6	114.2	1965.5	1169.8
9	1.10×10^{-3}	3.079	138.0	92.6	1741.7	1284.0
10	1.38×10^{-3}	3.072	91.6	116.4	1713.0	1690.5

log β_{101} = 10.86±0.02

Table U106. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	1.936	41.0	29.5	2339.4	336.4
2	0.0001	1.946	38.0	37.8	2384.6	374.1
3	0.0002	1.943	37.8	34.9	2389.6	401.3
4	0.0003	1.990	38.7	38.2	2361.9	403.9
5	0.0004	1.936	40.5	33.9	2339.7	448.1
6	0.0005	1.931	41.2	34.6	2315.9	420.9
7	0.0006	1.927	37.5	31.3	2342.9	448.3
8	0.0008	1.936	37.7	35.1	2297.9	535.3
9	0.001	1.959	34.6	34.0	2290.3	508.8

$\log \beta_{101} = 12.4\pm0.02$

Table U107. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.54×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	2.295	30.5	37.2	2612.0	247.6
2	0.0001	2.263	40.9	39.5	2417.0	268.4
3	0.0002	2.264	37.6	36.0	2499.9	277.4
4	0.0003	2.265	34.8	37.9	2559.8	293.3
5	0.0004	2.257	37.4	33.0	2545.0	290.3
6	0.0005	2.258	38.4	33.0	2492.9	289.3
7	0.0006	2.253	33.9	33.3	2526.1	307.9
8	0.0008	2.265	32.4	33.6	2452.4	312.2
9	0.001	2.258	28.2	37.4	2465.4	335.3

$\log \beta_{101} = 11.4\pm0.02$

Table U108. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 5.50×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.405	42.0	36.0	2437.6	247.5
2	0.0001	3.373	39.8	38.8	2363.5	309.8
3	0.0002	3.370	35.5	40.0	2399.2	358.2
4	0.0003	3.350	36.3	37.1	2316.9	404.8
5	0.0004	3.358	39.1	30.5	2294.7	472.1
6	0.0005	3.371	33.6	37.5	2281.2	468.6
7	0.0006	3.397	40.5	39.0	2244.9	487.7
8	0.0008	3.406	34.4	37.2	2206.2	508.7
9	0.001	3.408	37.2	38.5	2117.8	613.7

log β_{101} = 10.06±0.01

Table U109. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 2.31×10^{-4} M in Heptane.

** Sample #	L_T, M	pHr	Background cpm Organic	Background cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	3.262	42.2	35.1	2439.6	221.9
2	0.0001	3.213	37.7	36.9	2390.6	282.0
3	0.0002	3.238	38.6	37.1	2401.2	322.2
4	0.0003	3.246	38.6	34.1	2339.5	366.4
5	0.0004	3.291	38.7	39.9	2335.8	357.6
6	0.0005	3.227	41.5	42.6	2327.0	400.2
7	0.0006	3.268	37.6	36.5	2330.8	385.6
8	0.0008	3.269	35.5	36.0	2253.0	422.2
9	0.001	3.262	39.0	33.1	2266.3	446.3

log β_{101} = 10.16±0.03

Table U110. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.38×10^{-5} M in Heptane.

**			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.905	31.6	32.6	2840.6	968.9
2	0.0001	2.873	37.8	39.7	2487.1	1287.0
3	0.0002	2.897	32.2	33.6	2191.7	1572.5
4	0.0003	2.895	36.0	34.2	2008.2	1812.5
5	0.0004	2.895	37.8	34.5	1959.2	1798.0
6	0.0005	2.891	42.6	39.0	1812.1	1960.9
7	0.0006	2.897	36.0	38.1	1794.3	2054.3
8	0.0008	2.906	38.8	53.1	1357.5	2052.1
9	0.001	2.908	36.6	32.6	1388.1	2430.2

log β_{101} = 11.16±0.01

Table U111. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 4 m NaCl at 25°C. [$^{233}UO_2^{2+}$] ~ 10^{-7} M, [HDEHP] = 1.38×10^{-5} M in Heptane.

**			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.502	33.4	34.9	2524.1	239.1
2	0.0001	3.612	36.4	38.3	1891.6	513.0
3	0.0002	3.634	36.6	36.4	1917.7	877.3
4	0.0003	3.637	38.7	38.6	1559.5	1180.2
5	0.0005	3.631	36.2	35.7	1385.6	1308.1
6	0.0006	3.685	36.1	38.9	2916.0	2169.5
7	0.0008	3.698	35.7	37.5	1318.5	1355.2
8	0.001	3.685	30.4	28.5	549.4	1797.8

log β_{101} = 10.29±0.04

Table U112. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

**			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.688	33.7	30.1	1796.5	1923.8
2	0.0001	2.684	31.2	37.9	1360.3	2303.4
3	0.0002	2.696	31.8	32.5	1319.6	2330.1
4	0.0003	2.672	29.1	29.9	1121.0	2561.3
5	0.0004	2.676	30.7	34.3	1136.6	2538.3
6	0.0005	2.678	32.7	32.2	1064.4	2662.3
7	0.0006	2.681	30.0	30.3	956.2	2717.2
8	0.0007	2.692	30.3	32.4	866.1	2857.6
9	0.0008	2.686	30.3	31.0	818.7	2877.6
10	0.001	2.714	36.0	30.6	732.7	3636.4

$\log \beta_{101} = 11.427\pm0.01$

Table U113. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.363	38.7	43.4	817.8	3063.8
2	0.0001	2.343	49.6	55.5	650.9	3196.4
3	0.0002	2.371	34.5	39.7	707.0	3087.2
4	0.0003	2.369	44.6	42.0	664.1	3168.8
5	0.0004	2.372	40.2	35.3	600.5	3259.0
6	0.0005	2.386	46.6	37.1	596.5	3248.4
7	0.0006	2.389	39.6	41.7	550.3	3300.9
8	0.0008	2.382	42.3	40.3	444.7	3419.4
9	0.001	2.391	41.0	40.9	477.3	3402.8

$\log \beta_{101} = 11.75\pm0.02$

Table U114. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 5.50×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.122	55.3	61.4	3261.1	114.5
2	1.30×10^{-4}	3.067	64.6	59.7	3308.1	124.0
3	2.60×10^{-4}	3.088	58.7	60.8	3301.8	142.9
4	3.89×10^{-4}	3.090	57.3	58.3	3248.1	183.6
5	5.19×10^{-4}	3.083	58.3	58.1	3199.9	203.9
6	1.04×10^{-3}	3.092	62.7	60.7	3136.4	272.8
7	1.56×10^{-3}	3.112	85.5	56.7	3042.5	403.6
8	2.08×10^{-3}	3.130	56.5	58.1	3040.0	456.9
9	2.60×10^{-3}	3.148	57.1	58.0	2887.0	504.0

$\log \beta_{101} = 10.78\pm0.01$

Table U115. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.38×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.158	54.8	57.5	2274.3	314.0
2	$2.60x10^{-4}$	3.077	52.7	56.8	2191.9	961.0
3	$5.19x10^{-4}$	3.088	58.2	88.3	2148.1	1038.5
4	$7.79x10^{-4}$	3.080	54.5	61.2	1738.0	1506.4
5	$1.04x10^{-3}$	3.173	65.1	57.3	1462.9	1752.6
6	$1.30x10^{-3}$	3.125	66.1	61.1	1352.1	1849.2
7	$1.56x10^{-3}$	3.129	57.3	60.7	1229.8	1952.5
8	$2.08x10^{-3}$	3.142	56.1	57.6	1126.3	2067.7
9	$2.60x10^{-3}$	3.155	52.2	60.0	1017.3	2126.7

$\log \beta_{101} = 10.75\pm0.02$

Table U116. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

**			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	1.999	41.4	35.3	3702.4	357.4
2	0.0001	1.981	39.7	37.7	3620.7	394.3
3	0.0002	1.981	35.6	30.6	3577.2	412.8
4	0.0003	1.992	34.4	36.5	3535.6	406.2
5	0.0004	1.995	38.6	36.7	3475.9	417.4
6	0.0006	1.998	37.3	37.5	3451.2	427.4
7	0.0008	1.991	37.3	36.5	3388.5	448.0
8	0.001	2.005	36.0	38.5	3436.1	462.2

log β_{101} = 12.06±0.02

Table U117. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

**			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.201	36.6	36.7	1770.1	1853.8
2	0.0001	3.200	38.9	40.4	1343.2	2279.9
3	0.0002	3.209	39.6	36.7	1339.2	2331.9
4	0.0003	3.205	36.4	33.6	1106.2	2581.8
5	0.0004	3.211	38.6	43.1	1112.0	2548.9
6	0.0005	3.210	60.6	52.3	1056.5	2635.8
7	0.0006	3.212	37.4	36.1	966.6	2726.2
8	0.0007	3.225	35.4	52.2	858.6	2904.9
9	0.0008	3.226	42.1	38.1	799.5	2898.0
10	0.001	3.229	37.5	38.3	740.0	3651.7

log β_{101} = 10.398±0.01

Table U118. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.905	35.3	35.1	3022.5	733.5
2	0.0001	2.908	39.2	34.9	2604.7	1160.5
3	0.0002	2.906	31.0	36.8	2462.0	1300.4
4	0.0003	2.909	37.9	38.1	2205.9	1576.6
5	0.0004	2.911	36.3	40.3	2173.2	1569.5
6	0.0005	2.910	32.8	37.5	2082.2	1700.3
7	0.0006	2.915	36.8	37.5	1809.6	1913.8
8	0.0007	2.912	37.3	38.1	1776.0	1942.8
9	0.0008	2.913	37.7	35.8	1662.9	2075.9
10	0.001	2.919	35.5	35.5	1563.6	2195.2

log β_{101} = 11.2±0.02

Table U119. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

Sample #	L_T, M	pHr	Background cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.105	37.3	38.3	3342.9	421.8
2	0.0001	2.102	38.5	34.9	3238.9	495.0
3	0.0002	2.123	35.0	38.7	3242.6	484.0
4	0.0003	2.102	36.5	35.8	3233.4	551.9
5	0.0004	2.129	38.5	35.3	3194.4	477.6
6	0.0005	2.115	39.8	36.1	3206.4	543.7
7	0.0006	2.109	33.6	39.1	3134.3	591.0
8	0.0008	2.112	39.3	36.4	3138.0	601.3
9	0.001	2.120	37.7	35.8	3185.2	618.2

log β_{101} = 11.96±0.05

Table U120. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.742	37.1	33.2	2816.5	991.1
2	1.00×10^{-4}	2.661	36.0	39.8	2477.3	1290.3
3	2.00×10^{-4}	2.635	42.1	37.4	2180.8	1554.6
4	3.00×10^{-4}	2.610	37.1	38.8	1983.7	1834.6
5	4.00×10^{-4}	2.626	38.9	34.6	1984.7	1812.4
6	5.00×10^{-4}	2.624	39.4	37.4	1817.4	1973.2
7	6.00×10^{-4}	2.621	40.2	39.9	1755.0	2064.2
8	8.33×10^{-4}	2.610	39.8	35.6	1373.6	2057.3
9	1.00×10^{-3}	2.602	37.5	37.3	1387.5	2431.8

$\log \beta_{101} = 11.55\pm0.01$

Table U121. Solvent Extraction Data for Apparent Stability Constants of Uranium with EDTA in 5 m NaCl at 25°C. $[^{233}UO_2^{2+}] \sim 10^{-7}$ M, [HDEHP] = 1.28×10^{-5} M in Heptane.

			Background cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.722	47.1	43.3	1716.7	2179.1
2	0.0001	2.711	43.1	45.7	1496.4	2323.8
3	0.0002	2.707	43.9	44.5	1366.6	2428.0
4	0.0003	2.702	39.1	40.9	1668.9	2158.3
5	0.0004	2.798	42.9	36.4	1170.5	2666.1
6	0.0005	2.700	41.8	44.2	1025.4	2801.7
7	0.0006	2.796	42.9	47.5	955.3	2893.0
8	0.0008	2.811	39.2	43.9	800.9	2926.6
9	0.001	2.809	49.3	34.7	855.3	3046.9

$\log \beta_{101} = 11.29\pm0.01$

Table Np1. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
33	0.0	4.701	71.0	68.1	959.3	1186.3
34	0.00724	4.884	63.1	66.8	980.5	1062.4
35	0.0148	4.955	62.8	68.3	1114.0	873.7
36	0.0296	4.952	66.2	63.5	1053.4	953.0
37	0.0592	4.987	65.0	64.8	1063.1	1029.5
38	0.0888	4.996	68.1	62.9	856.5	1089.4
39	0.1184	5.005	61.5	71.0	813.3	1178.6
40	0.1480	5.011	69.2	64.0	813.9	1278.9

$\log \beta_{101} = 1.11 \pm 0.02$

Table Np2. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
41	0.0	2.664	86.3	85.7	189.2	2438.5
42	0.004	3.548	80.5	90.0	217.1	2459.6
43	0.01	4.352	93.4	78.6	666.1	1972.3
44	0.02	4.625	81.3	85.9	1183.9	1462.2
45	0.04	4.796	81.8	81.9	1524.5	1081.6
46	0.08	4.918	89.4	79.7	1517.3	952.4
47	0.12	4.965	83.0	84.3	1607.3	1015.3
48	0.16	5.002	82.2	82.2	1531.2	1076.9
49	0.20	5.033	83.2	83.2	1337.7	1003.3

$\log \beta_{101} = 1.00 \pm 0.01$

Table Np3. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
25	0.0	5.425	72.2	81.1	2943.3	397.8
26	0.0075	4.950	72.5	69.2	2892.7	416.9
27	0.015	4.953	77.1	70.4	2891.0	421.2
28	0.03	4.959	73.9	70.0	2837.1	434.7
29	0.06	4.971	70.4	77.2	2816.8	513.0
30	0.09	4.975	75.1	77.9	2802.4	592.5
31	0.12	4.982	74.0	70.2	2648.5	634.3
32	0.15	4.987	74.3	72.1	2533.8	720.4

$\log \beta_{101} = 1.10 \pm 0.01$

Table Np4. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
33	0.0	5.046	59.8	66.1	2092.0	388.0
34	0.00731	4.954	65.8	65.8	2068.0	393.8
35	0.01462	4.967	64.5	59.1	2086.7	389.4
36	0.02924	4.983	64.5	59.3	1943.9	408.4
37	0.05848	5.010	61.0	61.4	1924.0	488.3
38	0.08772	5.021	58.4	62.5	1883.7	518.5
39	0.11696	5.027	61.1	61.5	1796.9	588.4
40	0.1462	5.032	66.0	54.5	1691.4	662.4

$\log \beta_{101} = 1.07 \pm 0.02$

Table Np5. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.107	81.2	79.0	285.6	2416.3
2	0.01	4.660	83.8	74.6	1438.3	1154.3
3	0.02	4.788	82.8	84.6	1717.4	880.5
4	0.04	4.885	79.6	76.8	1721.2	830.0
5	0.08	4.959	81.4	116.0	1580.7	981.2
6	0.12	4.995	196.2	90.4	1436.9	1071.2
7	0.16	5.017	80.2	80.8	1186.0	1263.0
8	0.20	5.034	79.4	80.4	1052.5	1400.1

$\log \beta_{101} = 1.22 \pm 0.03$

Table Np6. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
17	0.0	5.020	70.2	71.3	2777.8	539.1
18	0.0075	5.002	77.3	69.5	2762.3	559.9
19	0.015	5.000	79.3	72.1	2746.2	585.7
20	0.030	4.994	72.9	73.8	2598.2	659.0
21	0.060	4.991	70.1	75.1	2545.4	774.9
22	0.090	4.989	78.3	71.7	2366.8	887.2
23	0.120	4.990	75.0	69.6	2237.2	1032.1
24	0.150	4.989	84.8	71.9	2018.9	1186.8

$\log \beta_{101} = 1.19 \pm 0.03$

Table Np7. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.999	70.3	63.5	1045.3	1145.4
2	0.0072	4.905	64.8	60.1	1061.9	1242.7
3	0.0144	4.906	68.1	59.6	968.1	1305.0
4	0.0288	4.913	62.4	60.8	976.8	1404.4
5	0.0576	4.923	66.8	63.1	717.8	1483.0
6	0.0864	4.932	66.7	73.0	653.6	1600.6
7	0.1152	4.931	60.1	64.9	561.5	1615.6
8	0.144	4.935	69.8	66.7	506.1	1729.9

$\log \beta_{101} = 1.31 \pm 0.03$

Table Np8. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
9	0.0	4.929	97.6	104.8	2531.6	726.0
10	0.007	4.967	109.4	100.0	2354.5	821.1
11	0.014	4.967	107.6	110.8	2327.0	861.5
12	0.028	4.967	93.4	88.2	2190.6	982.5
13	0.056	4.985	94.8	100.6	1932.6	1231.8
14	0.084	4.995	95.4	85.4	1807.6	1454.5
15	0.112	5.006	99.0	95.8	1684.9	1607.4
16	0.1403	5.010	97.6	95.8	1513.7	1794.8

$\log \beta_{101} = 1.49 \pm 0.01$

Table Np9. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
9	0.0	4.613	70.3	63.1	1348.0	916.4
10	0.0070	4.877	64.0	65.8	1311.8	997.9
11	0.0141	4.898	72.8	63.1	1237.7	1049.8
12	0.0281	4.923	71.1	57.6	1104.3	1174.5
13	0.0562	4.950	69.8	65.5	949.8	1337.6
14	0.0844	4.965	71.3	63.6	783.3	1729.8
15	0.1125	4.977	61.2	54.0	675.8	1552.1
16	0.1406	4.987	64.7	61.7	540.8	1561.4

$\log \beta_{101} = 1.61 \pm 0.01$

Table Np10. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
11	0.0	4.492	97.8	99.4	1854.1	590.0
12	0.004	4.669	116.8	156.8	1842.4	681.0
13	0.01	4.719	111.6	85.4	1839.1	689.2
14	0.02	4.785	118.0	104.8	1887.7	783.1
15	0.04	4.859	93.2	94.6	1524.5	972.5
16	0.08	4.930	118.8	95.0	1300.6	1244.9
17	0.12	4.970	86.2	111.2	1014.3	1512.6
18	0.16	4.997	113.0	111.0	850.0	1696.3
19	0.20	5.019	101.6	99.8	1047.7	1840.8

$\log \beta_{101} = 1.56 \pm 0.03$

Table Np11. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.980	125.0	109.2	3954.1	888.4
2	0.0069	4.927	115.2	134.4	3730.6	967.7
3	0.0138	4.959	118.8	100.8	3867.9	908.5
4	0.0276	4.983	106.0	109.2	3870.1	1015.4
5	0.0552	4.999	103.0	110.2	3441.1	1388.7
6	0.0828	5.008	107.8	91.0	3342.3	1516.9
7	0.1104	5.019	103.0	106.6	3077.1	1763.7
8	0.1380	5.024	106.6	103.0	2809.8	2009.2

$\log \beta_{101} = 1.50 \pm 0.02$

Table Np12. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
17	0.0	4.865	63.7	65.6	1838.3	656.5
18	0.0069	4.909	63.4	60.6	1842.4	675.3
19	0.0138	4.914	66.3	67.8	1735.3	705.6
20	0.0276	4.930	64.1	64.4	1652.8	844.9
21	0.0552	4.951	67.5	66.3	1439.6	967.1
22	0.0828	4.967	65.3	66.4	1170.8	1086.0
23	0.1104	4.973	67.3	63.9	1158.1	1308.1
24	0.1380	4.980	61.0	70.5	972.7	1413.9

$\log \beta_{101} = 1.54 \pm 0.01$

Table Np13. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.131	78.4	79.6	1900.4	490.4
2	0.004	4.674	83.6	82.8	1806.5	533.0
3	0.01	4.719	79.8	76.0	1753.2	620.3
4	0.02	4.779	84.6	67.8	1739.5	711.5
5	0.04	4.847	81.0	78.2	1480.3	918.3
6	0.08	4.927	87.4	109.6	1202.9	1202.7
7	0.12	4.968	96.2	95.4	977.0	1444.1
8	0.16	4.999	96.8	91.2	806.8	1658.6
9	0.20	5.024	104.2	99.6	709.3	1882.8

$\log \beta_{101} = 1.92 \pm 0.01$

Table Np14. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Acetate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
41	0.0	4.211	65.8	66.2	1904.8	328.0
42	0.0068	4.920	70.9	63.4	1705.4	431.3
43	0.0135	4.975	65.7	67.1	1706.9	416.5
44	0.0270	4.958	70.5	64.3	1492.3	413.5
45	0.0541	4.998	65.7	69.3	1389.4	576.5
46	0.0812	4.998	71.4	69.4	1172.7	852.2
47	0.1082	5.014	61.6	59.8	1135.0	978.0
48	0.1353	5.051	68.9	64.7	1011.5	1025.3

$\log \beta_{101} = 1.80 \pm 0.02$

Table Np15. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 0.2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.667	52.0	53.7	2825.5	543.3
2	0.0	4.610	52.4	52.1	2530.5	642.5
3	0.0197	4.905	60.8	57.5	2595.7	573.1
4	0.0394	4.949	55.1	106.9	2562.6	726.9
5	0.0788	5.000	76.3	159.4	2464.4	1007.9
6	0.1182	5.004	137.5	59.1	2204.5	1049.0
7	0.1576	5.045	71.6	65.5	1995.6	1025.5
8	0.1576	5.047	54.2	132.2	2246.3	1055.0
9	0.1970	5.060	65.0	183.2	2119.2	1165.1
10	0.1970	5.063	65.7	57.9	2385.7	1141.4

log β_{101} = 1.49±0.10

Table Np16. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.682	50.1	50.9	3957.0	1280.6
2	0.0194	4.758	49.6	51.8	1932.8	907.8
3	0.0388	4.800	55.6	47.5	1741.1	1150.5
4	0.0388	4.822	49.2	52.2	4302.1	1488.5
5	0.0582	4.847	54.4	51.5	2193.8	1427.7
6	0.1165	4.862	59.3	50.4	1217.4	1496.4
7	0.1553	4.904	52.3	52.2	1308.6	1896.9
8	0.1942	4.936	50.5	56.1	1736.1	2976.9

log β_{101} = 1.76±0.01

Table Np17. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
41	0.0	3.387	55.1	53.6	834.4	2849.4
42	0.0068	4.290	61.5	57.7	1973.2	1592.2
43	0.0137	4.451	78.8	65.8	2218.7	1483.5
44	0.0274	4.601	151.9	50.5	2319.4	1342.8
45	0.0547	4.705	51.6	57.1	2107.3	1492.1
46	0.0821	4.771	62.8	53.4	1827.3	1632.6
47	0.1094	4.816	53.1	61.9	1574.8	1713.2
48	0.1368	4.874	50.9	57.3	747.2	1035.0

log β_{101} = 1.81±0.02

Table Np18. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.628	52.3	55.0	2307.8	630.9
2	0.0195	4.713	48.0	50.2	2320.9	778.3
3	0.0390	4.731	52.0	54.4	1880.7	1036.9
4	0.0584	4.753	52.7	48.3	1826.5	1234.6
5	0.1169	4.795	65.2	52.6	1274.3	1625.6
6	0.1558	4.803	49.6	50.0	1128.6	1841.6
7	0.1948	4.813	49.3	48.7	1115.4	1768.7

log β_{101} = 1.51±0.02

Table Np19. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.253	54.1	52.0	1170.8	615.8
2	0.0	4.238	56.6	50.8	947.3	594.2
3	0.0	4.271	54.8	66.9	876.9	641.1
4	0.0385	4.680	61.0	56.3	1218.2	717.5
5	0.0385	4.753	50.7	60.6	1408.5	666.5
6	0.0385	4.804	57.5	49.7	1341.2	637.6
7	0.0769	4.875	61.4	66.9	1153.8	638.3
8	0.0769	4.865	59.1	52.5	1224.2	685.1
9	0.0769	4.876	64.8	54.3	1130.7	707.3
10	0.1154	4.923	60.7	57.4	1149.5	790.4
11	0.1154	4.933	58.8	59.7	1067.1	766.6
12	0.1539	4.942	56.6	55.4	1165.9	838.0
13	0.1539	4.940	48.2	58.2	1408.7	809.4

log β_{101} = 1.46±0.02

Table Np20. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
33	0.0	4.945	60.8	53.3	2931.3	531.1
34	0.0067	4.755	53.4	56.4	2790.6	618.9
35	0.0135	4.757	53.8	54.2	2810.7	681.2
36	0.0269	4.762	62.3	64.2	2743.0	737.6
37	0.0538	4.778	57.2	68.3	2542.1	949.7
38	0.0808	4.793	59.4	59.4	2404.5	1081.1
39	0.1077	4.803	59.5	52.7	2110.6	1322.1
40	0.1346	4.816	64.3	52.9	1882.7	1464.6

$\log \beta_{101} = 1.48 \pm 0.02$

Table Np21. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.820	53.9	55.7	1521.9	163.5
2	0.0197	5.040	54.5	58.7	2011.1	284.1
3	0.0590	5.055	53.8	52.3	1473.8	355.5
4	0.0786	5.061	88.8	47.9	1715.7	423.0
5	0.0983	5.061	50.2	49.6	1972.2	501.3
6	0.1179	5.044	54.1	51.9	1718.3	545.0
7	0.1573	5.060	55.0	53.0	2130.9	726.9
8	0.1966	5.081	54.8	55.7	1284.4	612.4

$\log \beta_{101} = 1.41 \pm 0.02$

Table Np22. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.600	47.7	52.9	1090.4	219.7
2	0.0197	4.820	54.4	46.9	1359.6	340.6
3	0.0590	4.851	51.3	52.7	1478.3	381.6
4	0.0786	4.867	46.5	55.1	1526.7	484.6
5	0.0983	4.869	51.9	47.8	1523.0	508.2
6	0.1179	4.885	47.8	55.2	1565.3	682.7
7	0.1573	4.901	51.8	45.2	1191.5	656.0
8	0.1573	4.918	54.4	50.7	1397.7	794.9

$\log \beta_{101} = 1.46 \pm 0.02$

Table Np23. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
25	0.0	4.893	57.0	56.4	3227.8	350.5
26	0.0066	4.825	57.9	58.4	3027.0	396.4
27	0.0133	4.828	65.4	67.6	2821.9	618.2
28	0.0266	4.893	48.7	67.7	2907.3	652.2
29	0.0531	4.863	72.4	58.8	2752.1	765.2
30	0.0797	4.876	50.0	58.0	2396.1	1066.4
31	0.1062	4.850	60.0	52.5	1962.5	1459.0
32	0.1328	4.841	72.7	58.9	1745.7	1590.4

$\log \beta_{101} = 1.58 \pm 0.03$

Table Np24. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	4.860	54.6	56.6	2181.9	497.8
3	0.0093	4.949	50.9	55.0	3605.1	990.1
2	0.0207	4.930	50.1	52.3	2178.5	837.4
4	0.0560	4.959	49.9	52.5	2078.3	1246.2
5	0.0746	4.966	54.0	52.1	2970.6	1503.5
6	0.1120	4.970	62.1	53.3	1758.4	1777.2
7	0.1866	4.989	50.1	53.1	948.5	1646.1
8	0.1866	4.984	51.7	46.4	939.6	1478.8

$\log \beta_{101} = 1.75 \pm 0.03$

Table Np25. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm Organic	Background, cpm Aqueous	Extraction, cpm Organic	Extraction, cpm Aqueous
1	0.0	4.705	51.8	58.4	1310.2	265.0
2	0.0	4.721	50.9	50.2	1420.0	200.0
3	0.0184	4.740	55.6	48.4	1907.6	281.8
4	0.0369	4.707	48.4	51.1	1652.9	335.4
5	0.0737	4.733	52.2	53.8	1467.0	518.2
6	0.1106	4.749	49.0	51.1	1352.4	657.0
7	0.1474	4.752	55.8	47.8	1204.2	769.0
8	0.1474	4.797	59.6	52.7	1305.8	727.8

$\log \beta_{101} = 1.78 \pm 0.02$

Table Np26. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.976	61.3	51.0	3158.7	244.9
3	0.00649	4.888	65.1	59.4	3189.0	345.6
2	0.01298	4.868	68.1	77.9	3132.6	356.5
4	0.02596	4.862	59.0	64.7	2844.3	540.4
5	0.05192	4.858	63.7	52.5	2486.9	851.5
6	0.07788	4.861	56.6	51.6	2568.6	841.8
7	0.10384	4.851	54.8	61.4	1762.8	1556.7
8	0.1298	4.855	50.9	58.6	1914.2	1367.8

$\log \beta_{101} = 1.74 \pm 0.04$

Table Np27. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.007	70.0	49.4	852.6	255.0
2	0.0	4.967	64.8	49.8	2264.9	341.8
3	0.012	4.950	49.6	67.6	965.0	318.8
4	0.012	4.982	78.1	55.4	1534.7	413.3
5	0.024	4.970	65.5	52.4	1048.4	382.5
6	0.024	4.975	82.2	52.4	1070.1	381.4
7	0.024	4.979	53.1	57.8	1007.8	405.0
8	0.049	5.021	54.5	57.1	951.7	569.9
9	0.049	4.977	98.5	60.0	1042.7	551.1
10	0.073	4.950	82.1	60.2	901.2	599.1
11	0.098	4.983	82.5	61.0	821.7	671.0
12	0.122	4.972	51.3	59.2	673.1	647.7
13	0.122	4.971	56.6	57.9	777.8	757.1
14	0.122	4.971	67.2	61.9	735.1	742.5

$\log \beta_{101} = 1.87 \pm 0.02$

Table Np28. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.749	52.8	51.4	3472.8	360.4
2	0.0122	4.956	56.2	47.7	2475.3	487.4
3	0.0245	4.943	53.9	53.9	2357.1	634.5
4	0.0490	4.902	51.3	52.7	2355.3	989.3
5	0.0734	4.920	49.4	56.7	1902.6	1011.6
6	0.0734	4.955	56.5	49.0	2051.1	1197.6
7	0.0979	4.950	53.8	52.7	2075.7	1665.5
8	0.1224	4.972	50.9	55.3	1730.2	1741.3

$\log \beta_{101} = 2.02 \pm 0.02$

Table Np29. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
9	0.0	4.979	53.8	51.7	3244.2	216.9
10	0.006	4.868	55.3	72.7	3224.3	258.1
11	0.012	4.851	47.2	78.0	3166.3	307.5
12	0.024	4.842	55.4	77.1	3112.9	366.0
13	0.049	4.850	59.4	66.7	2965.4	529.7
14	0.073	4.842	62.1	61.6	2664.8	780.0
15	0.098	4.833	62.5	49.7	2196.2	1183.1
16	0.122	4.836	62.8	70.7	2135.9	1320.0

$\log \beta_{101} = 1.91 \pm 0.02$

Table Np30. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.494	52.0	52.0	799.0	397.0
2	0.0	4.300	52.0	52.0	720.0	334.0
3	0.0126	4.363	52.0	52.0	605.0	540.0
4	0.0252	4.357	52.0	52.0	460.0	612.0
5	0.0503	4.354	52.0	52.0	378.0	594.0
6	0.0755	4.361	52.0	52.0	233.0	806.0
7	0.1008	4.360	52.0	52.0	183.0	820.0

$\log \beta_{101} = 2.00 \pm 0.03$

Table Np31. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.967	50.9	55.3	2572.5	230.0
2	0.01246	4.958	53.7	49.2	2501.0	269.2
3	0.02492	4.960	50.3	57.6	2698.8	482.0
4	0.03738	4.974	50.0	50.8	3118.7	804.1
5	0.04984	4.972	45.9	51.5	2161.0	528.0
6	0.07476	4.950	55.8	50.9	2138.6	914.7
7	0.09968	4.960	51.7	51.7	1844.0	1223.4
8	0.1439	4.940	46.7	48.8	1498.9	1431.3

$\log \beta_{101} = 1.93 \pm 0.02$

Table Np32. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.953	50.5	50.9	2348.4	305.4
2	0.0	4.989	47.5	44.5	2440.7	277.7
3	0.018	4.981	49.5	46.8	2263.6	421.0
4	0.018	4.971	46.8	49.8	2217.3	441.0
5	0.036	4.997	49.6	53.0	2108.8	622.3
6	0.036	5.007	47.4	49.0	2041.5	598.8
7	0.072	5.073	50.3	52.5	1783.8	872.7
8	0.072	5.067	45.6	51.8	1828.5	837.3
9	0.108	4.977	52.2	52.1	1564.7	1059.7
10	0.108	4.996	51.8	49.3	1583.0	1082.5
11	0.144	5.006	47.7	53.3	1421.6	1252.5
12	0.144	5.008	51.5	50.7	1611.2	1156.7
13	0.180	5.052	52.9	52.1	1390.0	1420.5
14	0.180	5.073	47.3	49.1	1268.3	1355.4

$\log \beta_{101} = 1.88 \pm 0.02$

Table Np33. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.041	53.2	48.3	2119.7	463.4
2	0.0	5.081	51.0	45.6	2113.3	550.3
3	0.0	5.085	52.7	47.0	2144.2	494.9
4	0.018	5.028	49.3	49.7	1816.7	785.4
5	0.018	5.019	48.0	52.5	1902.4	644.4
6	0.036	5.039	49.0	46.5	1759.2	751.3
7	0.036	5.022	53.7	51.8	1684.7	800.6
8	0.072	5.048	47.2	52.7	1507.3	963.1
9	0.072	5.057	48.3	50.2	1486.9	993.5
10	0.072	5.037	50.4	53.6	1529.1	1024.1
11	0.108	5.043	53.8	50.3	1420.5	1183.0
12	0.108	5.042	53.6	57.7	1375.6	1125.0
13	0.144	5.059	51.8	50.6	1264.4	1241.7
14	0.144	5.067	49.7	53.4	1303.0	1161.5
15	0.180	5.061	54.2	53.1	1198.3	1292.6

$\log \beta_{101} = 1.96 \pm 0.02$

Table Np34. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Lactate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.983	74.0	57.5	3349.1	337.9
2	0.006	4.829	57.4	68.9	3151.3	407.6
3	0.012	4.829	112.4	48.9	3080.6	477.3
4	0.025	4.827	54.2	64.3	2929.6	555.3
5	0.050	4.824	51.6	87.3	2623.9	851.3
6	0.075	4.831	60.0	59.3	1960.5	1391.6
7	0.100	4.840	99.6	61.7	1741.2	1487.2
8	0.125	4.842	55.5	63.2	1553.9	1750.7

$\log \beta_{101} = 2.05 \pm 0.02$

Table Np35. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	5.415	34.4	30.9	2711.6	672.5
2	5.0x10^{-5}	5.426	29.9	31.4	2601.6	715.5
3	0.00010	5.430	31.5	36.2	2494.4	776.8
4	0.00015	5.431	30.1	34.1	2649.7	918.8
5	0.00020	5.430	28.6	30.7	2272.6	950.7
6	0.00025	5.447	28.8	31.7	2600.2	1096.6
7	0.00030	5.432	30.5	35.5	2041.1	1036.4
8	0.00040	5.461	32.0	31.0	2014.2	1092.0
9	0.00050	5.479	31.9	33.1	2410.6	1405.6

log β_{101} = 3.62±0.02

Table Np36. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	4.456	70.2	60.6	2674.5	1557.0
2	5.0x10^{-5}	4.479	68.6	66.9	1955.2	1561.3
3	0.000101	4.502	59.2	66.0	2445.8	1775.9
4	0.000202	4.479	84.6	63.4	874.5	1696.6
5	0.000404	4.524	63.5	63.8	1549.1	2256.4
6	0.000606	4.522	63.2	68.0	449.8	2000.3
7	0.000808	4.563	62.0	66.3	1487.9	2507.3
8	0.001010	4.554	67.6	63.2	1444.6	2644.0

log β_{101} = 3.65±0.03

Table Np37. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.370	62.8	114.4	2342.0	654.0
2	9.4×10^{-5}	5.368	63.7	78.1	2120.4	797.7
3	0.000189	5.337	51.0	61.3	1923.9	981.9
4	0.000283	5.304	57.6	53.1	1806.7	1128.1
5	0.000378	5.303	59.6	97.9	1618.0	1185.2
6	0.000566	5.384	105.0	61.2	1645.5	1236.9
7	0.000755	5.392	58.2	93.1	1458.0	1309.2
8	0.000944	5.420	63.4	77.1	1410.0	1321.1

$\log \beta_{101} = 3.58\pm0.02$

Table Np38. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.315	34.5	33.2	3329.6	169.0
2	9.4×10^{-5}	5.348	34.4	36.1	3041.4	293.2
3	0.000189	5.363	33.9	30.0	2899.9	316.0
4	0.000283	5.352	34.7	27.1	3008.1	289.2
5	0.000378	5.340	29.2	37.2	2832.7	398.6
6	0.000566	5.332	35.8	30.1	2967.2	499.7
7	0.000566	5.321	32.4	29.1	2809.4	484.6
8	0.000755	5.329	31.2	34.3	2918.4	621.4
9	0.000944	5.326	41.4	34.9	2675.4	713.1

$\log \beta_{101} = 3.62\pm0.02$

Table Np39. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
9	0.0	4.821	87.5	67.3	3725.7	357.5
10	5.0×10^{-5}	4.895	64.4	59.9	3456.9	443.0
11	0.0001	4.874	60.6	69.0	3589.3	483.2
12	0.0002	4.895	62.0	71.8	1918.5	617.8
13	0.0004	4.899	63.1	65.8	1680.7	854.5
14	0.0006	4.885	64.3	66.6	1360.2	1184.7
15	0.0008	4.892	68.7	62.6	1095.6	1395.5
16	0.0010	4.874	75.8	71.1	1395.0	1604.7

$\log \beta_{101} = 3.98\pm0.10$

Table Np40. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
9	0.0	4.821	87.5	67.3	4546.0	520.0
10	5.0×10^{-5}	4.895	64.4	59.9	4481.2	663.8
11	0.0001	4.874	60.6	69.0	4606.8	694.2
12	0.0002	4.895	62.0	71.8	2858.8	935.6
13	0.0004	4.899	63.1	65.8	2516.2	1283.2
14	0.0006	4.885	64.3	66.6	1977.4	1816.8
15	0.0008	4.892	68.7	62.6	1616.6	2144.8
16	0.001	4.874	75.8	71.1	1716.4	2503.8

log β_{101} = 4.00±0.03

Table Np41. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
17	0.0	4.867	71.0	73.2	2046.3	563.0
18	4.915×10^{-5}	4.931	71.0	93.3	1920.5	662.4
19	9.830×10^{-5}	4.995	62.7	60.6	1908.2	681.9
20	0.0001966	4.931	62.1	109.9	1671.3	865.2
21	0.0003932	4.968	61.2	88.2	1310.6	1160.3
22	0.0005898	4.927	59.0	63.4	1074.9	1426.4
23	0.0007864	4.963	65.2	63.1	843.0	1664.3
24	0.0009830	4.947	62.6	54.6	666.9	1828.8

log β_{101} = 3.89±0.02

Table Np42. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
7	0.0	4.867	71.0	73.2	2476.0	650.8
8	4.915×10^{-5}	4.931	71.0	93.3	2326.3	812.5
9	9.830×10^{-5}	4.995	62.7	60.6	2273.8	817.9
10	0.0001966	4.931	62.1	109.9	2006.2	1041.5
11	0.0003932	4.968	61.2	88.2	1579.2	1420.2
12	0.0005898	4.927	59.0	63.4	1322.8	1753.9
13	0.0007864	4.963	65.2	63.1	995.5	2088.0
14	0.0009830	4.947	62.6	54.6	772.6	2211.7

log β_{101} = 4.20±0.02

Table Np43. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
25	0.0	4.641	60.4	65.2	1793.6	723.5
26	4.765×10^{-5}	4.893	57.5	49.2	1763.0	697.6
27	9.53×10^{-5}	4.930	52.4	50.1	1623.5	880.9
28	0.0001906	4.956	56.6	54.2	1411.1	1097.4
29	0.0003812	4.974	51.5	52.9	1032.4	1469.0
30	0.0005718	4.945	57.1	59.4	667.2	1802.1
31	0.0007624	4.948	57.1	51.1	606.0	1826.5
32	0.0009530	4.961	50.4	55.4	419.1	2044.1

log β_{101} = 4.05±0.02

Table Np44. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
25	0.0	4.641	60.4	65.2	2326.9	848.3
26	4.77×10^{-5}	4.893	57.5	49.2	2203.9	874.7
27	9.53×10^{-5}	4.930	52.4	50.1	2012.1	1087.3
28	0.0001906	4.956	56.6	54.2	1730.2	1327.4
29	0.0003812	4.974	51.5	52.9	1276.1	1786.7
30	0.0005718	4.945	57.1	59.4	818.3	2139.9
31	0.0007624	4.948	57.1	51.1	748.4	2234.0
32	0.000953	4.961	50.4	55.4	469.7	2496.4

log β_{101} = 4.06±0.01

Table Np45. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 4 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
33	0.0	4.917	51.4	56.8	1908.5	606.2
34	4.72×10^{-5}	4.941	47.1	51.1	1761.9	728.6
35	9.42×10^{-5}	4.944	52.8	58.9	1592.8	895.8
36	0.0001884	4.999	56.5	61.0	1331.1	1131.7
37	0.0003768	5.014	56.9	58.8	929.9	1460.4
38	0.0005652	4.971	50.3	49.3	675.2	1691.4
39	0.0007536	4.973	58.4	56.6	557.4	1840.3
40	0.0009420	4.996	53.4	50.2	1287.1	2586.7

log β_{101} = 4.17±0.02

Table Np46. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.569	34.5	34.0	1747.2	1398.0
2	$5.0x10^{-5}$	5.578	29.3	30.3	1364.8	1848.6
3	0.00010	5.581	34.5	35.6	855.7	2245.6
4	0.00015	5.582	32.4	32.0	808.7	2336.3
5	0.00020	5.582	33.6	38.9	530.6	2561.0
6	0.00025	5.586	34.4	30.9	610.9	2761.0
7	0.00030	5.590	33.5	31.7	368.4	2660.3
8	0.00040	5.591	31.8	36.1	357.6	2997.6
9	0.00050	5.590	36.8	32.6	293.7	2990.0

$\log \beta_{101} = 4.56 \pm 0.02$

Table Np47. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.039	38.0	34.4	1771.6	1418.5
2	$5.0x10^{-5}$	5.078	38.9	41.4	1390.9	1848.4
3	0.00010	5.081	31.6	31.5	852.0	2246.0
4	0.00015	5.099	36.1	32.3	832.0	2348.5
5	0.00020	5.082	39.3	75.4	628.7	2781.4
6	0.00020	5.096	32.1	41.4	554.3	2557.0
7	0.00030	5.059	32.4	32.3	362.1	2626.4
8	0.00040	5.091	40.8	36.6	367.2	2961.3
9	0.00050	5.095	36.7	30.0	297.8	2972.2

$\log \beta_{101} = 4.71 \pm 0.02$

Table Np48. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Oxalate in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
41	0.0	4.843	49.7	52.1	2127.7	475.8
42	$4.6x10^{-5}$	4.930	53.2	52.3	1971.1	612.5
43	$9.2x10^{-5}$	4.978	54.5	51.8	3661.6	832.8
44	0.00018	5.020	50.9	50.8	1876.8	1284.2
45	0.00037	5.036	52.0	53.1	2423.0	1646.0
46	0.00055	5.051	50.5	53.2	2374.3	2063.5
47	0.00074	5.058	46.1	46.9	565.2	1919.5
48	0.00092	5.099	53.7	47.4	1732.2	2553.2

log β_{101} = 4.63±0.01

Table Np49. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	4.386	51.5	55.6	1469.6	1309.3
2	0.0	4.396	57.2	61.1	1289.9	1365.5
3	0.002	4.822	68.3	58.5	1756.5	878.5
4	0.004	4.875	54.2	55.3	1939.7	1031.3
5	0.006	4.873	55.7	77.8	1733.5	1134.7
6	0.008	4.989	60.2	64.5	1594.5	1076.0
7	0.008	4.988	60.2	56.2	1622.6	1119.4
8	0.012	5.071	50.6	47.7	1628.6	1183.5
9	0.016	5.074	68.7	61.9	1409.4	1353.9
10	0.020	5.151	69.4	62.3	1397.0	1381.5

log β_{101} = 2.97±0.01

Table Np50. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.491	80.9	59.9	1227.8	1477.6
2	0.002	4.705	64.3	57.8	1664.6	903.1
3	0.004	4.745	55.9	51.8	1707.7	904.6
4	0.006	4.924	58.8	88.6	1926.5	954.7
5	0.008	4.949	51.3	75.3	1660.8	917.3
6	0.012	4.991	54.5	52.8	1459.9	1055.9
7	0.016	5.077	49.7	284.6	1522.2	1547.6
8	0.020	5.087	53.4	54.6	1592.1	1228.7

$\log \beta_{101} = 2.67 \pm 0.06$

Table Np51. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
49	0.0	3.490	48.4	50.5	721.2	2399.1
50	0.00098	4.429	50.2	52.9	1662.7	1416.5
51	0.00197	4.650	51.2	46.4	1977.4	1012.3
52	0.00394	4.798	52.8	54.7	2104.2	882.2
53	0.00787	4.888	52.1	47.6	2102.5	942.7
54	0.01181	4.928	51.8	51.1	1877.5	1064.7
55	0.01574	4.943	49.4	49.1	1760.0	1167.4
56	0.01968	4.957	54.9	54.1	1614.5	1291.9

$\log \beta_{101} = 2.63 \pm 0.02$

Table Np52. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
41	0.0	3.551	47.6	52.8	339.9	2632.9
42	0.00098	4.462	51.9	54.4	1442.9	1572.7
43	0.00197	4.634	52.9	50.7	1750.5	1252.0
44	0.00787	4.917	54.8	52.3	1906.8	1054.1
45	0.01181	4.958	51.1	50.2	1822.6	1103.8
46	0.01574	4.980	54.5	48.3	1701.6	1208.9
47	0.01968	4.991	49.8	53.0	1537.5	1398.7

$\log \beta_{101} = 2.55 \pm 0.02$

Table Np53. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.040	31.5	44.5	2423.5	403.8
2	0.00087	4.950	32.9	31.9	1999.1	505.7
3	0.00174	5.015	32.1	36.1	1977.6	497.0
4	0.00261	5.030	29.8	36.7	2003.3	539.3
5	0.00348	5.081	27.5	34.3	1986.8	532.9
6	0.00522	5.160	37.4	33.0	2079.8	569.8
7	0.00696	5.118	32.5	36.8	1855.4	625.1
8	0.00870	5.120	31.1	32.2	1875.9	675.9

$\log \beta_{101} = 2.59 \pm 0.02$

Table Np54. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.154	29.6	33.3	2268.4	318.9
2	0.00087	5.070	33.8	32.5	2110.5	439.9
3	0.00174	5.100	33.9	29.7	2131.5	468.4
4	0.00261	5.120	29.8	32.7	2053.6	496.7
5	0.00348	5.130	30.0	30.4	2127.1	538.8
6	0.00522	5.186	32.9	34.3	2051.1	530.7
7	0.00696	5.164	31.7	35.9	1959.6	588.3
8	0.00870	5.154	32.0	31.8	1937.5	635.8

$\log \beta_{101} = 2.45 \pm 0.02$

Table Np55. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.286	32.8	33.8	2372.2	234.5
2	0.002	5.269	31.9	28.7	2160.2	308.4
3	0.004	5.262	35.2	34.6	2206.6	391.3
4	0.006	5.232	33.7	34.8	2120.3	500.5
5	0.008	5.260	29.6	29.2	2092.9	524.5
6	0.010	5.262	29.2	31.1	1935.5	540.9
7	0.012	5.262	32.5	32.2	1979.2	609.5
8	0.016	5.309	32.5	30.0	1929.9	648.7

$\log \beta_{101} = 2.54 \pm 0.01$

Table Np56. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.910	28.8	27.5	2131.3	500.6
2	0.002	4.960	33.4	32.8	2014.8	557.0
3	0.004	5.070	32.3	34.8	2049.2	534.7
4	0.006	5.092	31.9	27.8	1982.5	567.5
5	0.008	5.232	36.3	32.0	2024.3	586.1
6	0.012	5.264	28.0	29.7	1924.1	626.6
7	0.016	5.280	31.8	34.1	1764.9	697.4

log β_{101} = 2.51±0.01

Table Np57. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
33	0.0	5.026	46.8	50.7	2613.0	453.1
34	0.0010	4.882	49.4	50.2	2543.2	526.4
35	0.0019	4.936	47.6	51.8	2523.8	553.1
36	0.0039	4.960	44.2	47.7	2456.2	579.3
37	0.0078	4.992	53.2	45.9	2225.8	721.7
38	0.0117	5.015	48.5	50.7	2042.3	885.8
39	0.0156	5.016	45.8	46.9	1988.1	968.1
40	0.0194	5.025	51.5	56.7	1810.7	1214.3

log β_{101} = 2.40±0.02

Table Np58. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.080	55.1	61.3	1653.6	415.9
2	0.002	5.050	49.7	59.6	2190.0	645.3
3	0.004	5.056	62.5	54.8	2128.0	728.7
4	0.006	5.062	61.7	54.2	2010.9	812.7
5	0.008	5.024	54.1	75.6	1929.8	988.6
6	0.012	5.068	47.2	55.5	1827.7	1082.6
7	0.016	5.082	56.1	55.3	1650.3	1112.5
8	0.020	5.087	55.5	57.0	1564.5	1221.4

log β_{101} = 2.38±0.01

Table Np59. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
25	0.0	5.391	58.7	60.5	2585.1	504.1
26	0.0010	5.062	56.0	51.3	2594.8	526.1
27	0.0019	5.030	49.8	58.5	2496.1	579.8
28	0.0038	5.019	50.9	48.6	2293.4	719.3
29	0.0076	4.969	52.7	53.7	2063.5	964.7
30	0.0115	4.976	50.3	48.6	1780.1	1233.9
31	0.0153	4.965	47.2	51.8	1687.3	398.1
32	0.0191	4.971	51.4	48.2	1360.8	487.6

log β_{101} = 2.53±0.02

Table Np60. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 2 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.870	55.1	61.6	1554.7	422.8
2	0.002	4.770	57.9	60.5	1479.8	625.9
3	0.004	4.755	91.0	61.0	1291.7	571.1
4	0.006	4.776	57.9	52.1	1366.8	648.9
5	0.008	4.786	74.2	61.1	1341.5	753.3
6	0.012	4.826	68.2	67.4	1220.0	849.9
7	0.016	4.869	65.0	56.8	1275.1	870.8
8	0.020	4.887	59.0	54.4	1106.7	944.0

log β_{101} = 2.37±0.02

Table Np61. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
17	0.0	5.010	58.7	60.5	2408.0	616.1
18	0.0009	4.870	56.0	51.3	2345.3	646.2
19	0.0019	4.864	49.8	58.5	2327.0	765.3
20	0.0037	4.857	50.9	48.6	2109.7	898.6
21	0.0075	4.880	52.7	53.7	1805.6	1162.7
22	0.0112	4.900	50.3	48.6	1604.9	1396.0
23	0.0150	4.909	47.2	51.8	1424.8	1507.2
24	0.0187	4.924	51.4	48.2	1220.5	1643.3

log β_{101} = 2.53±0.01

Table Np62. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.994	83.3	92.2	2331.3	431.8
2	0.00187	4.916	93.0	87.7	1983.9	830.3
3	0.00374	4.980	91.1	79.4	1943.2	823.4
4	0.00374	4.967	79.7	86.8	1884.7	909.7
5	0.00561	4.995	78.0	77.8	1844.6	926.2
6	0.00748	4.997	78.9	82.3	1731.9	1051.0
7	0.00748	5.003	75.0	67.5	1704.0	1049.3
8	0.01122	5.003	83.1	78.7	1551.0	1209.9
9	0.01496	5.056	85.2	126.5	1479.5	1356.8
10	0.0187	5.076	71.8	73.0	1372.4	1372.6

log β_{101} = 2.53±0.01

Table Np63. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 4 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
9	0.0	5.042	59.0	58.9	2430.5	509.2
10	0.00092	4.873	55.2	58.1	2239.5	701.2
11	0.00183	4.880	50.9	56.9	2224.4	830.6
12	0.00366	4.898	57.8	58.9	2107.4	816.7
13	0.00732	4.905	58.9	55.5	1906.3	1127.6
14	0.01099	4.909	54.1	52.3	1589.3	1377.0
15	0.01465	4.912	63.4	54.8	1478.2	1401.8
16	0.01831	4.921	55.0	56.9	1360.0	1522.6

log β_{101} = 2.61±0.01

Table Np64. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 4 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.220	70.5	56.1	1523.9	436.1
2	0.00037	5.070	59.8	60.6	1442.2	616.1
3	0.00074	5.040	68.2	55.6	1387.4	690.8
4	0.00112	5.037	56.9	66.4	1422.0	781.3
5	0.00149	5.031	62.6	69.9	1280.8	775.7
6	0.00223	5.035	74.8	59.0	1248.1	836.1
7	0.00297	5.037	58.5	58.5	1175.5	865.2
8	0.00372	5.042	56.7	83.3	1152.1	948.6

log β_{101} = 2.50±0.01

Table Np65. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.466	54.0	55.9	2605.1	442.7
2	0.00090	4.885	56.4	56.7	2485.6	521.0
3	0.00180	4.916	56.0	55.9	2405.4	577.4
4	0.00359	4.914	61.6	51.7	2408.9	662.0
5	0.00719	4.918	59.5	58.6	1912.1	977.9
6	0.01078	4.925	56.5	55.4	1903.4	1170.2
7	0.01438	4.939	54.4	59.9	1641.8	1284.1
8	0.01797	4.946	58.4	59.5	1491.0	1462.2

$\log \beta_{101} = 2.58 \pm 0.01$

Table Np66. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.00947 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.0	59.5	58.4	2936.1	1394.3
2	0.001	6.0	56.4	56.7	2575.8	1348.7
3	0.0025	6.0	56.0	55.9	2058.6	1573.0
4	0.005	6.0	55.4	51.7	1793.8	2073.1
5	0.0075	6.0	53.2	58.6	1628.4	2341.5
6	0.010	6.0	56.5	55.9	1501.6	2591.2
7	0.020	6.0	54.4	59.9	1075.5	3063.2
8	0.030	6.0	55.7	61.6	485.9	3370.8
9	0.050	6.0	54.8	59.6	218.0	3768.7

$\log \beta_{101} = 2.53 \pm 0.01$

Table Np67. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.12 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.785	42.5	62.8	1972.5	251.8
2	0.0004	5.605	42.6	35.3	1823.8	374.4
3	0.002	5.610	43.0	45.5	1789.7	437.4
4	0.004	5.617	63.8	47.5	1572.1	482.4
5	0.006	5.692	40.9	42.7	1748.1	502.8
6	0.008	5.725	38.3	38.6	1629.5	572.2
7	0.012	5.727	42.3	37.8	1498.8	690.5
8	0.016	5.763	46.2	36.2	1402.0	779.8
9	0.020	5.803	45.5	39.4	1353.5	820.2

$\log \beta_{101} = 2.66 \pm 0.01$

Table Np68. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.3 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.456	113.0	60.7	1481.8	626.5
2	0.002	4.568	65.4	61.0	1523.8	576.5
3	0.004	4.669	61.6	63.8	1560.3	584.0
4	0.006	4.695	54.1	111.3	1551.9	652.4
5	0.008	4.681	64.8	84.6	1347.0	657.0
6	0.012	4.680	60.8	66.7	1310.1	689.6
7	0.016	4.696	59.9	64.5	1306.2	737.4
8	0.016	4.723	68.9	65.5	1436.1	765.4

$\log \beta_{101} = 2.69 \pm 0.01$

Table Np69. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 0.5 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.361	31.6	29.2	1661.5	184.1
2	0.002	5.440	31.7	38.2	1588.4	235.8
3	0.004	5.442	29.4	32.1	1474.8	346.1
4	0.006	5.425	31.6	28.3	1378.1	404.4
5	0.008	5.443	33.1	42.0	1277.4	512.0
6	0.010	5.452	31.5	30.6	1193.4	582.9
7	0.012	5.454	32.0	30.4	1104.6	662.3
8	0.016	5.497	30.2	31.7	981.3	742.1
9	0.020	5.526	30.4	32.9	937.6	864.4

$\log \beta_{101} = 2.73 \pm 0.01$

Table Np70. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 1 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.462	30.1	32.9	1252.7	449.5
2	0.002	5.467	35.5	36.7	1152.9	642.8
3	0.004	5.494	33.4	30.9	978.4	754.6
4	0.006	5.504	34.7	34.2	878.6	883.0
5	0.008	5.501	35.2	32.5	757.6	939.2
6	0.010	5.534	28.8	28.0	757.1	953.5
7	0.012	5.548	32.7	30.7	706.8	980.8
8	0.012	5.576	27.6	33.0	698.4	1028.4
9	0.016	5.582	34.9	29.1	659.8	1031.9

$\log \beta_{101} = 2.71 \pm 0.01$

Table Np71. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 1 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.919	60.7	117.0	1943.0	309.6
2	0.002	4.845	66.1	67.9	1789.8	340.6
3	0.004	4.862	67.1	64.8	1797.5	483.0
4	0.006	4.919	65.6	68.3	1438.4	429.9
5	0.008	4.933	84.0	68.3	1363.4	472.9
6	0.012	4.978	58.4	87.1	1291.7	558.8
7	0.016	5.069	60.9	65.3	1559.3	669.7
8	0.02	5.021	67.1	63.8	1164.9	649.9

$\log \beta_{101} = 2.76 \pm 0.01$

Table Np72. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 2 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.379	41.5	45.7	1852.3	347.7
2	0.002	5.384	28.2	30.8	1648.8	387.8
3	0.004	5.362	32.3	36.2	1545.2	437.1
4	0.006	5.393	41.6	25.3	1719.9	652.7
5	0.008	5.413	31.5	46.6	1348.3	823.3
6	0.010	5.415	42.5	45.0	1282.4	928.0
7	0.012	5.461	43.1	39.3	1138.3	1088.0
8	0.016	5.485	40.0	50.1	1056.7	1152.3
9	0.020	5.507	39.4	44.6	944.3	1202.9

$\log \beta_{101} = 2.83 \pm 0.01$

Table Np73. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 2 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.521	38.1	34.8	4091.0	414.5
2	0.002	4.458	42.6	40.1	3815.2	528.9
3	0.004	4.473	36.1	44.4	3759.5	546.8
4	0.006	4.476	38.4	43.8	3838.3	630.8
5	0.008	4.516	39.7	46.5	3627.8	602.2
6	0.010	4.559	39.9	48.4	4112.3	752.2
7	0.012	4.504	44.7	46.7	3159.7	689.2
8	0.016	4.524	44.7	34.5	3110.4	763.8
9	0.020	4.528	41.4	45.1	4445.6	978.8

$\log \beta_{101} = 2.79 \pm 0.02$

Table Np74. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 3 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.857	63.6	61.5	1833.6	161.6
2	0.002	4.831	64.0	89.1	1788.3	334.2
3	0.004	4.858	58.7	58.5	1524.1	378.1
4	0.004	4.868	68.4	68.0	1874.3	456.4
5	0.006	4.888	54.8	66.8	1671.2	476.6
6	0.008	4.899	62.2	63.5	1394.2	504.4
7	0.010	4.912	64.5	63.6	1412.0	589.5
8	0.012	4.955	53.5	151.8	1406.9	708.4
9	0.016	4.943	66.3	58.3	1342.7	753.5
10	0.020	4.998	70.7	63.2	1272.8	782.3

$\log \beta_{101} = 2.89 \pm 0.01$

Table Np75. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 4 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.427	41.9	42.8	2070.9	139.8
2	0.002	5.406	36.1	38.9	1679.0	393.8
3	0.004	5.440	45.7	44.7	1653.5	516.8
4	0.006	5.450	39.1	40.8	1638.4	606.4
5	0.008	5.469	40.2	47.0	1402.9	641.4
6	0.010	5.484	40.1	42.5	1409.0	760.0
7	0.012	5.497	41.5	44.0	1466.7	759.4
8	0.016	5.514	46.6	43.7	1358.2	718.8
9	0.020	5.521	43.2	41.9	1315.5	643.6

$\log \beta_{101} = 2.95 \pm 0.02$

Table Np76. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 5 m $NaClO_4$ at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.086	78.6	77.2	1786.0	115.5
2	0.0	4.416	70.6	75.8	1731.0	91.7
3	0.002	4.482	70.8	70.6	1708.5	188.1
4	0.004	4.527	71.5	66.2	1706.7	189.2
5	0.004	4.506	66.4	68.8	1704.2	273.5
6	0.006	4.621	61.2	72.9	1623.5	238.9
7	0.008	4.659	65.0	64.1	1675.9	305.4
8	0.008	4.661	70.7	62.9	1587.4	285.9
9	0.010	4.652	111.5	63.0	1899.7	344.7
10	0.012	4.696	68.0	65.9	1537.1	419.0
11	0.016	4.745	60.8	62.4	1424.6	481.6
12	0.020	4.726	57.0	68.7	1617.7	621.9

log β_{101} = 3.06±0.02

Table Np77. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 5 m $NaClO_4$ at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.519	30.5	36.8	1896.7	383.6
2	0.002	5.806	34.6	33.9	1690.4	414.3
3	0.004	5.849	29.3	33.2	1577.3	479
4	0.006	5.889	30.2	27.2	1740.8	703.9
5	0.008	5.841	32.9	51.5	1365.4	880.2
6	0.010	5.844	34.6	29.2	1290.6	977.9
7	0.012	5.838	35.6	36.2	1165.1	1138.8
8	0.016	5.852	30.5	30.5	1055.6	1225.1
9	0.020	5.859	30.1	31.1	935.1	1268.5

log β_{101} = 3.00±0.02

Table Np78. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 5 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.832	57.8	57.2	1785.9	78.9
2	0.002	4.630	60.1	62.7	1731.4	192.2
3	0.004	4.688	56.5	67.5	1664.7	220.9
4	0.006	4.710	77.9	61.6	1952.8	347.5
5	0.008	4.742	66.1	70.3	1618.3	379.6
6	0.012	4.799	59.3	96.6	1571.4	493.0
7	0.016	4.793	58.9	75.1	1658.6	741.1
8	0.020	4.822	69.2	93.7	1473.1	730.8

$\log \beta_{101} = 3.04 \pm 0.01$

Table Np79. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 7 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.179	31.7	34.8	1162.3	58.2
2	0.002	5.237	30.9	31.2	1855.0	154.7
3	0.004	5.241	34.4	35.7	1683.1	251.9
4	0.006	5.323	27.8	31.0	1276.3	210.3
5	0.008	5.301	36.2	30.4	1481.5	360.3
6	0.010	5.313	30.0	30.6	1239.3	386.5
7	0.012	5.307	34.1	30.1	1195.0	452.5
8	0.016	5.428	31.3	29.7	924.3	305.3
9	0.020	5.389	32.2	27.2	1122.5	580.1

$\log \beta_{101} = 3.25 \pm 0.01$

Table Np80. Solvent Extraction Data for Apparent Stability Constants of Neptunium with Citrate in 7 m $NaClO_4$ at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.01 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.958	30.7	28.8	1663.5	83.3
2	0.002	5.054	29.1	33.0	1635.4	150.7
3	0.004	5.042	32.4	29.8	1542.0	221.2
4	0.006	5.038	30.9	31.5	1437.5	282.5
5	0.008	5.034	28.1	28.3	1422.8	340.7
6	0.010	5.045	31.5	28.1	1312.9	324.6
7	0.012	5.066	30.1	29.6	1236.7	368.6
8	0.016	5.056	28.8	32.4	1206.9	262.8
9	0.020	5.047	36.6	31.5	1082.1	281.5

$\log \beta_{101} = 3.14 \pm 0.01$

Table Np81. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.890	51.5	55.0	937.5	1502.7
2	0.00015	4.810	52.9	56.2	645.7	1866.8
3	0.00030	4.896	56.9	56.2	633.6	1884.6
4	0.00030	4.827	51.6	56.6	635.8	1873.1
5	0.00059	4.888	53.2	53.6	569.9	1869.5
6	0.00059	4.833	56.1	58.0	551.6	1902.7
7	0.00089	4.882	60.9	53.2	531.3	1986.2
8	0.00148	4.949	52.2	60.3	415.6	2046.2
9	0.00148	5.029	53.8	55.5	457.4	1987.2
10	0.00148	5.016	54.2	59.6	499.0	2017.8

$\log \beta_{101} = 8.02 \pm 0.05$

Table Np82. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.433	56.3	85.9	2599.9	1257.3
2	0.0	4.470	79.4	67.9	2287.3	1148.4
3	0.00015	4.406	56.7	95.7	1723.5	1974.9
4	0.00015	4.437	49.5	51.1	1601.0	1840.1
5	0.00030	4.424	54.1	66.6	1596.2	2524.3
6	0.00030	4.446	54.9	56.3	1423.4	2100.4
7	0.00044	4.461	94.2	54.4	1456.6	2256.4
8	0.00044	4.431	59.0	57.7	1164.2	2285.4
9	0.00059	4.404	94.6	85.7	1248.5	2265.1
10	0.00059	4.407	60.7	57.7	1357.1	2806.6
11	0.00089	4.433	82.4	56.3	1326.0	2651.0
12	0.00089	4.426	53.2	57.1	1033.8	2445.8
13	0.00118	4.432	55.0	60.9	1075.2	2688.5
14	0.00118	4.535	55.1	49.2	898.3	2646.9
15	0.00148	4.508	54.5	68.7	813.7	2720.2
16	0.00148	4.507	80.6	58.5	892.1	2568.7

$\log \beta_{101} = 8.55 \pm 0.03$

Table Np83. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.694	32.4	33.5	1944.9	260.9
2	0.0001	5.698	31.3	32.2	1880.4	384.3
3	0.0002	5.695	32.7	30.8	1617.5	550.1
4	0.0003	5.704	30.6	30.6	1608.2	593.7
5	0.0004	5.705	32.3	32.3	1362.5	669.2
6	0.0006	5.705	32.3	30.3	1306.2	797.7
7	0.0008	5.702	36.0	33.0	1242.8	1013.7
8	0.0010	5.770	34.3	25.7	954.3	1152.1

$\log \beta_{101} = 7.30 \pm 0.02$

Table Np84. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.898	32.7	30.3	501.4	397.1
2	0.00025	2.870	33.0	32.1	334.3	526.3
3	0.0005	2.805	28.8	32.2	221.1	638.7
4	0.0010	2.890	30.0	30.3	318.6	641.0
5	0.0010	2.848	27.7	31.6	304.0	612.8
6	0.0020	2.856	31.1	30.8	231.0	639.1
7	0.0020	2.975	29.0	31.4	313.1	644.6
8	0.0040	3.034	31.8	30.8	217.2	653.8
9	0.0030	3.096	32.0	31.1	250.2	620.5
10	0.0080	3.106	36.1	32.5	194.1	779.5

$\log \beta_{101} = 11.59 \pm 0.04$

Table Np85. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.408	32.5	33.8	416.0	430.2
2	2.50×10^{-5}	6.432	29.9	30.6	330.0	453.4
3	5.00×10^{-5}	6.456	32.3	31.2	277.4	566.2
4	5.00×10^{-5}	6.490	29.4	30.9	305.7	527.3
5	0.00010	6.364	30.3	34.1	234.7	624.9
6	0.00015	6.398	33.1	34.2	158.5	692.7
7	0.00020	6.450	29.5	30.2	149.4	709.0
8	0.00020	6.489	35.4	34.5	152.1	709.1

$\log \beta_{101} = 6.899 \pm 0.02$

Table Np86. Solvent extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.715	33.0	34.0	1863.5	798.9
2	0.001	3.675	35.2	32.4	1463.6	1068.3
3	0.002	3.670	33.1	37.0	1325.3	1137.8
4	0.003	3.690	33.2	34.0	914.0	1670.4
5	0.004	3.699	35.4	33.6	935.2	1699.3
6	0.006	3.694	30.8	29.5	543.9	2011.6
7	0.008	3.697	33.6	33.0	540.2	1963.0
8	0.010	3.680	34.0	29.9	369.3	2169.5

log β_{101} = 10.19±0.06

Table Np87. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.757	30.7	35.5	100.4	3430.1
2	$2.5x10^{-5}$	6.783	33.2	34.6	90.8	4003.2
3	$5.0x10^{-5}$	6.854	29.7	35.1	110.0	6041.3
4	0.00010	6.798	31.4	28.7	35.9	1412.6
5	0.00015	6.980	31.0	29.3	33.6	2422.1
6	0.00025	6.812	33.9	34.0	45.3	2470.2

log β_{101} = 7.1±0.1

Table Np88. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.910	32.0	35.6	1329.2	1289.9
2	0.00025	5.910	38.1	31.7	661.9	1916.6
3	0.00050	5.907	31.9	34.8	442.4	2164.5
4	0.00075	5.914	32.8	33.0	345.3	2382.5
5	0.00125	5.889	29.4	36.3	240.8	2311.3
6	0.00125	5.916	34.9	33.7	270.2	2414.1
7	0.00250	5.908	33.2	31.3	142.4	2398.5
8	0.00250	5.890	34.5	28.7	148.4	2428.5
9	0.00200	5.907	27.8	35.4	179.0	2404.0

log β_{101} = 6.979±0.01

Table Np89. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	6.211	31.4	30.6	2078.6	474.1
2	0.00025	6.196	34.7	31.2	240.6	2336.0
3	0.00050	6.165	38.7	33.3	261.2	2490.8
4	0.00075	6.177	27.4	33.7	117.3	2426.4
5	0.00100	6.184	34.1	35.7	105.9	2494.9
6	0.00150	6.179	35.8	34.0	102.4	2489.9
7	0.00250	6.185	32.3	34.1	63.7	2441.9
8	0.00250	6.176	33.9	30.2	71.3	2474.5
9	0.0	6.203	28.7	33.9	2094.1	486.2

$\log \beta_{101} = 6.881 \pm 0.02$

Table Np90. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	5.608	33.0	29.1	913.6	108.3
2	0.00025	5.600	30.9	26.3	610.9	370.1
3	0.00050	5.603	31.2	33.9	417.0	569.4
4	0.00075	5.582	33.7	30.7	292.6	639.4
5	0.0010	5.606	28.0	33.5	235.1	745.0
6	0.00125	5.604	32.4	34.4	177.1	786.4
7	0.0015	5.608	31.9	30.2	166.8	846.8
8	0.0020	5.612	30.2	30.9	121.4	830.7
9	0.0025	5.598	33.1	30.6	115.9	852.3

$\log \beta_{101} = 7.51 \pm 0.03$

Table Np91. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	5.266	29.9	31.2	798.7	192.2
2	0.0005	5.286	32.8	29.5	564.6	426.3
3	0.0010	5.286	28.3	28.6	329.4	545.4
4	0.0015	5.291	30.9	29.6	323.6	626.6
5	0.0020	5.275	31.8	26.7	218.2	736.5
6	0.0025	5.302	31.0	29.0	285.7	999.6
7	0.0030	5.293	28.8	33.7	170.9	769.5
8	0.0040	5.293	30.2	30.3	155.2	866.6
9	0.0050	5.311	29.4	31.4	122.8	870.3

$\log \beta_{101} = 7.76 \pm 0.03$

Table Np92. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.231	32.0	29.9	1646.5	1247.6
2	0.0005	3.252	31.5	36.9	948.6	1925.0
3	0.0010	3.282	29.8	32.6	791.0	2127.5
4	0.0015	3.361	33.6	34.2	756.8	2057.5
5	0.0020	3.330	32.9	32.5	623.3	1786.5
6	0.0030	3.299	32.9	29.0	627.6	2184.6
7	0.0040	3.292	33.2	32.5	600.0	2176.1
8	0.0050	3.283	28.9	31.8	732.4	2124.2

log β_{101} = 10.81±0.10

Table Np93. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.235	33.0	32.6	1853.4	961.3
2	0.00025	4.232	30.3	31.7	1067.2	1620.5
3	0.0005	4.224	33.8	36.6	890.5	1773.9
4	0.00075	4.297	33.2	30.2	837.4	1739.7
5	0.0012	4.346	30.4	31.1	665.4	2096.6
6	0.0015	4.239	29.5	30.9	571.9	2030.8
7	0.0020	4.327	28.8	29.5	396.1	1812.1
8	0.0025	4.222	30.8	29.8	457.0	2060.3

log β_{101} = 9.22±0.03

Table Np94. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.367	34.7	27.9	2845.8	1032.5
2	0.0005	4.468	37.9	29.5	2086.1	1930.9
3	0.0010	4.420	32.3	31.1	1699.8	2352.3
4	0.0015	4.519	28.5	30.1	1805.2	2203.7
5	0.0020	4.527	29.8	31.3	1643.0	2548.9
6	0.0030	4.547	29.7	40.9	1352.8	2671.2
7	0.0040	4.691	33.3	28.2	873.9	3055.2
8	0.0050	4.603	26.6	33.3	866.5	3209.3

log β_{101} = 8.60±0.01

Table Np95. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.078	31.1	31.5	3608.1	551.4
2	0.00025	5.077	32.4	32.7	3160.9	940.6
3	0.00050	5.083	31.3	29.0	2678.1	1367.9
4	0.00075	5.078	34.4	30.2	2166.5	1918.8
5	0.00120	5.090	29.0	33.2	2271.0	1713.8
6	0.00150	5.148	29.8	29.3	1477.1	2361.0
7	0.00200	5.130	30.9	25.5	1250.7	2101.2
8	0.00250	5.128	33.3	31.2	1166.6	2829.4

log β_{101} = 7.96±0.03

Table Np96. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.272	29.9	33.1	1873.3	2282.1
2	0.0	3.284	28.3	30.2	1789.0	2373.0
3	0.001	3.329	33.4	28.8	1028.3	3090.3
4	0.002	3.329	31.4	29.5	1102.2	3103.7
5	0.002	3.293	34.4	30.1	1206.5	2919.1
6	0.003	3.307	31.1	28.9	794.2	3340.6
7	0.004	3.314	33.5	33.8	697.4	3544.2
8	0.006	3.394	33.2	29.4	397.3	3446.9
9	0.008	3.302	38.7	34.3	428.9	3626.5
10	0.010	3.340	31.2	29.3	506.4	3836.6

log β_{101} = 10.86±0.02

Table Np97. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.390	32.4	33.5	2931.9	1230.5
2	0.001	4.410	31.3	32.2	1736.6	2346.7
3	0.002	4.415	32.7	30.8	1210.5	2873.1
4	0.003	4.416	30.6	30.6	1037.2	2811.5
5	0.004	4.408	32.3	32.3	699.2	2790.0
6	0.002	4.405	32.3	30.3	1464.0	2616.9
7	0.004	4.380	36.0	33.0	846.6	3244.8
8	0.010	4.380	34.3	25.7	465.1	3615.4

log β_{101} = 8.73±0.02

Table Np98. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.715	155.4	108.9	1940.0	270.3
2	0.0005	4.708	94.4	134.9	1957.0	411.8
3	0.0010	4.700	172.1	256.2	1872.1	580.3
4	0.0015	4.701	238.2	321.8	1922.7	739.7
5	0.0020	4.700	144.3	314.8	1683.3	802.4
6	0.0030	4.698	535.7	22.9	1879.2	631.3
7	0.0040	4.696	443.4	319.6	1770.4	991.9
8	0.0050	4.698	178.9	276.8	1419.1	1073.8

$\log \beta_{101} = 8.38 \pm 0.01$

Table Np99. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 0.3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane.

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.925	257.5	70.6	2152.8	229.2
2	0.001	3.916	338.0	269.9	2071.9	517.2
3	0.002	3.908	113.5	348.2	1920.5	669.4
4	0.003	3.899	198.7	294.1	1755.0	712.5
5	0.004	3.895	252.9	183.9	1784.5	657.8
6	0.006	3.891	176.1	250.8	1558.6	810.9
7	0.008	3.880	110.5	171.8	1407.0	832.6
8	0.010	3.872	231.8	96.1	1465.4	350.4

$\log \beta_{101} = 9.67 \pm 0.02$

Table Np100. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.996	69.1	58.3	2519.6	319.8
2	0.00015	5.028	66.3	60.9	2401.2	693.4
3	0.0003	5.010	66.6	64.8	1719.5	830.4
4	0.00045	4.986	76.0	60.4	2203.1	1304.9
5	0.0006	5.039	63.4	80.9	1060.6	1015.1
6	0.0009	5.012	76.8	58.7	1452.3	1517.8
7	0.0012	5.017	86.2	68.8	1239.3	1616.7
8	0.0015	5.015	59.3	63.6	1134.1	1716.9

$\log \beta_{101} = 7.92 \pm 0.02$

Table Np101. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.942	42.7	52.0	1696.8	846.9
2	0.000125	5.954	33.7	36.3	452.0	2124.4
3	0.00025	5.942	107.7	39.4	325.4	2395.7
4	0.000375	5.946	43.2	46.0	183.1	2503.6
5	0.00050	5.953	82.7	28.7	180.2	2423.7
6	0.00075	5.973	30.4	30.0	97.1	2330.6
7	0.0010	5.979	29.0	30.1	79.9	2488.4
8	0.00125	5.986	38.8	33.5	64.1	2311.6

log β_{101} = 7.08±0.01

Table Np102. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.680	30.7	34.9	1515.3	1277.0
2	0.00075	3.766	42.7	55.8	822.2	1791.2
3	0.00075	3.607	41.3	80.8	853.8	1897.1
4	0.0015	3.608	52.8	39.8	580.7	2127.7
5	0.001	3.622	42.5	39.6	697.3	1981.2
6	0.001	3.628	52.8	46.2	1369.0	3728.8
7	0.002	3.615	45.2	36.9	531.5	2050.8
8	0.002	3.613	39.5	56.1	524.0	2077.8

log β_{101} = 10.20±0.05

Table Np103. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.401	30.2	32.3	2191.0	685.4
2	0.00025	4.406	32.9	31.5	1970.0	832.4
3	0.0005	4.390	28.8	176.3	1782.4	1133.3
4	0.00075	4.406	32.8	57.2	1650.0	1201.8
5	0.0010	4.379	33.4	32.5	1538.1	1275.1
6	0.0015	4.386	32.7	40.5	1235.8	1581.7
7	0.0020	4.413	52.3	33.1	961.0	1812.2
8	0.0025	4.415	32.1	23.4	751.7	1957.8

log β_{101} = 8.93±0.05

Table Np104. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.695	30.2	31.9	974.1	1562.9
2	0.0005	5.643	26.6	32.3	220.3	2329.2
3	0.0005	5.659	29.4	35.6	184.5	2331.1
4	0.00075	5.663	26.2	34.6	186.5	2454.7
5	0.00125	5.640	32.3	25.4	115.3	2257.7
6	0.00125	5.712	30.7	28.5	140.7	2446.7
7	0.0020	5.704	25.2	33.7	93.4	2440.3
8	0.0020	5.748	36.8	30.7	103.4	2380.8

log β_{101} = 6.95±0.02

Table Np105. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.123	34.4	36.9	1674.9	1118.4
2	0.001	4.165	30.9	108.4	842.4	1928.4
3	0.002	4.050	168.0	26.5	820.2	2201.9
4	0.003	4.142	27.2	35.8	456.3	2209.2
5	0.004	4.096	31.3	33.3	411.4	2347.1
6	0.006	4.167	42.4	78.7	284.6	2543.8
7	0.008	4.129	39.6	29.1	239.8	2424.4
8	0.01	4.146	37.2	54.8	271.9	2519.7

log β_{101} = 9.21±0.01

Table Np106. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.311	28.9	28.5	2498.1	362.1
2	0.00025	5.335	40.4	31.0	1823.4	1022.1
3	0.0005	5.304	67.4	37.4	1466.6	1479.8
4	0.00075	5.306	53.4	42.5	964.8	1801.6
5	0.001	5.316	95.5	30.1	718.7	1945.3
6	0.0015	5.299	27.4	29.5	455.6	1841.8
7	0.002	5.311	27.5	24.4	371.3	2305.3
8	0.002	5.306	113.2	29.9	480.4	2246.3

log β_{101} = 7.61±0.02

Table Np107. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.289	46.8	30.5	1179.3	1572.2
2	0.001	3.277	33.6	29.8	545.4	1997.7
3	0.002	3.272	39.2	34.1	440.5	2267.9
4	0.003	3.281	145.3	52.7	620.9	2219.6
5	0.004	3.284	51.6	47.9	450.2	2152.7
6	0.006	3.268	33.9	40.9	503.5	2202.1
7	0.008	3.261	45.2	66.4	423.5	2237.9
8	0.010	3.268	48.5	39.2	524.2	1908.7

log β_{101} = 10.98±0.03

Table Np108. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.319	35.0	36.3	1242.8	1500.0
2	0.0005	3.418	34.2	38.8	905.5	1782.1
3	0.00025	3.473	32.6	36.0	1124.7	1549.9
4	0.0010	3.425	39.7	34.4	765.7	1931.9
5	0.00075	3.46	37.2	33.7	739.6	1726.2
6	0.0015	3.451	30.6	32.8	657.6	1998.1
7	0.0005	3.386	31.7	33.7	807.3	1799.3
8	0.0020	3.451	36.7	34.7	955.3	1729.3

log β_{101} = 10.58±0.03

Table Np109. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.046	55.5	75.1	661.6	1520.3
2	0.00015	3.095	66.6	70.0	802.8	2044.8
3	0.0003	3.004	151.1	61.6	560.1	1832.4
4	0.0003	3.004	58.5	63.2	553.9	2402.0
5	0.00045	2.993	68.2	62.2	466.4	2023.3
7	0.0006	2.981	78.8	62.5	458.1	2183.2
8	0.0009	2.964	74.6	97.7	403.5	2228.8
9	0.0012	2.910	80.6	75.0	370.6	2445.4
10	0.0012	2.990	142.8	66.7	416.1	2115.5

log β_{101} = 10.58±0.03

Table Np110. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.663	95.2	56.1	2376.7	407.7
2	0.00015	5.655	51.6	50.6	1288.7	1428.4
3	0.0003	5.641	53.7	49.1	780.9	1922.9
4	0.00045	5.646	50.8	69.4	494.6	2157.0
5	0.0006	5.649	72.9	47.1	393.7	2264.9
6	0.0009	5.650	49.2	53.3	308.8	2312.9
7	0.0012	5.650	57.6	47.3	209.4	2450.6
8	0.0015	5.648	48.0	50.7	176.3	2521.7

log β_{101} = 7.25±0.02

Table Np111. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.254	56.4	71.6	2548.5	278.9
2	0.00025	5.267	56.2	57.5	2476.2	556.9
3	0.00025	5.263	42.6	47.0	2247.0	673.2
4	0.0005	5.235	58.2	53.7	1860.4	972.3
5	0.00075	5.256	47.1	48.7	1718.8	1171.1
6	0.0012	5.253	55.9	45.6	1271.3	1661.0
7	0.0020	5.262	46.3	49.2	915.2	1883.7
8	0.0025	5.285	55.4	57.1	733.1	2140.9

log β_{101} = 7.70±0.02

Table Np112. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.100	43.2	42.6	2148.3	709.6
2	0.000125	6.134	34.6	44.6	214.6	2455.6
3	0.00025	6.056	66.5	32.3	181.1	2480.5
4	0.000375	6.068	40.8	42.4	129.2	2605.0
5	0.00050	6.110	36.6	41.0	118.1	2570.7
6	0.00075	6.062	52.2	56.8	111.6	2596.1
7	0.00100	6.066	34.9	38.6	81.0	2557.6
8	0.00125	6.104	41.3	45.9	86.4	2569.9

log β_{101} = 6.85±0.02

Table Np113. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.430	38.1	40.7	672.9	1568.6
2	$3.75x10^{-5}$	6.442	34.4	110.6	235.4	2123.6
3	$7.50x10^{-5}$	6.434	32.0	36.4	145.4	2236.1
4	0.000113	6.425	32.8	56.6	110.0	2443.9
5	0.00015	6.492	45.3	42.7	94.3	2489.0
6	0.000188	6.493	50.7	33.7	87.3	2409.5
7	0.000225	6.487	92.6	39.1	130.0	2440.6
8	0.00030	6.497	36.9	38.5	54.6	2475.6

log β_{101} = 6.77±0.02

Table Np114. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.633	40.6	45.3	2347.8	471.9
2	0.000125	5.632	29.0	48.2	1823.5	844.3
3	0.00025	5.648	44.9	46.6	1616.7	1196.7
4	0.000375	5.643	28.9	30.4	1319.6	1471.7
5	0.00050	5.637	32.8	32.3	1038.0	1702.9
6	0.00075	5.635	29.4	33.7	758.5	1959.2
7	0.0010	5.647	36.2	27.7	602.8	2063.9
8	0.00125	5.655	35.4	26.4	493.2	2250.0

log β_{101} = 7.25±0.02

Table Np115. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.894	37.3	31.0	2557.0	325.1
2	0.00025	4.875	44.1	42.6	2397.0	569.7
3	0.0005	4.879	28.2	33.1	2133.2	713.0
4	0.00075	4.881	28.6	35.0	1942.7	923.2
5	0.0010	4.882	34.3	51.4	1715.3	1093.7
6	0.0015	4.886	42.1	30.5	1394.6	1436.9
7	0.0020	4.883	35.3	76.9	1110.8	1658.5
8	0.0025	4.883	27.5	37.8	996.1	1867.6

log β_{101} = 8.17±0.02

Table Np116. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 1 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
51	0.0	5.887	68.4	71.4	2278.8	346.2
52	3.0×10^{-5}	5.697	67.8	64.4	2306.0	397.2
53	7.5×10^{-5}	5.501	75.6	69.0	2183.4	443.8
54	0.00015	5.548	97.4	80.6	2053.6	563.4
55	0.0003	5.209	66.0	94.2	1827.4	875.6
56	0.0006	5.266	74.4	76.0	1381.4	1199.2
57	0.0009	5.182	72.6	74.2	1034.6	1539.0
58	0.0012	5.091	73.0	70.8	810.8	1759.6
59	0.0015	5.133	74.8	92.4	695.4	2023.0
60	0.0	5.731	99.8	91.4	1961.7	603.7
61	3.0×10^{-5}	5.239	97.2	85.2	2039.6	944.5
62	7.5×10^{-5}	5.360	91.8	96.8	1703.3	656.8
63	0.00015	5.127	95.0	87.2	1837.0	791.9
64	0.0003	4.884	92.4	89.8	1571.3	950.3
65	0.0006	5.017	99.0	96.6	1277.5	1311.7
66	0.0009	4.893	94.6	110.0	1006.7	1599.6
67	0.0012	4.952	92.6	93.8	703.4	1624.2

log β_{101} = 7.72±0.05

Table Np117. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.739	49.6	52.7	3016.3	438.4
2	0.0	4.805	48.8	51.2	3940.2	531.4
3	0.000143	4.780	52.8	48.6	3156.2	855.5
4	0.000286	4.801	47.9	51.6	4986.6	1746.7
5	0.000286	4.835	53.7	50.2	3372.9	1013.6
6	0.000573	4.851	49.0	48.4	1992.2	1628.1
7	0.000716	4.869	49.1	54.2	1789.8	1681.2
8	0.000859	4.842	47.6	47.9	1862.8	1783.5
9	0.00114	4.850	47.9	48.0	1127.0	1169.2
10	0.00143	4.859	48.6	49.1	1521.9	2037.0

log β_{101} = 7.79±0.03

Table Np118. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.620	53.3	50.2	1357.5	137.7
2	0.0	4.760	50.1	48.4	1512.6	133.8
3	0.000143	4.850	45.5	51.3	1046.1	224.2
4	0.000286	4.930	49.1	44.3	644.0	318.4
5	0.000286	4.950	49.8	47.1	822.8	408.4
6	0.000286	4.910	51.1	49.6	1370.7	318.0
7	0.000573	4.908	50.4	48.4	1120.9	699.4
8	0.000859	4.904	52.0	46.0	796.8	700.7
9	0.001146	4.930	48.6	47.7	769.5	942.7
10	0.001432	4.900	49.7	49.4	816.6	681.3

log β_{101} = 7.80±0.06

Table Np119. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.816	39.5	30.2	2125.3	1225.2
2	4.0×10^{-5}	3.639	40.9	37.6	1450.1	1849.0
3	8.0×10^{-5}	3.651	33.4	34.9	1275.5	2032.2
4	0.0001	3.729	34.4	30.1	1235.3	1980.4
5	0.0002	3.745	33.3	38.1	1083.6	2071.3
6	0.0002	3.763	34.2	39.3	1148.8	1888.0
7	0.0002	3.771	32.7	34.1	1395.7	2336.7
8	0.0006	3.758	37.6	30.7	610.5	2463.1

log β_{101} = 10.01±0.03

Table Np120. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.320	40.8	32.0	951.6	2215.3
2	0.00015	6.374	33.1	30.1	415.8	2518.8
3	0.0003	6.421	36.7	30.7	210.7	2755.1
4	0.00045	6.374	34.7	38.6	168.8	3217.2
5	0.0006	6.383	34.3	38.3	117.4	2992.1
6	0.0009	6.407	39.7	33.7	91.0	3108.2
7	0.0012	6.420	33.7	39.6	69.0	3104.9
8	0.0015	6.374	30.6	31.9	70.7	3366.6

log β_{101} = 6.06±0.03

Table Np121. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.645	29.7	35.8	1795.5	1400.7
2	0.0001	5.677	42.3	33.1	1477.4	1697.6
3	0.0002	5.717	33.6	37.7	980.4	2060.6
4	0.0003	5.690	30.1	32.6	918.6	2243.7
5	0.0004	5.730	36.8	35.9	710.3	2765.5
6	0.0005	5.712	36.4	40.1	617.2	2436.8
7	0.0006	5.724	31.7	42.5	445.1	1996.7
8	0.0008	5.727	34.1	31.2	441.3	2970.5
9	0.0010	5.727	37.4	33.3	342.4	2869.3

log β_{101} = 6.70±0.02

Table Np122. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.511	33.8	39.0	2311.9	1092.9
2	5.0×10^{-5}	5.472	28.3	34.2	1291.2	2063.8
3	0.0001	5.515	27.6	34.1	1232.2	2067.6
4	0.00015	5.505	33.5	33.8	1077.3	2223.4
5	0.0002	5.509	32.9	36.6	1032.6	2285.5
6	0.0003	5.510	36.8	33.4	980.9	2278.6
7	0.0005	5.512	30.9	37.9	652.3	2640.7
8	0.0004	5.510	34.7	33.7	909.5	2712.1

log β_{101} = 6.86±0.05

Table Np123. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 2 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.112	33.7	33.0	2623.3	919.5
2	5.0×10^{-5}	3.110	36.4	33.1	2344.7	1051.4
3	0.00025	3.100	31.9	37.6	1938.7	1368.0
4	0.0003	3.096	34.7	36.8	1881.7	1402.4
5	0.0005	3.097	33.0	31.6	1975.9	1852.8
6	0.0005	3.085	36.4	33.9	1848.0	1344.0
7	0.0010	3.083	33.7	31.7	1311.9	1896.6
8	0.0015	3.076	35.2	38.1	952.5	1958.6

log β_{101} = 11.21±0.02

Table Np124. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.508	60.2	79.8	1611.4	339.3
2	0.000141	4.602	57.4	60.3	995.8	954.9
3	0.000282	4.597	56.5	62.3	1106.2	738.2
4	0.000423	4.686	62.8	60.6	951.8	1167.9
6	0.000846	4.647	69.9	59.4	805.4	1253.5
7	0.00113	4.701	70.3	56.3	510.9	1280.8
8	0.00141	4.712	57.7	63.6	483.9	1505.9

log β_{101} = 7.62±0.02

Table Np125. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.961	45.8	53.9	2431.5	636.7
2	0.0	5.020	52.4	47.4	2424.3	608.2
3	0.000140	5.082	49.5	50.8	2306.8	1273.6
4	0.000280	5.120	49.8	53.6	1850.6	1581.2
5	0.000420	5.050	47.6	49.2	1648.5	1334.3
6	0.000560	5.060	50.3	47.0	1813.4	1667.8
7	0.000701	5.000	48.7	56.6	1793.0	1303.0
8	0.000841	5.120	50.1	45.8	1178.1	1478.9
9	0.001121	5.089	49.6	48.4	1513.3	1725.2
10	0.001402	5.071	51.2	51.6	1186.5	1650.1

log β_{101} = 6.9±0.1

Table Np126. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.640	51.0	87.9	1169.7	474.5
2	0.000140	5.012	53.1	112.3	1236.2	1041.9
3	0.000280	5.040	163.8	89.9	879.7	842.7
4	0.000420	4.910	50.5	63.2	895.0	620.4
5	0.000560	5.050	49.6	132.8	600.9	964.1
6	0.000701	4.990	53.5	93.6	584.8	816.8
7	0.000841	5.000	130.1	68.8	852.4	1142.5
8	0.000981	4.983	122.9	47.3	647.5	947.5
9	0.001121	5.020	59.5	51.3	503.1	949.0
10	0.001402	4.940	125.8	57.4	716.5	1132.3

log β_{101} = 7.09±0.02

Table Np127. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.040	52.6	50.0	1168.1	1451.6
2	0.0	3.038	59.2	55.4	1159.5	1410.1
3	0.00025	3.121	49.0	56.0	1122.2	1590.7
4	0.0005	3.188	51.2	54.4	1133.4	2102.4
5	0.00075	3.280	49.1	58.7	978.5	2076.0
6	0.0010	3.358	49.2	61.4	676.2	2313.1
7	0.00125	3.411	51.3	79.1	712.0	2188.9
8	0.0015	3.512	52.5	51.7	562.5	2585.0
9	0.0020	3.599	52.1	74.0	557.3	2245.7
10	0.0025	3.650	53.8	73.0	482.3	2304.3
11	0.0010	3.042	63.4	52.5	847.5	2146.7
12	0.0020	3.033	50.4	58.8	462.9	2474.1
13	0.0025	3.033	54.2	52.6	574.3	2381.8
14	0.0030	3.033	91.1	58.4	586.7	2392.0
15	0.0050	3.028	73.6	76.5	448.2	2374.2

$\log \beta_{101} = 10.75 \pm 0.02$

Table Np128. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.807	76.8	63.6	846.2	2093.2
2	0.000125	2.803	69.9	69.6	690.9	2240.6
3	0.00025	2.817	70.7	67.3	540.1	2220.0
4	0.00025	2.800	61.3	74.3	564.6	2160.6
5	0.000375	2.798	57.1	67.1	512.6	2477.0
6	0.00050	2.800	57.6	73.1	476.8	2399.2
7	0.000625	2.800	60.5	68.3	468.7	2469.1
8	0.00075	2.796	63.1	62.2	447.8	2548.4
9	0.0010	2.805	64.0	60.4	425.3	2496.6
10	0.00125	2.813	107.3	61.2	449.2	2507.6

$\log \beta_{101} = 11.30 \pm 0.03$

Table Np129. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.168	57.0	48.6	2661.5	527.5
2	0.00015	4.172	56.7	53.2	2515.6	680.2
3	0.0003	4.161	52.7	53.5	2186.2	806.4
4	0.00045	4.138	54.9	57.0	2280.2	880.9
5	0.0006	4.116	53.9	54.6	2076.4	956.4
6	0.0009	4.139	55.0	49.5	1948.0	1013.1
7	0.0012	4.148	53.9	49.9	2164.0	988.4
8	0.0015	4.150	58.7	53.7	2049.9	1124.2

log β_{101} = 6.46±0.02

Table Np130. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.514	55.4	54.9	2326.1	1028.1
2	3.75×10^{-5}	6.519	48.8	58.2	771.3	2014.5
3	7.50×10^{-5}	6.516	53.1	55.6	365.7	2444.3
4	0.000113	6.520	53.8	52.9	268.0	2742.1
5	0.00015	6.515	183.1	54.3	311.1	2413.6
6	0.000225	6.521	52.8	49.5	191.4	2767.9
7	0.0003	6.523	51.1	52.2	124.3	2775.4
8	0.000375	6.530	54.2	60.3	115.1	2512.1

log β_{101} = 6.01±0.04

Table Np131. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	7.400	61.3	67.9	581.8	2089.4
2	8.75×10^{-6}	7.374	68.9	61.9	506.0	2154.3
3	2.75×10^{-5}	7.435	66.6	62.8	230.2	2389.0
4	4.63×10^{-5}	7.413	60.8	66.2	138.4	2565.8
5	6.5×10^{-5}	7.413	65.4	58.2	110.8	2640.5
6	0.000103	7.404	65.0	54.8	87.4	2623.9
7	0.00015	7.439	77.3	61.0	87.7	2368.0
8	0.000188	7.423	66.9	66.4	91.3	2686.3

log β_{101} = 5.83±0.05

Table Np132. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	7.142	90.1	81.9	1094.5	1419.4
2	1.88×10^{-5}	6.995	91.0	74.8	630.0	2005.7
3	1.88×10^{-5}	7.105	74.0	75.3	980.8	1611.7
4	3.76×10^{-5}	7.103	82.7	71.7	827.9	1859.6
5	7.50×10^{-5}	7.142	72.2	71.8	522.3	2158.9
6	0.000113	7.158	67.1	79.0	413.8	2195.9
7	0.00015	7.153	67.6	71.7	194.4	2439.5
8	0.000188	7.163	80.7	73.5	136.3	2436.6

log β_{101} = 5.7±0.1

Table Np133. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.836	52.4	58.0	802.0	1825.2
2	3.75×10^{-5}	6.820	51.6	78.6	400.8	2370.5
3	7.50×10^{-5}	6.848	51.7	53.0	212.6	2657.9
4	0.000113	6.860	56.6	86.7	126.9	2607.9
5	0.00015	6.855	54.9	53.8	107.9	2536.0
6	0.000225	6.870	49.6	72.9	90.5	2635.7
7	0.0003	6.856	62.8	83.2	88.6	2569.5
8	0.000375	6.864	56.9	56.1	70.0	2550.6

log β_{101} = 5.82±0.02

Table Np134. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.710	49.2	56.0	2167.9	444.2
2	0.00015	5.590	74.5	53.5	944.5	1789.4
3	0.0003	5.586	53.7	52.4	539.1	2142.7
4	0.00045	5.584	55.9	60.7	424.0	2302.9
5	0.0006	5.564	57.1	88.2	289.3	2367.1
6	0.0009	5.544	62.2	59.3	263.5	2358.8
7	0.0012	5.529	58.5	54.7	219.2	2497.3
8	0.0015	5.505	147.3	68.6	273.8	2563.7

log β_{101} = 6.74±0.02

Table Np135. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.150	79.2	65.6	1518.9	1280.8
2	0.00025	3.133	73.8	69.7	1408.3	1489.4
3	0.0005	3.169	69.9	73.4	1223.9	1630.1
4	0.00075	3.167	48.2	68.9	1127.7	1744.6
5	0.0010	3.152	71.3	59.9	1143.2	1640.7
6	0.0015	3.160	72.2	67.6	1127.5	1675.3
7	0.0020	3.178	71.9	75.3	1079.1	1732.1
8	0.0025	3.168	66.3	63.6	1086.8	1737.4

$\log \beta_{101} = 10.20 \pm 0.15$

Table Np136. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.596	58.6	55.6	1517.0	1258.1
2	0.00025	3.305	56.2	57.0	908.6	1903.3
3	0.0005	3.494	77.3	51.5	1277.7	1779.2
4	0.00075	3.500	63.5	89.9	1050.2	1852.9
5	0.0010	3.485	59.2	60.0	918.8	1811.3
6	0.0015	3.464	63.6	141.5	873.8	1957.7
7	0.0020	3.429	83.0	81.9	968.9	1725.4
8	0.0025	3.403	87.6	101.2	682.9	1972.3

$\log \beta_{101} = 9.37 \pm 0.03$

Table Np137. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.112	68.5	65.3	1363.6	1262.1
2	3.75×10^{-5}	6.116	69.0	68.8	885.0	1907.5
3	7.50×10^{-5}	6.119	64.9	62.4	577.3	2180.9
4	0.000113	6.122	65.2	78.0	388.9	2215.8
5	0.000150	6.124	66.3	61.1	302.6	2370.1
6	0.000225	6.122	66.0	73.9	200.2	2336.3
7	0.00030	6.125	60.4	70.6	170.9	2605.0
8	0.000375	6.129	65.3	67.1	157.2	2616.9

$\log \beta_{101} = 6.30 \pm 0.03$

Table Np138. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.609	73.4	68.1	1363.6	1262.1
2	0.00015	3.696	54.1	64.3	885.0	1907.5
3	0.0003	3.635	75.2	316.1	577.3	2180.9
4	0.00045	3.722	55.0	72.7	388.9	2215.8
5	0.0006	3.717	55.0	55.8	302.6	2370.1
6	0.0009	3.697	55.2	51.2	200.2	2336.3
7	0.0012	3.719	61.5	49.1	170.9	2605.0
8	0.0015	3.706	54.3	54.4	157.2	2616.9

$\log \beta_{101} = 10.08 \pm 0.03$

Table Np139. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.336	68.6	65.9	1246.7	1313.1
2	3.75×10^{-5}	6.327	58.0	68.8	658.0	1971.0
3	7.50×10^{-5}	6.330	63.5	64.2	356.0	1994.0
4	0.00011	6.335	64.7	67.9	286.3	2467.8
5	0.00015	6.334	62.7	66.3	216.4	2439.0
6	0.00023	6.329	62.2	90.0	164.5	2616.4
7	0.00030	6.325	62.6	184.0	139.3	2745.3
8	0.00038	6.328	64.0	67.0	120.1	2616.0

$\log \beta_{101} = 6.22 \pm 0.02$

Table Np140. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 3 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.108	55.4	47.8	1594.3	883.7
2	5.0×10^{-5}	3.085	58.3	45.2	1678.4	979.8
3	0.0001	3.053	49.6	60.8	1655.5	1040.4
4	0.00015	3.012	49.8	45.6	1620.3	1041.6
5	0.00025	3.045	48.5	54.0	1721.5	1116.7
6	0.0	3.134	59.7	59.4	1784.8	840.6
7	0.0005	3.102	59.2	58.4	1542.4	1275.1
8	0.00075	3.181	50.9	64.1	1269.0	1393.1
9	0.0015	3.192	62.4	49.2	965.5	1520.6
10	0.0015	3.123	50.4	53.3	1062.5	1453.9
11	0.0015	3.106	49.3	48.7	1077.4	1641.3
12	0.002	3.132	45.7	50.0	818.9	1608.4

$\log \beta_{101} = 10.56\pm0.02$

Table Np141. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.948	66.9	59.3	964.5	327.4
2	0.000147	4.955	65.6	53.1	1307.8	648.1
3	0.000288	4.956	63.8	53.1	1102.9	708.3
4	0.000443	4.963	70.7	51.6	944.7	880.9
5	0.000590	4.931	78.3	58.9	973.8	913.8
6	0.000881	4.950	55.5	49.5	844.4	1096.4
7	0.001180	4.990	56.9	55.3	748.6	1213.8
8	0.001470	4.969	55.9	58.2	672.0	1199.7

$\log \beta_{101} = 6.99\pm0.02$

Table Np142. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	4.953	56.5	68.1	1912.0	677.5
2	0.000137	4.945	54.7	67.5	1535.5	1070.5
3	0.000275	4.954	59.3	57.1	1377.7	1194.2
4	0.000412	4.960	98.2	62.9	1287.6	1313.5
5	0.000549	4.948	54.9	57.2	1203.8	1441.8
6	0.000686	4.964	154.1	64.0	1200.8	1495.7
7	0.000824	4.951	56.7	58.0	1033.6	1534.9
8	0.000961	4.940	63.6	55.0	987.2	1492.9
9	0.001098	4.918	50.4	59.9	1003.5	1551.6
10	0.001373	4.919	54.8	54.4	859.1	1596.1

$\log \beta_{101} = 7.01 \pm 0.02$

Table Np143. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 4 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

Sample #	L_T, M	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0	2.501	43.3	42.2	435.2	1331.0
2	2.5×10^{-5}	2.493	43.9	38.1	437.7	1339.3
3	5.0×10^{-5}	2.469	46.6	43.8	432.2	1352.7
4	0.0001	2.528	41.2	42.0	405.2	1348.9
5	0.00025	2.464	48.0	46.8	340.0	1405.4
6	0.0004	2.714	35.7	43.0	286.6	1374.2
7	0.0006	2.730	39.0	37.5	265.7	1378.6
8	0.0008	2.750	35.8	37.5	227.9	1466.3
9	0.0010	2.748	36.8	40.1	330.5	1853.9

$\log \beta_{101} = 11.40 \pm 0.02$

Table Np144. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 4 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.390	38.8	36.1	848.1	853.1
2	0.00025	6.381	39.1	38.8	154.0	1392.6
3	0.00050	6.399	36.1	43.4	96.6	1518.3
4	0.00075	6.399	36.0	45.7	87.4	2039.5
5	0.0010	6.381	41.1	32.9	79.9	1571.0
6	0.0015	6.404	32.4	34.2	62.7	1447.5
7	0.0020	6.408	46.7	34.2	59.7	1604.3
8	0.0025	6.402	38.1	35.3	52.3	1564.7

log β_{101} = 5.61±0.02

Table Np145. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 4 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.472	34.8	36.2	635.1	1080.8
2	$5x10^{-5}$	3.307	40.8	38.1	458.1	1234.6
3	0.0001	3.346	32.3	33.0	413.0	1229.0
4	0.0001	3.368	36.0	32.1	407.4	1149.4
5	0.0002	3.346	34.0	32.5	356.1	1280.1
7	0.0004	3.344	37.9	37.7	306.3	1295.8
8	0.0006	3.404	30.2	37.4	249.8	1381.2
9	0.0008	3.430	36.5	32.4	208.6	1416.8
10	0.0010	3.450	33.8	42.6	201.9	1440.6

log β_{101} = 9.89±0.02

Table Np146. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 4 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.965	30.3	32.5	615.2	988.2
2	0.0001	6.941	38.0	32.8	166.5	1492.2
3	0.0002	7.055	29.9	33.1	92.9	1492.5
4	0.0004	6.912	33.9	37.9	65.8	1516.1
5	0.0005	6.940	32.2	38.1	65.3	1472.6
6	0.0006	6.986	37.0	39.7	54.7	1504.2
7	0.0010	7.007	35.1	34.3	50.1	1528.5

log β_{101} = 5.46±0.03

Table Np147. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.147	59.0	59.6	2053.1	392.0
2	0.0	5.103	101.2	61.8	2206.1	414.2
3	0.0	5.133	56.4	175.1	2073.2	653.5
4	0.000135	5.113	60.4	57.3	1742.5	725.1
5	0.000135	5.115	62.0	59.8	1695.2	763.3
6	0.00027	5.169	63.7	82.5	1463.2	966.1
7	0.00027	5.137	58.3	56.5	1539.3	962.2
8	0.00027	5.139	112.6	59.2	1630.2	915.1
9	0.00054	5.156	58.6	59.4	1273.0	1223.7
10	0.00054	5.154	80.8	81.9	1334.0	1147.6
11	0.00081	5.170	57.7	55.4	1086.4	1378.6
12	0.00081	5.139	56.2	110.9	1146.4	1359.4
13	0.00108	5.115	125.1	56.7	1302.8	1475.5
14	0.00108	5.132	57.2	59.7	1063.8	1354.0
15	0.00135	5.110	59.5	61.5	990.5	1392.2

log β_{101} = 6.90±0.02

Table Np148. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.166	89.4	51.5	2142.4	537.1
2	0.00027	5.112	56.1	56.6	2025.2	956.2
3	0.00027	5.138	56.3	52.6	1840.7	932.7
4	0.00027	5.111	69.1	56.8	1831.7	932.9
5	0.00054	5.109	97.2	60.9	1866.1	1202.8
6	0.00054	5.103	78.3	91.8	1888.8	1127.7
7	0.00081	5.132	55.7	135.4	2019.2	1285.5
8	0.00108	5.098	60.7	71.0	1314.1	1200.3
9	0.00135	5.106	54.8	53.9	1139.2	1258.0
10	0.00135	5.105	66.1	63.4	1552.8	1461.4

log β_{101} = 6.77±0.04

Table Np149. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.853	70.1	81.4	1346.7	2188.7
2	0.0	2.822	61.2	53.9	1558.4	1966.6
3	0.0005	2.845	98.0	56.1	1125.1	2374.3
4	0.001	2.845	86.5	95.8	1001.7	2609.8
5	0.0015	2.851	72.4	62.2	789.1	2770.6
6	0.002	2.841	60.4	60.3	733.6	2785.6
7	0.003	2.872	76.9	67.0	568.9	2972.8
8	0.004	2.878	72.6	67.6	541.0	2904.5
9	0.005	2.892	88.2	61.4	509.9	2885.3

$\log \beta_{101} = 10.70 \pm 0.02$

Table Np150. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.659	74.2	75.0	1910.8	1025.9
2	0.0	6.750	57.4	55.4	1890.2	999.6
3	0.0001	6.590	48.9	55.9	1045.6	1751.8
4	0.0001	6.485	55.3	53.9	996.6	1775.3
5	0.0002	6.515	53.8	52.0	472.0	2299.5
6	0.0002	6.516	65.3	59.9	549.4	2467.5
7	0.0003	6.584	52.2	55.1	233.2	2507.4
8	0.0003	6.599	59.0	53.5	246.0	2655.7
9	0.0	6.610	44.9	49.9	2051.5	1297.7
10	0.0	7.075	54.0	117.4	2081.1	1341.7
11	0.0006	6.775	51.7	50.7	119.4	2608.4
12	0.0006	6.770	51.9	55.6	124.1	2642.0
13	0.0008	6.727	48.3	63.1	104.3	2655.9
14	0.0008	6.807	55.6	59.8	101.8	2631.2
15	0.001	6.748	109.9	50.0	154.3	2616.2
16	0.001	6.863	49.4	101.7	84.8	2698.4

$\log \beta_{101} = 5.58 \pm 0.02$

Table Np151. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.759	69.8	65.4	1200.0	518.3
2	0.0001	6.788	63.6	66.3	504.8	961.8
3	0.0002	6.803	71.6	66.6	267.6	1567.9
4	0.0003	6.763	69.4	73.8	148.4	997.7
5	0.0004	6.807	69.0	69.3	130.4	1314.4
6	0.0006	6.871	87.3	70.7	152.5	1591.5
7	0.0008	7.010	98.0	72.6	155.1	1490.2
8	0.0010	7.080	66.6	66.3	120.5	1408.3

$\log \beta_{101} = 5.46 \pm 0.02$

Table Np152. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.433	58.6	62.7	1308.6	710.0
2	0.00015	5.424	73.6	58.7	759.3	1266.3
3	0.0003	5.450	60.1	59.7	597.4	1427.2
4	0.00045	5.445	77.2	89.4	568.3	1450.1
5	0.0006	5.457	62.0	68.9	473.8	1557.6
6	0.0009	5.459	59.8	79.6	405.9	1557.1
7	0.0012	5.469	56.2	87.2	354.2	1697.9
8	0.0015	5.482	59.1	65.7	272.9	1694.5

$\log \beta_{101} = 6.56 \pm 0.02$

Table Np153. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.704	76.0	58.5	854.5	613.6
2	$1.5 \cdot 10^{-5}$	6.691	61.2	72.8	1116.0	1220.6
3	$3.0 \cdot 10^{-5}$	6.696	55.3	67.5	951.1	1067.8
4	$4.5 \cdot 10^{-5}$	6.702	74.6	55.1	792.6	1161.0
5	$6.0 \cdot 10^{-5}$	6.698	56.8	64.2	632.3	1301.2
6	$9.0 \cdot 10^{-5}$	6.706	67.5	137.0	412.6	1677.8
7	0.00012	6.698	62.7	56.4	352.5	1632.1
8	0.00015	6.710	60.7	68.3	217.1	1754.9

$\log \beta_{101} = 5.56 \pm 0.05$

Table Np154. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	6.165	58.2	64.0	1212.7	756.3
2	$6.0 \cdot 10^{-5}$	6.167	94.8	75.1	833.6	1321.6
3	$9.0 \cdot 10^{-5}$	6.161	75.5	57.4	662.9	1455.8
4	0.00012	6.163	79.3	82.6	510.6	1618.5
5	0.00015	6.165	70.6	57.5	424.2	1671.5
6	0.00018	6.169	62.5	66.1	323.1	1695.3
7	0.00024	6.165	57.1	63.3	274.9	1764.9
8	0.00030	6.165	68.3	58.8	223.8	1769.5

$\log \beta_{101} = 6.08 \pm 0.05$

Table Np155. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	4.016	58.5	57.4	1641.0	390.0
2	0.00015	4.037	88.4	62.5	946.4	986.3
3	0.0003	4.010	82.6	62.8	779.5	1108.0
4	0.00045	4.007	71.6	56.8	813.4	1209.5
5	0.0006	3.978	60.3	53.2	762.9	1210.8
6	0.0009	4.000	61.2	65.2	723.9	1283.0
7	0.0012	3.994	60.2	61.2	642.0	1360.9
8	0.0015	3.987	59.1	59.8	562.4	1445.4

$\log \beta_{101} = 8.54 \pm 0.04$

Table Np156. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	5.950	55.5	65.4	1244.8	782.1
2	$6.0 \cdot 10^{-5}$	5.957	63.9	80.3	794.8	1146.1
3	0.00012	5.957	73.1	72.3	499.0	1302.9
4	0.00018	5.968	60.1	63.5	344.4	1402.3
5	0.0001	5.977	65.3	74.3	646.0	1276.4
6	0.0003	5.921	84.4	52.8	233.5	1371.2
7	0.0004	5.935	69.8	59.8	200.0	1253.5
8	0.0005	5.939	61.8	56.0	174.8	1482.4

$\log \beta_{101} = 6.24 \pm 0.03$

Table Np157. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	7.242	71.6	75.7	1044.6	940.9
2	1.5×10^{-5}	7.237	81.3	66.2	910.9	1161.8
3	3.0×10^{-5}	7.231	63.6	55.1	889.4	1124.8
4	6.0×10^{-5}	7.233	131.0	68.6	637.1	1448.3
5	9.0×10^{-5}	7.237	98.8	60.4	372.7	1568.4
6	0.00015	7.248	59.2	64.7	198.2	1797.7
7	0.00015	7.242	70.7	76.0	202.2	1768.4
8	9.0×10^{-5}	7.160	54.3	58.1	157.1	671.2
9	0.00024	7.058	49.9	59.0	136.2	1868.9
10	0.0003	7.238	87.6	57.9	133.2	1862.5

log β_{101} = 5.48±0.02

Table Np158. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	7.445	62.8	52.2	908.6	2138.1
2	$1.0\cdot10^{-5}$	7.407	57.4	56.5	905.1	2135.5
3	$3.0\cdot10^{-5}$	7.452	57.0	54.0	563.0	2584.6
4	$9.0\cdot10^{-5}$	7.419	68.9	59.7	254.6	2700.9
5	0.00012	7.425	55.7	60.1	179.0	2239.0
6	0.00015	7.447	55.6	57.5	158.9	2699.0
7	0.00030	7.421	58.0	56.3	114.3	2982.2
8	0.00060	7.394	59.4	55.2	96.8	2815.8

log β_{101} =5.38±0.02

Table Np159. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. [$^{237}NpO_2^+$] ~ 10^{-6} M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	2.405	55.0	47.4	1645.7	1929.7
2	$5.0\cdot10^{-5}$	2.399	77.9	49.9	2103.5	1556.3
3	0.0001	2.273	56.0	56.3	845.6	1087.3
4	0.00015	2.343	65.1	104.7	863.9	1126.8
5	0.0002	2.376	54.4	55.8	849.9	1172.9
6	0.0003	2.478	56.0	52.3	705.1	913.9
7	0.0004	2.517	62.5	53.9	842.0	1113.9

log β_{101} = 12.25±0.02

Table Np160. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0	4.246	53.5	56.2	2350.0	460.7
2	$5.0 \cdot 10^{-5}$	4.203	54.8	54.5	2238.5	594.2
3	0.0001	4.006	54.4	53.3	2121.2	709.6
4	0.00015	4.140	57.4	56.8	2140.2	694.7
5	0.0002	4.116	67.5	51.8	2052.7	756.4
6	0.0003	4.130	54.0	57.0	2027.7	788.7
7	0.0004	4.236	54.3	50.8	2051.6	884.7
8	0.0005	4.279	58.3	54.4	1981.2	812.0

$\log \beta_{101} = 8.32 \pm 0.02$

Table Np161. Solvent Extraction Data for Apparent Stability Constants of Neptunium with EDTA in 5 m NaCl at 25°C. $[^{237}NpO_2^+] \sim 10^{-6}$ M, [HDEHP] = 0.010 M in *n*-Heptane

			Background, cpm		Extraction, cpm	
Sample #	L_T, M	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0	3.604	65.5	66.1	1982.7	908.5
2	0.0	3.608	62.1	56.4	1957.7	899.9
3	5.0×10^{-5}	3.528	57.1	59.9	1809.1	1042.1
4	0.0001	3.373	58.4	55.3	1619.1	1279.6
5	0.00015	3.503	57.3	69.1	1670.7	1126.0
6	0.0002	3.492	56.6	62.0	1709.6	1236.4
7	0.00025	3.440	56.4	55.7	1567.6	1252.4
8	0.0003	3.533	115.4	625.5	1670.0	1789.9
9	0.0004	3.575	57.7	64.6	1535.9	1238.7
10	0.0005	3.529	65.1	59.7	1497.3	1360.1

$\log \beta_{101} = 9.45 \pm 0.02$

Table Np162. pH - Dependence of NpO_2^+ from 0.3 m NaCl Extraction by 0.01 M HDEHP in *n*-Heptane.

		Background, cpm		Extraction, cpm	
Sample #	pHr	Organic	Aqueous	Organic	Aqueous
1	2.774	70.2	69.0	114.8	2103.5
2	2.930	84.4	68.6	132.8	2085.4
3	3.107	104.4	71.4	147.6	2229.6
4	3.748	84.2	89.6	155.3	2048.7
5	4.548	69.2	92.0	514.1	1695.2
6	4.847	82.6	72.6	1233.6	1075.3
7	5.234	67.0	73.6	1756.6	458.0
8	5.384	81.6	81.8	1945.5	287.8

log D vs. pH; slope = 0.996

Table Np163. pH - Dependence of NpO_2^+ from 1 m NaCl extraction by 0.01 M HDEHP in *n*- Heptane.

		Background, cpm		Extraction, cpm	
Sample #	pHr	Organic	Aqueous	Organic	Aqueous
1	3.090	81.5	63.6	144.9	735.5
2	3.787	64.9	65.9	107.0	785.4
3	4.580	60.0	64.0	262.6	531.2
4	4.752	44.7	79.9	436.7	428.5
5	4.912	63.0	64.6	500.0	398.9
6	4.799	63.6	66.4	473.0	429.9
7	4.699	64.9	65.9	564.7	400.4
8	3.851	64.9	65.9	173.1	756.8
9	4.473	64.9	65.9	442.6	425.0
10	4.699	64.9	65.9	625.6	305.1
11	4.879	64.9	65.9	741.8	259.4
12	4.986	64.9	65.9	715.7	245.8

log D vs. pH; slope = 0.927

Table Np164. pH - Dependence of NpO_2^+ Extraction from 2 m NaCl by 0.01 M HDEHP in *n*- Heptane.

Sample #	pHr	Background, cpm		Extraction, cpm	
		Organic	Aqueous	Organic	Aqueous
1	4.767	59.4	59.1	486.1	396.9
2	4.770	124.1	60.7	511.9	370.3
3	5.081	45.5	65.4	449.2	360.9
4	5.120	44.2	81.2	554.8	407.5
5	5.187	48.4	60.8	1116.6	457.2
6	5.104	69.1	69.3	1832.0	469.4
7	4.788	63.6	71.8	753.7	301.6
8	3.013	57.0	60.4	577.1	390.1
9	4.607	61.4	61.9	680.2	301.7
10	3.048	63.0	72.0	640.4	456.4
11	2.469	62.6	61.2	1016.8	760.2
12	2.070	60.0	66.3	1900.0	733.0

log D vs. pH; slope = 0.1533

Table Np165. pH - Dependence of NpO_2^+ Extraction from 3 m NaCl by 0.01 M HDEHP in *n*- Heptane.

Sample #	pHr	Background, cpm		Extraction, cpm	
		Organic	Aqueous	Organic	Aqueous
1	4.790	69.2	60.4	476.6	309.6
2	4.722	63.4	47.0	602.7	344.0
3	4.733	60.1	43.7	568.4	373.6
4	4.694	63.9	63.9	584.4	379.5
5	4.807	57.4	67.4	548.2	450.7
6	4.958	65.9	56.1	534.1	434.3
7	1.464	65.2	67.9	499.8	560.8
8	1.773	60.1	59.4	424.5	576.9
9	2.681	68.5	59.5	554.5	517.9
10	4.370	67.2	55.0	692.1	413.7
11	4.851	58.5	58.3	587.9	449.9
12	1.315	62.3	63.3	260.8	566.3

log D vs. pH; slope = 0.0836

Table Np166. pH - Dependence of NpO_2^+ Extraction from 4 m NaCl by 0.01 M HDEHP in *n*-Heptane.

		Background, cpm		Extraction, cpm	
Sample #	pHr	Organic	Aqueous	Organic	Aqueous
1	4.540	84.6	67.2	1920.0	421.7
2	4.627	80.4	74.6	1845.9	431.6
3	4.753	90.2	71.6	1773.9	462.5
4	4.796	78.8	87.2	1794.6	518.5
5	4.877	84.8	454.4	1639.5	567.1
6	4.917	104.8	66.0	1606.3	613.8
7	5.004	106.0	79.0	1545.8	687.6
8	5.057	68.2	80.6	1377.9	777.7

log D vs. pH; slope = 0.0

Table Np167. pH - Dependence of NpO_2^+ Extraction from 4 m NaCl by 0.01 M HDEHP in *n*-Heptane.

		Background, cpm		Extraction, cpm	
Sample #	pHr	Organic	Aqueous	Organic	Aqueous
1	5.862	76.8	74.2	1567.2	684.8
2	5.225	74.0	74.4	1686.2	553.0
3	5.053	71.6	71.0	1358.8	647.6
4	5.030	61.4	73.0	1463.0	796.2
5	4.861	71.8	71.6	1294.8	933.4
6	4.990	83.4	79.2	1402.0	839.8
7	5.046	69.6	75.4	1476.2	790.2
8	5.220	66.2	65.0	1265.0	961.6
9	1.070	74.4	72.4	375.5	1928.4
10	1.941	74.0	72.0	317.4	1980.6
11	4.048	66.0	67.2	1445.1	811.2
12	4.431	70.2	62.6	1751.3	733.9
13	4.575	67.8	67.6	1522.1	873.8
14	4.710	60.6	64.8	1547.5	821.2
15	4.862	59.8	66.4	1662.9	823.8
16	5.487	74.0	61.6	1085.5	1292.2

log D vs. pH; slope = 0.0

Table Am1. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC03-I-1	0.0010	4.754	1223	128
AC03-I-2	0.0110	4.743	1226	155
AC03-I-3	0.0210	4.741	1055	183
AC03-I-4	0.0310	4.739	1075	199
AC03-I-5	0.0410	4.735	1129	205
AC03-I-6	0.0510	4.735	1051	243
AC03-I-7	0.0610	4.735	1067	236

log β_{101} = 1.71±0.06

Table Am2. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC03-I-1'	0.0010	4.754	1229	129
AC03-I-2'	0.0110	4.743	1248	154
AC03-I-3'	0.0210	4.741	1074	182
AC03-I-4'	0.0310	4.739	1085	198
AC03-I-5'	0.0410	4.735	1122	203
AC03-I-6'	0.0510	4.735	1053	241
AC03-I-7'	0.0610	4.735	1089	246

log β_{101} = 1.75±0.05

Table Am3. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC03-II-1	0.0010	4.751	1248	134
AC03-II-2	0.0110	4.753	1201	137
AC03-II-3	0.0210	4.749	1116	210
AC03-II-4	0.0310	4.748	617*	641*
AC03-II-5	0.0410	4.742	997	209
AC03-II-6	0.0510	4.739	1087	222
AC03-II-7	0.0610	4.735	1032	262

log β_{101} = 1.76±0.08, * data not used.

Table Am4. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC03-II-1'	0.0010	4.751	1246	136
AC03-II-2'	0.0110	4.753	1211	139
AC03-II-3'	0.0210	4.749	1128	205
AC03-II-4'	0.0310	4.748	675*	641*
AC03-II-5'	0.0410	4.742	1006	203
AC03-II-6'	0.0510	4.739	1091	224
AC03-II-7'	0.0610	4.735	1046	253

log β_{101} = 1.71±0.07, * data not used.

Table Am5. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 1 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC10-I-1	0.0010	4.501	1231	172
AC10-I-2	0.0110	4.558	1243	173
AC10-I-3	0.0210	4.553	1241	173
AC10-I-4	0.0310	4.552	1258	180
AC10-I-5	0.0410	4.551	1183	247
AC10-I-6	0.0510	4.551	1211	237
AC10-I-7	0.0610	4.551	1226	230

log β_{101} = 1.5±0.1

Table Am6. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 1 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC10-I-1'	0.0010	4.501	1250	174
AC10-I-2'	0.0110	4.558	1254	176
AC10-I-3'	0.0210	4.553	1255	172
AC10-I-4'	0.0310	4.552	1248	176
AC10-I-5'	0.0410	4.551	1191	249
AC10-I-6'	0.0510	4.551	1204	239
AC10-I-7'	0.0610	4.551	1230	229

log β_{101} = 1.5±0.1

Table Am7. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC10-II-1	0.0010	4.547	1256	163
AC10-II-2	0.0110	4.553	1287	157
AC10-II-3	0.0210	4.551	1286	181
AC10-II-4	0.0310	4.551	1222	198
AC10-II-5	0.0410	4.549	1273	199
AC10-II-6	0.0510	4.549	1146	267
AC10-II-7	0.0610	4.552	1183	226

$\log \beta_{101} = 1.43\pm0.05$

Table Am8. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC10-II-1'	0.0010	4.547	1249	167
AC10-II-2'	0.0110	4.553	1266	157
AC10-II-3'	0.0210	4.551	1289	170
AC10-II-4'	0.0310	4.551	1221	206
AC10-II-5'	0.0410	4.549	1238	207
AC10-II-6'	0.0510	4.549	1147	279
AC10-II-7'	0.0610	4.552	1209	247

$\log \beta_{101} = 1.54\pm0.06$

Table Am9. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5x10^{-5}$ M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC20-I-1	0.0010	4.312	1345	180
AC20-I-2	0.0110	4.313	1348	184
AC20-I-3	0.0210	4.310	1376	188
AC20-I-4	0.0310	4.311	1280	174
AC20-I-5	0.0410	4.306	1331	192
AC20-I-6	0.0510	4.304	1286	233
AC20-I-7	0.0610	4.304	1265	273

log β_{101} = 1.4±0.1

Table Am10. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5x10^{-5}$ M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC10-I-1'	0.0010	4.312	1224	175
AC10-I-2'	0.0110	4.313	1236	192
AC10-I-3'	0.0210	4.310	1250	187
AC10-I-4'	0.0310	4.311	1277	175
AC10-I-5'	0.0410	4.306	1183	202
AC10-I-6'	0.0510	4.304	1125	234
AC10-I-7'	0.0610	4.304	1139	266

log β_{101} = 1.5±0.1

Table Am11. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC20-II-1	0.0010	4.315	1145	160
AC20-II-2	0.0110	4.313	1284	151
AC20-II-3	0.0210	4.307	1196	183
AC20-II-4	0.0310	4.304	1113	170
AC20-II-5	0.0410	4.302	1202	188
AC20-II-6	0.0510	4.302	1160	195
AC20-II-7	0.0610	4.300	1175	246

log β_{101} = 1.4±0.1

Table Am12. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 77 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC20-II-1'	0.0010	4.315	1248	164
AC20-II-2'	0.0110	4.313	1288	154
AC20-II-3'	0.0210	4.307	1233	186
AC20-II-4'	0.0310	4.304	1137	180
AC20-II-5'	0.0410	4.302	1212	186
AC20-II-6'	0.0510	4.302	1168	200
AC20-II-7'	0.0610	4.300	1163	249

log β_{101} = 1.5±0.1

Table Am13. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC30-I-1	0.0010	4.167	1158	231
AC30-I-2	0.0110	4.167	1098	238
AC30-I-3	0.0210	4.167	1084	255
AC30-I-4	0.0310	4.167	898	262
AC30-I-5	0.0410	4.167	1027	311
AC30-I-6	0.0510	4.167	1001	358
AC30-I-7	0.0610	4.167	909	401

$\log \beta_{101} = 1.64\pm0.04$

Table Am14. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC30-I-1'	0.0010	4.167	1171	245
AC30-I-2'	0.0110	4.167	1218	248
AC30-I-3'	0.0210	4.167	1094	253
AC30-I-4'	0.0310	4.167	1070	279
AC30-I-5'	0.0410	4.167	974	350
AC30-I-6'	0.0510	4.167	1013	348
AC30-I-7'	0.0610	4.167	994	394

$\log \beta_{101} = 1.70\pm0.06$

Table Am15. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC30-II-1	0.0010	4.167	1112	224
AC30-II-2	0.0110	4.167	1115	246
AC30-II-3	0.0210	4.167	1084	255
AC30-II-4	0.0310	4.167	871	266
AC30-II-5	0.0410	4.167	1032	312
AC30-II-6	0.0510	4.167	1009	355
AC30-II-7	0.0610	4.167	959*	397*

log β_{101} = 1.62±0.05, * data not used.

Table Am16. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC30-II-1'	0.0010	4.167	1158	231
AC30-II-2'	0.0110	4.167	1098	238
AC30-II-3'	0.0210	4.167	1084	255
AC30-II-4'	0.0310	4.167	898	262
AC30-II-5'	0.0410	4.167	1027	311
AC30-II-6'	0.0510	4.167	1001	358
AC30-II-7'	0.0610	4.167	909*	401*

log β_{101} = 1.64±0.04, * data not used.

Table Am17. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC40-II-1'	0.0010	3.963	1252	212
AC40-II-2'	0.0110	3.963	1196	255
AC40-II-3'	0.0210	3.963	1167	298
AC40-II-4'	0.0310	3.963	1130	337
AC40-II-5'	0.0410	3.963	1056	372
AC40-II-6'	0.0510	3.963	952	462
AC40-II-7'	0.0610	3.963	917*	484*

log β_{101} = 1.79±0.07, * data not used.

Table Am18. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC40-I-1'	0.0010	3.963	1124	259
AC40-I-2'	0.0110	3.963	1044	291
AC40-I-3'	0.0210	3.963	1066	290
AC40-I-4'	0.0310	3.963	969	347
AC40-I-5'	0.0410	3.963	961	387
AC40-I-6'	0.0510	3.963	749	328
AC40-I-7'	0.0610	3.963	744	406

log β_{101} = 1.7±0.1

Table Am19. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC40-II-1	0.0010	3.963	1124	224
AC40-II-2	0.0110	3.963	1079	275
AC40-II-3	0.0210	3.963	1040	309
AC40-II-4	0.0310	3.963	1017	353
AC40-II-5	0.0410	3.963	1042	395
AC40-II-6	0.0510	3.963	938	470
AC40-II-7	0.0610	3.963	915	510

$\log \beta_{101} = 1.85\pm0.04$

Table Am20. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC40-II-1'	0.0010	3.963	1252	212
AC40-II-2'	0.0110	3.963	1196	255
AC40-II-3'	0.0210	3.963	1167	298
AC40-II-4'	0.0310	3.963	1130	337
AC40-II-5'	0.0410	3.963	1056	372
AC40-II-6'	0.0510	3.963	952	462
AC40-II-7'	0.0610	3.963	917	484

$\log \beta_{101} = 1.95\pm0.03$

Table Am21. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC50-I-1	0.001	3.772	. 937	322
AC50-I-2	0.0208	3.772	863	379
AC50-I-3	0.0406	3.772	830	396
AC50-I-4	0.0604	3.772	653	572
AC50-I-5	0.0802	3.772	671	576
AC50-I-6	0.100	3.772	577	652

$\log \beta_{101} = 2.1\pm0.2$

Table Am22. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5\text{x}10^{-5}$ M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC50-I-1'	0.0010	3.772	944	315
AC50-I-2'	0.0208	3.772	851	383
AC50-I-3'	0.0406	3.772	874	371
AC50-I-4'	0.0604	3.772	661	564
AC50-I-5'	0.0802	3.772	657	558
AC50-I-6'	0.100	3.772	572	652

$\log \beta_{101} = 2.1\pm0.3$

Table Am23. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC50-II-1	0.0010	3.840	1162	187
AC50-II-2	0.0208	3.772	963	308
AC50-II-3	0.0406	3.772	892	388
AC50-II-4	0.0604	3.772	800	526
AC50-II-5	0.0802	3.772	648	540
AC50-II-6	0.100	3.772	568	663

log β_{101} = 2.34±0.21

Table Am24. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC50-II-1'	0.0010	3.840	1157	178
AC50-II-2'	0.0208	3.772	939	320
AC50-II-3'	0.0406	3.772	871	391
AC50-II-4'	0.0604	3.772	775	471
AC50-II-5'	0.0802	3.772	630	537
AC50-II-6'	0.100	3.772	566	641

log β_{101} = 2.3±0.2

Table Am25. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC50-III-1	0.0010	3.840	1019	162
AC50-III-2	0.0208	3.772	893	386
AC50-III-3	0.0406	3.772	897	318
AC50-III-4	0.0604	3.772	708	487
AC50-III-5	0.0802	3.772	670	516
AC50-III-6	0.100	3.772	612	549

$\log \beta_{101} = 2.2\pm0.3$

Table Am26. Solvent Extraction Data for Apparent Stability Constants of Americium with Acetate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 74 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
AC50-III-1'	0.0010	3.840	1042	166
AC50-III-2'	0.0208	3.772	904	367
AC50-III-3'	0.0406	3.772	931	328
AC50-III-4'	0.0604	3.772	760	482
AC50-III-5'	0.0802	3.772	710	510
AC50-III-6'	0.100	3.772	607	549

$\log \beta_{101} = 2.2\pm0.3$

Table Am27. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-I-1	0.005	4.470	735	534
LAC03-I-2	0.010	4.476	974	784
LAC03-I-3	0.015	4.491	446	1659
LAC03-I-4	0.020	4.498	389	1656
LAC03-I-5	0.030	4.514	295	1874
LAC03-I-6	0.040	4.511	248	2010
LAC03-I-7	0.050	4.506	208	2001

$\log \beta_{101} = 2.49\pm0.02$, $\log \beta_{102} = 3.47\pm0.09$

Table Am28. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-I-1'	0.005	4.470	735	542
LAC03-I-2'	0.010	4.476	974	769
LAC03-I-3'	0.015	4.491	446	1672
LAC03-I-4'	0.020	4.498	389	1700
LAC03-I-5'	0.030	4.514	295	1886
LAC03-I-6'	0.040	4.511	248	1991
LAC03-I-7'	0.050	4.506	208	1987

$\log \beta_{101} = 2.48\pm0.02$, $\log \beta_{102} = 3.43\pm0.09$

Table Am29. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-II-1	0.005	4.477	650	1427
LAC03-II-2	0.010	4.479	554	1470
LAC03-II-3	0.015	4.486	422	1655
LAC03-II-4	0.020	4.486	361	1649
LAC03-II-5	0.030	4.526	288	1895
LAC03-II-6	0.040	4.511	550	1622
LAC03-II-7	0.050	4.511	167	1983

$\log \beta_{101} = 2.46\pm0.06$, $\log \beta_{102} = 3.81\pm0.04$

Table Am30. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-II-1'	0.005	4.477	654	1424
LAC03-II-2'	0.010	4.479	550	1529
LAC03-II-3'	0.015	4.486	427	1673
LAC03-II-4'	0.020	4.486	401	1650
LAC03-II-5'	0.030	4.526	302	1925
LAC03-II-6'	0.040	4.511	552	1622
LAC03-II-7'	0.050	4.511	161	1981

$\log \beta_{101} = 2.42\pm0.07$, $\log \beta_{102} = 3.85\pm0.05$

Table Am31. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-III-1	0.0	4.407	637	1523
LAC03-III-2	0.005	4.453	878	1477
LAC03-III-3	0.010	4.461	516	1870
LAC03-III-4	0.015	4.464	440	1955
LAC03-III-5	0.020	4.462	294	1865
LAC03-III-6	0.025	4.464	324	1821
LAC03-III-7	0.030	4.467	264	1930
LAC03-III-8	0.040	4.468	284	1857
LAC03-III-9	0.050	4.467	159	1931

$\log \beta_{101} = 2.45\pm0.05$, $\log \beta_{102} = 3.6\pm0.2$

Table Am32. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-III-1'	0.0	4.407	639	1500
LAC03-III-2'	0.005	4.453	858	1506
LAC03-III-3'	0.010	4.461	516	1863
LAC03-III-4'	0.015	4.464	447	1987
LAC03-III-5'	0.020	4.462	290	1882
LAC03-III-6'	0.025	4.464	336	1796
LAC03-III-7'	0.030	4.467	260	1915
LAC03-III-8'	0.040	4.468	285	1868
LAC03-III-9'	0.050	4.467	156	1895

$\log \beta_{101} = 2.44\pm0.06$, $\log \beta_{102} = 3.6\pm0.2$

Table Am33. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-IV-1	0.0	4.417	682	1279
LAC03-IV-2	0.005	4.450	680	1289
LAC03-IV-3	0.010	4.462	532	1367
LAC03-IV-4	0.015	4.464	478	1590
LAC03-IV-5	0.020	4.466	390	1562
LAC03-IV-6	0.025	4.466	669	1510
LAC03-IV-7	0.030	4.468	225	1800
LAC03-IV-8	0.040	4.469	164	1865
LAC03-IV-9	0.050	4.471	152	1957

$\log \beta_{101} = 2.19\pm0.04$ $\log \beta_{102} = 3.99\pm0.05$

Table Am34. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC03-IV-1'	0.0	4.417	681	1280
LAC03-IV-2'	0.005	4.450	675	1312
LAC03-IV-3'	0.010	4.462	534	1410
LAC03-IV-4'	0.015	4.464	482	1547
LAC03-IV-5'	0.020	4.466	391	1587
LAC03-IV-6'	0.025	4.466	662	1477
LAC03-IV-7'	0.030	4.468	227	1803
LAC03-IV-8'	0.040	4.469	175	1854
LAC03-IV-9'	0.050	4.471	146	1938

$\log \beta_{101} = 2.18\pm0.04$ $\log \beta_{102} = 3.98\pm0.04$

Table Am35. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-I-1	0.005	4.375	649	1254
LAC10-I-2	0.010	4.346	636	1113
LAC10-I-3	0.015	4.321	562	1636
LAC10-I-4	0.020	4.312	412	1841
LAC10-I-5	0.030	4.300	263	1823
LAC10-I-6	0.040	4.295	244	1933
LAC10-I-7	0.050	4.284	179	1937

$\log \beta_{101} = 2.0\pm0.2$ $\log \beta_{102} = 3.53\pm0.09$

Table Am36. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-I-1'	0.005	4.375	679	1280
LAC10-I-2'	0.010	4.346	614	1116
LAC10-I-3'	0.015	4.321	611	1637
LAC10-I-4'	0.020	4.312	401	1714
LAC10-I-5'	0.030	4.300	260	1851
LAC10-I-6'	0.040	4.295	210	1970
LAC10-I-7'	0.050	4.284	182	1920

$\log \beta_{101} = 2.0\pm0.2$ $\log \beta_{102} = 3.58\pm0.08$

Table Am37. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-II-1	0.005	4.425	1045	796
LAC10-II-2	0.010	4.354	911	1045
LAC10-II-3	0.015	4.324	532	1638
LAC10-II-4	0.020	4.313	452	1796
LAC10-II-5	0.030	4.302	323	1807
LAC10-II-6	0.040	4.295	520	1557
LAC10-II-7	0.050	4.286	174	1926

$\log \beta_{102} = 3.5\pm0.2$

Table Am38. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-II-1'	0.005	4.425	1046	780
LAC10-II-2'	0.010	4.354	903	1041
LAC10-II-3'	0.015	4.324	545	1611
LAC10-II-4'	0.020	4.313	447	1825
LAC10-II-5'	0.030	4.302	330	1806
LAC10-II-6'	0.040	4.295	510	1588
LAC10-II-7'	0.050	4.286	177	1953

$\log \beta_{102} = 3.5\pm0.2$

Table Am39. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-III-1	0.005	4.213	613	1523
LAC10-III-2	0.009	4.236	514	1477
LAC10-III-3	0.014	4.270	530	1870
LAC10-III-4	0.016	4.242	420	1955
LAC10-III-5	0.025	4.249	420	1865
LAC10-III-6	0.030	4.245	352	1821
LAC10-III-7	0.020	4.254	619	1930
LAC10-III-8	0.040	4.250	347	1857
LAC10-III-9	0.050	4.251	163	1931

$\log \beta_{101} = 1.9\pm0.1$ $\log \beta_{102} = 3.4\pm0.2$

Table Am40. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-III-1'	0.005	4.213	608	1500
LAC10-III-2'	0.009	4.236	553	1506
LAC10-III-3'	0.014	4.270	533	1863
LAC10-III-4'	0.016	4.242	422	1987
LAC10-III-5'	0.025	4.249	390	1882
LAC10-III-6'	0.030	4.245	360	1796
LAC10-III-7'	0.020	4.254	624	1915
LAC10-III-8'	0.040	4.250	362	1868
LAC10-III-9'	0.050	4.251	165	1895

log β_{101}= 2.0±0.1 log β_{102} = 3.4±0.2

Table Am41. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-IV-1	0.005	4.221	641	1476
LAC10-IV-2	0.009	4.234	894	1488
LAC10-IV-3	0.014	4.242	511	1895
LAC10-IV-4	0.016	4.245	446	1983
LAC10-IV-5	0.025	4.260	293	1874
LAC10-IV-6	0.030	4.258	325	1837
LAC10-IV-7	0.020	4.256	266	1905
LAC10-IV-8	0.040	4.263	294	1856
LAC10-IV-9	0.050	4.260	157	1932

log β_{101}= 2.2±0.1 log β_{102} = 3.7±0.2

Table Am42. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-IV-1'	0.005	4.221	627	1494
LAC10-IV-2'	0.009	4.234	871	1503
LAC10-IV-3'	0.014	4.242	515	1874
LAC10-IV-4'	0.016	4.245	445	1981
LAC10-IV-5'	0.025	4.260	305	1911
LAC10-IV-6'	0.030	4.258	330	1814
LAC10-IV-7'	0.020	4.256	268	1897
LAC10-IV-8'	0.040	4.263	290	1868
LAC10-IV-9'	0.050	4.260	147	1910

log β_{101}= 2.2±0.1 log β_{102} = 3.7±0.2

Table Am43. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-V-1	0.0	4.135	553	1465
LAC10-V-2	0.004	4.199	511	1541
LAC10-V-3	0.008	4.210	473	1234
LAC10-V-4	0.012	4.212	500	1369
LAC10-V-5	0.016	4.223	406	1738
LAC10-V-6	0.020	4.225	308	1784
LAC10-V-7	0.024	4.227	273	1838

log β_{101}= 2.0±0.1 log β_{102} = 4.01±0.08

Table Am44. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC10-V-1'	0	4.135	570	1483
LAC10-V-2'	0.004	4.199	499	1545
LAC10-V-3'	0.008	4.210	471	1255
LAC10-V-4'	0.012	4.212	497	1362
LAC10-V-5'	0.016	4.223	400	1709
LAC10-V-6'	0.020	4.225	314	1786
LAC10-V-7'	0.024	4.227	264	1854

log β_{101}= 2.27±0.02   log β_{102} = 3.57±0.07

Table Am45. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC20-I-1	0.005	4.260	692	1427
LAC20-I-2	0.010	4.234	591	1588
LAC20-I-3	0.015	4.226	578	1557
LAC20-I-4	0.020	4.213	497	1573
LAC20-I-5	0.030	4.210	407	1716
LAC20-I-6	0.040	4.194	222	1915
LAC20-I-7	0.050	4.232	184	1976

log β_{101}= 1.50±0.09

Table Am46. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC20-I-1'	0.005	4.260	692	1409
LAC20-I-2'	0.010	4.234	604	1498
LAC20-I-3'	0.015	4.226	550	1578
LAC20-I-4'	0.020	4.213	497	1590
LAC20-I-5'	0.030	4.210	399	1761
LAC20-I-6'	0.040	4.194	214	1916
LAC20-I-7'	0.050	4.232	183	1967

log β_{101}= 1.63±0.07

Table Am47. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC20-II-1	0.005	4.276	874	1265
LAC20-II-2	0.010	4.252	700	1448
LAC20-II-3	0.015	4.234	552	1540
LAC20-II-4	0.020	4.225	485	1525
LAC20-II-5	0.030	4.220	380	1652
LAC20-II-6	0.040	4.212	220	1900
LAC20-II-7	0.050	4.205	193	1898

log β_{101}= 1.95±0.03

Table Am48. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC20-II-1'	0.005	4.276	860	1286
LAC20-II-2'	0.010	4.252	693	1486
LAC20-II-3'	0.015	4.234	568	1567
LAC20-II-4'	0.020	4.225	484	1571
LAC20-II-5'	0.030	4.220	377	1656
LAC20-II-6'	0.040	4.212	220	1909
LAC20-II-7'	0.050	4.205	191	1890

log β_{101}= 1.93±0.02

Table Am49. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC20-III-1	0.005	4.132	898	984
LAC20-III-2	0.010	4.145	525	1645
LAC20-III-3	0.015	4.148	462	1739
LAC20-III-4	0.020	4.152	593	1379
LAC20-III-5	0.030	4.156	304	1824
LAC20-III-6	0.040	4.151	227	1876
LAC20-III-7	0.050	4.158	186	1906

log β_{102}= 3.5±0.1

Table Am50. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC20-III-1'	0.005	4.132	913	982
LAC20-III-2'	0.010	4.145	524	1621
LAC20-III-3'	0.015	4.148	465	1711
LAC20-III-4'	0.020	4.152	594	1383
LAC20-III-5'	0.030	4.156	310	1856
LAC20-III-6'	0.040	4.151	230	1859
LAC20-III-7'	0.050	4.158	186	1921

$\log \beta_{101} = 3.7\pm0.1$

Table Am51. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5\text{x}10^{-5}$ M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-I-1	0.005	4.129	791	1217
LAC30-I-2	0.010	4.111	682	1439
LAC30-I-3	0.015	4.098	610	1458
LAC30-I-4	0.020	4.102	636	1494
LAC30-I-5	0.030	4.100	618	1528
LAC30-I-6	0.040	4.098	427	1702
LAC30-I-7	0.050	4.111	175	1995

$\log \beta_{101} = 1.6\pm0.1$, $\log \beta_{102} = 3.6\pm0.1$

Table Am52. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5\text{x}10^{-5}$ M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-I-1'	0.005	4.129	795	1248
LAC30-I-2'	0.010	4.111	720	1418
LAC30-I-3'	0.015	4.098	618	1459
LAC30-I-4'	0.020	4.102	650	1523
LAC30-I-5'	0.030	4.100	611	1647
LAC30-I-6'	0.040	4.098	428	1724
LAC30-I-7'	0.050	4.111	172	1991

$\log \beta_{101} = 1.71\pm0.08$, $\log \beta_{102} = 3.6\pm0.1$

Table Am53. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-II-1	0.005	4.217	969	1045
LAC30-II-2	0.010	4.095	704	1485
LAC30-II-3	0.015	4.104	521	1529
LAC30-II-4	0.020	4.123	460	1612
LAC30-II-5	0.030	4.114	716	1591
LAC30-II-6	0.040	4.107	450	1634
LAC30-II-7	0.050	4.142	267	1747

log β_{101}= 1.4±0.2, log β_{102}= 3.2±0.2

Table Am54. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-II-1'	0.005	4.217	984	1034
LAC30-II-2'	0.010	4.095	725	1501
LAC30-II-3'	0.015	4.104	500	1551
LAC30-II-4'	0.020	4.123	454	1739
LAC30-II-5'	0.030	4.114	714	1605
LAC30-II-6'	0.040	4.107	506	1639
LAC30-II-7'	0.050	4.142	267	1793

log β_{101}= 1.2±0.3, log β_{102}= 3.2±0.2

Table Am55. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-III-1	0.005	4.018	776	1089
LAC30-III-2	0.010	4.027	556	1227
LAC30-III-3	0.015	4.039	1037	992
LAC30-III-4	0.020	4.028	813	918
LAC30-III-5	0.030	4.028	284	1792
LAC30-III-6	0.040	4.030	617	1364
LAC30-III-7	0.050	4.039	188	1923

log β_{101}= 2.1±0.3, log β_{102}= 3.8±0.2

Table Am56. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-III-1'	0.005	4.018	771	1091
LAC30-III-2'	0.010	4.027	535	1223
LAC30-III-3'	0.015	4.039	1022	985
LAC30-III-4'	0.020	4.028	793	886
LAC30-III-5'	0.030	4.028	277	1771
LAC30-III-6'	0.040	4.030	560	1388
LAC30-III-7'	0.050	4.039	175	1883

log β_{101}= 2.2±0.3, log β_{102}= 3.8±0.2

Table Am57. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-IV-0	0.0	4.076	685	620
LAC30-IV-1	0.0	3.901	457	1156
LAC30-IV-2	0.005	3.976	508	1289
LAC30-IV-3	0.010	3.993	338	1595
LAC30-IV-4	0.020	3.983	453	1434
LAC30-IV-5	0.030	4.001	267	1807
LAC30-IV-6	0.040	4.007	188	1699
LAC30-IV-7	0.050	4.010	148	1825

log β_{101}= 2.2±0.1, log β_{102}= 3.6±0.2

Table Am58. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC30-IV-0'	0.0	4.076	702	644
LAC30-IV-1'	0.0	3.901	461	1153
LAC30-IV-2'	0.005	3.976	501	1294
LAC30-IV-3'	0.010	3.993	328	1573
LAC30-IV-4'	0.020	3.983	441	1412
LAC30-IV-5'	0.030	4.001	266	1828
LAC30-IV-6'	0.040	4.007	185	1698
LAC30-IV-7'	0.050	4.010	145	1876

$\log \beta_{101} = 2.2\pm0.1$, $\log \beta_{102} = 3.6\pm0.2$

Table Am59. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC40-I-1	0.005	3.978	501	1385
LAC40-I-2	0.010	3.983	636	1267
LAC40-I-3	0.015	3.987	451	1430
LAC40-III-4	0.020	4.000	547	1488
LAC40-I-5	0.030	4.000	406	1569
LAC40-I-6	0.040	4.003	278	1786
LAC40-I-7	0.050	3.999	220	1749

$\log \beta_{101} = 1.7\pm0.1$, $\log \beta_{102} = 3.46\pm0.09$

Table Am60. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC40-I-1'	0.005	3.978	509	1352
LAC40-I-2'	0.010	3.983	649	1293
LAC40-I-3'	0.015	3.987	497	1445
LAC40-III-4'	0.020	4.000	539	1493
LAC40-I-5'	0.030	4.000	411	1584
LAC40-I-6'	0.040	4.003	273	1793
LAC40-I-7'	0.050	3.999	232	1753

log β_{101}= 1.8±0.1, log β_{102}= 3.47±0.08

Table Am61. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC40-II-1	0.005	3.983	690	1475
LAC40-II-2	0.010	4.012	554	1408
LAC40-II-3	0.015	3.998	555	1487
LAC40-II-4	0.020	3.991	450	1406
LAC40-II-5	0.030	3.997	394	1571
LAC40-II-6	0.040	3.998	306	1781
LAC40-II-7	0.050	3.997	228	1763

log β_{101}= 1.80±0.06, log β_{102}= 3.36±0.06

Table Am62. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC40-II-1'	0.005	3.983	703	1458
LAC40-II-2'	0.010	4.012	532	1408
LAC40-II-3'	0.015	3.998	554	1497
LAC40-II-4'	0.020	3.991	457	1381
LAC40-II-5'	0.030	3.997	400	1574
LAC40-II-6'	0.040	3.998	306	1760
LAC40-II-7'	0.050	3.997	222	1773

log β_{101}= 1.76±0.09, log β_{102}= 3.39±0.08

Table Am63. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC40-III-1	0.005	3.980	710	789
LAC40-III-2	0.010	3.992	1168	356
LAC40-III-3	0.015	4.000	1212	670
LAC40-III-4	0.020	4.000	547	1488
LAC40-III-5	0.030	4.005	529	1509
LAC40-III-6	0.040	4.001	696	1254
LAC40-III-7	0.050	3.996	341	1653

log β_{101}= 1.8±0.1, log β_{102}= 3.55±0.12

Table Am64. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5\text{x}10^{-5}$ M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC40-III-1'	0.005	3.980	733	813
LAC40-III-2'	0.010	3.992	1178	355
LAC40-III-3'	0.015	4.000	1216	666
LAC40-III-4'	0.020	4.000	539	1493
LAC40-III-5'	0.030	4.005	545	1516
LAC40-III-6'	0.040	4.001	697	1265
LAC40-III-7'	0.050	3.996	326	1625

log β_{101}= 1.8±0.1, log β_{102}= 3.6±0.1

Table Am65. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC50-I-1	0.005	3.897	937	1112
LAC50-I-2	0.010	3.955	732	1088
LAC50-I-3	0.015	3.963	664	1299
LAC50-I-4	0.020	3.962	597	1296
LAC50-I-5	0.030	3.965	480	1497
LAC50-I-6	0.040	3.965	320	1626
LAC50-I-7	0.050	3.967	280	1885

log β_{101}= 2.56±0.03, log β_{102}= 3.81±0.09

Table Am66. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC50-I-1'	0.005	3.897	885	1041
LAC50-I-2'	0.010	3.955	740	1039
LAC50-I-3'	0.015	3.963	642	1289
LAC50-I-4'	0.020	3.962	590	1312
LAC50-I-5'	0.030	3.965	472	1483
LAC50-I-6'	0.040	3.965	329	1630
LAC50-I-7'	0.050	3.967	266	1780

log β_{101}= 2.63±0.03, log β_{102}= 3.84±0.09

Table Am67. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5\text{x}10^{-5}$ M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC50-II-1	0.005	3.904	926	1016
LAC50-II-2	0.010	3.942	792	1248
LAC50-II-3	0.015	4.010	713	1125
LAC50-II-4	0.020	3.947	644	1474
LAC50-II-5	0.030	3.944	468	1615
LAC50-II-6	0.040	3.954	397	1613
LAC50-II-7	0.050	3.969	242	1692

log β_{101}= 2.54±0.03, log β_{102}= 3.8±0.2

Table Am68. Solvent Extraction Data for Apparent Stability Constants of Americium with Lactate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = $5\text{x}10^{-5}$ M in *n*-Heptane. Background = 79 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
LAC50-II-1'	0.005	3.904	925	1035
LAC50-II-2'	0.010	3.942	787	1320
LAC50-II-3'	0.015	4.010	706	1200
LAC50-II-4'	0.020	3.947	598	1495
LAC50-II-5'	0.030	3.944	456	1589
LAC50-II-6'	0.040	3.954	380	1597
LAC50-II-7'	0.050	3.969	232	1658

log β_{101}= 2.47±0.03, log β_{102}= 3.8±0.2

Table Am69. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX03-I-1	0.0	4.884	984	338
OX03-I-2	1.0×10^{-5}	4.866	769	530
OX03-I-3	2.0×10^{-5}	4.874	854	460
OX03-I-4	3.0×10^{-5}	4.874	819	530
OX03-I-5	4.0×10^{-5}	4.874	764	618
OX03-I-6	6.0×10^{-5}	4.886	638	673
OX03-I-7	8.0×10^{-5}	4.876	609	730
OX03-I-8	1.0×10^{-4}	4.879	559	776
OX03-I-31	1.0×10^{-4}	4.829	821	1725
OX03-I-32	2.0×10^{-4}	4.861	472	2071
OX03-I-33	3.0×10^{-4}	4.861	318	2316
OX03-I-34	4.0×10^{-4}	4.878	262	2347
OX03-I-35	5.0×10^{-4}	4.879	214	2355

$\log \beta_{101} = 4.53\pm0.04$, $\log \beta_{102} = 8.23\pm0.03$

Table Am70. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX03-I-1'	0.0	4.884	983	337
OX03-I-2'	1.0×10^{-5}	4.866	767	548
OX03-I-3'	2.0×10^{-5}	4.874	863	466
OX03-I-4'	3.0×10^{-5}	4.874	833	529
OX03-I-5'	4.0×10^{-5}	4.874	761	624
OX03-I-6'	6.0×10^{-5}	4.886	653	692
OX03-I-7'	8.0×10^{-5}	4.876	601	709
OX03-I-8'	1.0×10^{-4}	4.879	548	800
OX03-I-31'	1.0×10^{-4}	4.829	815	1747
OX03-I-32'	2.0×10^{-4}	4.861	470	2089
OX03-I-33'	3.0×10^{-4}	4.861	326	2330
OX03-I-34'	4.0×10^{-4}	4.878	266	2376
OX03-I-35'	5.0×10^{-4}	4.879	217	2373

$\log \beta_{101} = 4.55\pm0.04$, $\log \beta_{102} = 8.22\pm0.03$

Table Am71. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 0.3 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX03-II-1	0.0	4.858	929	351
OX03-II-2	1.0×10^{-5}	4.885	916	402
OX03-II-3	2.0×10^{-5}	4.908	879	461
OX03-II-4	3.0×10^{-5}	4.883	813	520
OX03-II-5	4.0×10^{-5}	4.894	826	579
OX03-II-6	6.0×10^{-5}	4.880	700	653
OX03-II-7	8.0×10^{-5}	4.860	598	747
OX03-II-8	1.0×10^{-4}	4.855	528	776
OX03-II-31	1.0×10^{-4}	4.852	792	1619
OX03-II-32	2.0×10^{-4}	4.870	463	2072
OX03-II-33	3.0×10^{-4}	4.857	327	2270
OX03-II-34	4.0×10^{-4}	4.847	245	2311
OX03-II-35	5.0×10^{-4}	4.852	186	2416

$\log \beta_{101} = 4.52\pm0.01$, $\log \beta_{102} = 8.24\pm0.04$

Table Am72. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 0.3 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX03-II-1'	0.0	4.858	919	369
OX03-II-2'	1.0×10^{-5}	4.885	923	406
OX03-II-3'	2.0×10^{-5}	4.908	869	465
OX03-II-4'	3.0×10^{-5}	4.883	849	525
OX03-II-5'	4.0×10^{-5}	4.894	795	592
OX03-II-6'	6.0×10^{-5}	4.880	699	668
OX03-II-7'	8.0×10^{-5}	4.860	600	760
OX03-II-8'	1.0×10^{-4}	4.855	539	772
OX03-II-31'	1.0×10^{-4}	4.852	780	1639
OX03-II-32'	2.0×10^{-4}	4.870	463	2082
OX03-II-33'	3.0×10^{-4}	4.857	322	2263
OX03-II-34'	4.0×10^{-4}	4.847	246	2314
OX03-II-35'	5.0×10^{-4}	4.852	197	2435

$\log \beta_{101} = 4.49\pm0.02$, $\log \beta_{102} = 8.19\pm0.04$

Table Am73. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX10-I-1	0.0	4.583	931	463
OX10-I-2	1.0×10^{-5}	4.579	950	490
OX10-I-3	2.0×10^{-5}	4.610	901	526
OX10-I-4	3.0×10^{-5}	4.628	826	561
OX10-I-5	4.0×10^{-5}	4.604	797	573
OX10-I-6	6.0×10^{-5}	4.593	754	665
OX10-I-7	8.0×10^{-5}	4.603	693	708
OX10-I-8	1.0×10^{-4}	4.607	686	699
OX10-I-31	1.0×10^{-4}	4.561	96	114
OX10-I-32	2.0×10^{-4}	4.566	607	1984
OX10-I-33	3.0×10^{-4}	4.572	416	2166
OX10-I-34	4.0×10^{-4}	4.574	310	2501
OX10-I-35	5.0×10^{-4}	4.554	254	2752

$\log \beta_{101} = 4.22\pm0.05$, $\log \beta_{102} = 7.88\pm0.06$

Table Am74. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX10-I-1'	0.0	4.583	908	468
OX10-I-2'	1.0×10^{-5}	4.579	957	492
OX10-I-3'	2.0×10^{-5}	4.610	890	527
OX10-I-4'	3.0×10^{-5}	4.628	833	571
OX10-I-5'	4.0×10^{-5}	4.604	816	572
OX10-I-6'	6.0×10^{-5}	4.593	746	667
OX10-I-7'	8.0×10^{-5}	4.603	711	708
OX10-I-8'	1.0×10^{-4}	4.607	691	700
OX10-I-31'	1.0×10^{-4}	4.561	98	114
OX10-I-32'	2.0×10^{-4}	4.566	575	1984
OX10-I-33'	3.0×10^{-4}	4.572	431	2188
OX10-I-34'	4.0×10^{-4}	4.574	339	2305
OX10-I-35'	5.0×10^{-4}	4.554	276	2515

$\log \beta_{101} = 4.19\pm0.05$, $\log \beta_{102} = 7.75\pm0.07$

Table Am75. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX10-II-1	0.0	4.607	931	515
OX10-II-2	1.0×10^{-5}	4.598	882	530
OX10-II-3	2.0×10^{-5}	4.608	874	558
OX10-II-4	3.0×10^{-5}	4.684	1038	549
OX10-II-5	4.0×10^{-5}	4.605	815	615
OX10-II-6	6.0×10^{-5}	4.611	752	722
OX10-II-7	8.0×10^{-5}	4.607	696	806
OX10-II-8	1.0×10^{-4}	4.601	649	781
OX10-II-31'	1.0×10^{-4}	4.567	792	1619
OX10-II-32'	2.0×10^{-4}	4.548	463	2072
OX10-II-33'	3.0×10^{-4}	4.535	327	2270
OX10-II-34'	4.0×10^{-4}	4.532	245	2311
OX10-II-35'	5.0×10^{-4}	4.529	186	2416

$\log \beta_{101}$ =4.19±0.04, $\log \beta_{102}$ = 7.90±0.04

Table Am76. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX10-II-1'	0.0	4.607	938	471
OX10-II-2'	1.0×10^{-5}	4.598	893	485
OX10-II-3'	2.0×10^{-5}	4.608	877	515
OX10-II-4'	3.0×10^{-5}	4.684	1040	522
OX10-II-5'	4.0×10^{-5}	4.605	891	570
OX10-II-6'	6.0×10^{-5}	4.611	829	659
OX10-II-7'	8.0×10^{-5}	4.607	748	730
OX10-II-8'	1.0×10^{-4}	4.601	724	727
OX10-II-31	1.0×10^{-4}	4.567	842	1792
OX10-II-32	2.0×10^{-4}	4.548	577	1997
OX10-II-33	3.0×10^{-4}	4.535	375	2132
OX10-II-34	4.0×10^{-4}	4.532	285	2271
OX10-II-35	5.0×10^{-4}	4.529	270	2298

$\log \beta_{101}$ = 4.09±0.06, $\log \beta_{102}$ = 7.81±0.09

Table Am77. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 2 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX20-I-1	0.0	4.325	955	488
OX20-I-2	1.0×10^{-5}	4.315	918	576
OX20-I-3	2.0×10^{-5}	4.330	859	563
OX20-I-4	3.0×10^{-5}	4.337	825	582
OX20-I-5	4.0×10^{-5}	4.320	783	639
OX20-I-6	6.0×10^{-5}	4.335	701	680
OX20-I-7	8.0×10^{-5}	4.337	644	740
OX20-I-8	1.0×10^{-4}	4.327	576	806
OX20-I-31	1.5×10^{-4}	4.331	675	1927
OX20-I-32	2.0×10^{-4}	4.328	512	2055
OX20-I-33	2.5×10^{-4}	4.335	419	2126
OX20-I-34	3.0×10^{-4}	4.333	343	2256
OX20-I-35	3.5×10^{-4}	4.334	268	2207

$\log \beta_{101} = 4.37\pm0.02$, $\log \beta_{101} = 8.23\pm0.03$

Table Am78. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 2 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX20-I-1'	0.0	4.325	944	495
OX20-I-2'	1.0×10^{-5}	4.315	928	583
OX20-I-3'	2.0×10^{-5}	4.330	881	551
OX20-I-4'	3.0×10^{-5}	4.337	820	568
OX20-I-5'	4.0×10^{-5}	4.320	803	647
OX20-I-6'	6.0×10^{-5}	4.335	706	696
OX20-I-7'	8.0×10^{-5}	4.337	663	732
OX20-I-8'	1.0×10^{-4}	4.327	585	808
OX20-I-31'	1.5×10^{-4}	4.321	661	1954
OX20-I-32'	2.0×10^{-4}	4.308	535	2044
OX20-I-33'	2.5×10^{-4}	4.325	417	2114
OX20-I-34'	3.0×10^{-4}	4.303	342	2248
OX20-I-35'	3.5×10^{-4}	4.314	266	2251

$\log \beta_{101} = 4.36\pm0.02$, $\log \beta_{102} = 8.16\pm0.03$

Table Am79. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX20-II-1	0.0	4.345	925	412
OX20-II-2	1.0×10^{-5}	4.334	706	344
OX20-II-3	2.0×10^{-5}	4.339	847	527
OX20-II-4	3.0×10^{-5}	4.337	869	564
OX20-II-5	4.0×10^{-5}	4.337	790	616
OX20-II-6	6.0×10^{-5}	4.338	719	680
OX20-II-7	8.0×10^{-5}	4.332	644	752
OX20-II-8	1.0×10^{-4}	4.332	581	810
OX20-II-31	1.5×10^{-4}	4.328	630	1706
OX20-II-32	2.0×10^{-4}	4.331	501	2068
OX20-II-33	2.5×10^{-4}	4.334	450	2142
OX20-II-34	3.0×10^{-4}	4.328	313	2249
OX20-II-35	3.5×10^{-4}	4.351	313	2196

$\log \beta_{101} = 4.46\pm0.02$, $\log \beta_{102} = 8.25\pm0.05$

Table Am80. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX20-II-1'	0.0	4.345	938	418
OX20-II-2'	1.0×10^{-5}	4.334	699	345
OX20-II-3'	2.0×10^{-5}	4.339	838	524
OX20-II-4'	3.0×10^{-5}	4.337	843	555
OX20-II-5'	4.0×10^{-5}	4.337	807	613
OX20-II-6'	6.0×10^{-5}	4.338	722	673
OX20-II-7'	8.0×10^{-5}	4.332	660	748
OX20-II-8'	1.0×10^{-4}	4.332	587	806
OX20-II-31'	1.5×10^{-4}	4.328	616	1717
OX20-II-32'	2.0×10^{-4}	4.331	478	2098
OX20-II-33'	2.5×10^{-4}	4.334	460	2162
OX20-II-34'	3.0×10^{-4}	4.328	317	2250
OX20-II-35'	3.5×10^{-4}	4.351	312	2224

$\log \beta_{101} = 4.44\pm0.02$, $\log \beta_{102} = 8.25\pm0.04$

Table Am81. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 3 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX30-I-1	0.0	4.110	669	584
OX30-I-2	1.0×10^{-5}	4.120	651	533
OX30-I-3	2.0×10^{-5}	4.103	670	660
OX30-I-4	3.0×10^{-5}	4.108	629	743
OX30-I-5	4.0×10^{-5}	4.110	567	818
OX30-I-6	6.0×10^{-5}	4.122	506	836
OX30-I-7	8.0×10^{-5}	4.142	476	839
OX30-I-8	1.0×10^{-4}	4.128	422	1033
OX30-I-31	1.5×10^{-4}	4.114	412	2112
OX30-I-32	2.0×10^{-4}	4.094	285	2403
OX30-I-33	2.5×10^{-4}	4.119	216	2264
OX30-I-34	3.0×10^{-4}	4.094	175	2307
OX30-I-35	3.5×10^{-4}	4.103	178	2226

$\log \beta_{101} = 4.58\pm0.03$, $\log \beta_{102} = 8.51\pm0.03$

Table Am82. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 3 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX30-I-1'	0.0	4.110	685	637
OX30-I-2'	1.0×10^{-5}	4.120	651	568
OX30-I-3'	2.0×10^{-5}	4.103	691	672
OX30-I-4'	3.0×10^{-5}	4.108	616	744
OX30-I-5'	4.0×10^{-5}	4.110	569	820
OX30-I-6'	6.0×10^{-5}	4.122	492	837
OX30-I-7'	8.0×10^{-5}	4.142	465	838
OX30-I-8'	1.0×10^{-4}	4.128	412	1038
OX30-I-31'	1.5×10^{-4}	4.114	388	2110
OX30-I-32'	2.0×10^{-4}	4.094	288	2387
OX30-I-33'	2.5×10^{-4}	4.119	228	2246
OX30-I-34'	3.0×10^{-4}	4.094	178	2300
OX30-I-35'	3.5×10^{-4}	4.103	182	2294

$\log \beta_{101} = 4.57\pm0.04$, $\log \beta_{102} = 8.47\pm0.02$

Table Am83. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX30-II-1	0.0	4.125	787	458
OX30-II-2	1.0×10^{-5}	4.126	637	495
OX30-II-3	2.0×10^{-5}	4.124	681	607
OX30-II-4	3.0×10^{-5}	4.133	586	539
OX30-II-5	4.0×10^{-5}	4.128	642	682
OX30-II-6	6.0×10^{-5}	4.122	521	810
OX30-II-7	8.0×10^{-5}	4.110	456	887
OX30-II-8	1.0×10^{-4}	4.118	402	754
OX30-II-31	1.5×10^{-4}	4.066	290	2135
OX30-II-32	2.0×10^{-4}	4.082	233	2096
OX30-II-33	2.5×10^{-4}	4.065	197	2302
OX30-II-34	3.0×10^{-4}	4.075	167	2156
OX30-II-35	3.5×10^{-4}	4.072	167	2307

$\log \beta_{101} = 4.46\pm0.03$, $\log \beta_{102} = 8.50\pm0.05$

Table Am84. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX30-II-1'	0.0	4.125	788	457
OX30-II-2'	1.0×10^{-5}	4.126	641	489
OX30-II-3'	2.0×10^{-5}	4.124	682	600
OX30-II-4'	3.0×10^{-5}	4.133	548	540
OX30-II-5'	4.0×10^{-5}	4.128	644	675
OX30-II-6'	6.0×10^{-5}	4.122	515	799
OX30-II-7'	8.0×10^{-5}	4.110	473	892
OX30-II-8'	1.0×10^{-4}	4.118	393	752
OX30-II-31'	1.5×10^{-4}	4.066	291	2033
OX30-II-32'	2.0×10^{-4}	4.082	250	2245
OX30-II-33'	2.5×10^{-4}	4.065	196	2356
OX30-II-34'	3.0×10^{-4}	4.075	162	2279
OX30-II-35'	3.5×10^{-4}	4.072	172	2521

$\log \beta_{101} = 4.46\pm0.02$, $\log \beta_{102} = 8.53\pm0.04$

Table Am85. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 4 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX40-I-1	0.0	3.966	620	711
OX40-I-2	8.0×10^{-6}	3.960	665	693
OX40-I-3	1.6×10^{-5}	3.968	606	687
OX40-I-4	2.4×10^{-5}	3.989	578	711
OX40-I-6	4.0×10^{-5}	3.967	553	973
OX40-I-7	5.0×10^{-5}	3.967	429	918
OX40-I-8	6.0×10^{-5}	3.969	410	946
OX40-I-31	1.5×10^{-4}	3.960	290	2135
OX40-I-32	2.0×10^{-4}	3.968	233	2096
OX40-I-33	2.5×10^{-4}	3.968	197	2302
OX40-I-34	3.0×10^{-4}	3.971	167	2156
OX40-I-35	3.5×10^{-4}	3.982	167	2307

log β_{101} = 4.68±0.02, log β_{101} = 8.36±0.04

Table Am86. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 4 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX40-I-1'	0.0	3.966	632	704
OX40-I-2'	8.0×10^{-6}	3.960	657	694
OX40-I-3'	1.6×10^{-5}	3.960	609	699
OX40-I-4'	2.4×10^{-5}	3.989	572	737
OX40-I-6'	4.0×10^{-5}	3.957	569	970
OX40-I-7'	5.0×10^{-5}	3.967	426	899
OX40-I-8'	6.0×10^{-5}	3.969	414	938
OX40-I-31'	1.5×10^{-4}	3.960	291	2033
OX40-I-32'	2.0×10^{-4}	3.968	250	2245
OX40-I-33'	2.5×10^{-4}	3.968	196	2356
OX40-I-34'	3.0×10^{-4}	3.971	162	2279
OX40-I-35'	3.5×10^{-4}	3.982	171	2521

log β_{101} = 4.64±0.04, log β_{102} = 8.40±0.04

Table Am87. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX40-II-1	0.0	3.973	605	747
OX40-II-2	8.0×10^{-6}	3.967	781	617
OX40-II-3	1.6×10^{-5}	3.967	614	710
OX40-II-4	2.4×10^{-5}	3.989	622	714
OX40-II-6	4.0×10^{-5}	4.025	564	757
OX40-II-7	5.0×10^{-5}	3.974	425	915
OX40-II-8	6.0×10^{-5}	3.969	364	956
OX40-II-31	1.5×10^{-4}	3.953	339	2213
OX40-II-32	2.0×10^{-4}	3.980	280	2129
OX40-II-33	2.5×10^{-4}	3.986	230	2320
OX40-II-34	3.0×10^{-4}	3.975	187	2344
OX40-II-35	3.5×10^{-4}	3.970	163	2284

$\log \beta_{101} = 4.63\pm0.01$, $\log \beta_{102} = 8.46\pm0.03$

Table Am88. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX40-II-1'	0.0	3.973	623	743
OX40-II-2'	8.0×10^{-6}	3.967	766	609
OX40-II-3'	1.6×10^{-5}	3.967	606	735
OX40-II-4'	2.4×10^{-5}	3.989	616	716
OX40-II-6'	4.0×10^{-5}	4.025	579	761
OX40-II-7'	5.0×10^{-5}	3.974	434	917
OX40-II-8'	6.0×10^{-5}	3.969	365	953
OX40-II-31'	1.5×10^{-4}	3.953	341	2262
OX40-II-32'	2.0×10^{-4}	3.980	267	2161
OX40-II-33'	2.5×10^{-4}	3.986	250	2318
OX40-II-34'	3.0×10^{-4}	3.975	190	2342
OX40-II-35'	3.5×10^{-4}	3.970	168	2259

$\log \beta_{101} = 4.58\pm0.02$, $\log \beta_{102} = 8.41\pm0.04$

Table Am89. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX50-I-1	0.0	3.775	460	782
OX50-I-2	8.0×10^{-6}	3.746	604	719
OX50-I-3	1.6×10^{-5}	3.762	516	790
OX50-I-4	2.4×10^{-5}	3.846	596	661
OX50-I-5	3.2×10^{-5}	3.742	484	853
OX50-I-6	4.0×10^{-5}	3.755	408	887
OX50-I-7	5.0×10^{-5}	3.755	350	1055
OX50-I-8	6.0×10^{-5}	3.765	343	905
OX50-I-31	1.5×10^{-4}	3.717	197	1996
OX50-I-32	2.0×10^{-4}	3.712	132	2199
OX50-I-33	2.5×10^{-4}	3.687	133	2405
OX50-I-34	3.0×10^{-4}	3.721	142	2303
OX50-I-35	3.5×10^{-4}	3.721	101	2419

$\log \beta_{101} = 4.75\pm0.07$, $\log \beta_{101} = 8.74\pm0.02$

Table Am90. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX50-I-1'	0.0	3.775	462	794
OX50-I-2'	8.0×10^{-6}	3.746	595	718
OX50-I-3'	1.6×10^{-5}	3.762	532	802
OX50-I-4'	2.4×10^{-5}	3.846	625	670
OX50-I-5'	3.2×10^{-5}	3.742	483	833
OX50-I-6'	4.0×10^{-5}	3.755	410	875
OX50-I-7'	5.0×10^{-5}	3.755	363	1062
OX50-I-8'	6.0×10^{-5}	3.765	344	920
OX50-I-31'	1.5×10^{-4}	3.717	202	2030
OX50-I-32'	2.0×10^{-4}	3.712	143	2235
OX50-I-33'	2.5×10^{-4}	3.687	148	2363
OX50-I-34'	3.0×10^{-4}	3.721	157	2264
OX50-I-35'	3.5×10^{-4}	3.721	105	2462

$\log \beta_{101} = 4.76\pm0.06$, $\log \beta_{102} = 8.62\pm0.10$

Table Am91. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX50-II-1	0.0	3.764	640	681
OX50-II-2	8.0×10^{-6}	3.768	558	761
OX50-II-3	1.6×10^{-5}	3.786	539	614
OX50-II-4	2.4×10^{-5}	3.837	606	595
OX50-II-5	3.2×10^{-5}	3.767	482	936
OX50-II-6	4.0×10^{-5}	3.774	376	964
OX50-II-7	5.0×10^{-5}	3.779	386	1011
OX50-II-8	6.0×10^{-5}	3.766	194	1004
OX30-II-31	1.5×10^{-4}	3.737	157	2290
OX30-II-32	2.0×10^{-4}	3.720	146	2352
OX30-II-33	2.5×10^{-4}	3.741	87	145
OX30-II-34	3.0×10^{-4}	3.750	184	2271
OX30-II-35	3.5×10^{-4}	3.751	126	2345

$\log \beta_{101} = 4.52\pm0.05$, $\log \beta_{102} = 8.3\pm0.2$

Table Am92. Solvent Extraction Data for Apparent Stability Constants of Americium with Oxalate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 78 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
OX50-II-1'	0.0	3.764	654	679
OX50-II-2'	8.0×10^{-6}	3.768	555	777
OX50-II-3'	1.6×10^{-5}	3.786	552	616
OX50-II-4'	2.4×10^{-5}	3.837	596	587
OX50-II-5'	3.2×10^{-5}	3.767	483	767
OX50-II-6'	4.0×10^{-5}	3.774	372	955
OX50-II-7'	5.0×10^{-5}	3.779	391	998
OX50-II-8'	6.0×10^{-5}	3.766	197	1010
OX30-II-31'	1.5×10^{-4}	3.737	158	2304
OX30-II-32'	2.0×10^{-4}	3.720	145	2344
OX30-II-33'	2.5×10^{-4}	3.741	83	128
OX30-II-34'	3.0×10^{-4}	3.750	184	2231
OX30-II-35'	3.5×10^{-4}	3.751	127	2354

$\log \beta_{101} = 4.51\pm0.07$, $\log \beta_{101} = 8.4\pm0.2$

Table Am93. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit03-I-0	0.0	4.950	1371	65
Cit03-I-1	4.8×10^{-6}	4.958	946	941
Cit03-I-2	9.7×10^{-6}	4.951	797	1173
Cit03-I-3	1.5×10^{-5}	4.920	593	1374
Cit03-I-4	1.9×10^{-5}	4.940	493	1364
Cit03-I-5	2.4×10^{-5}	4.926	456	1543
Cit03-I-6	2.9×10^{-5}	4.947	472	1514
Cit03-I-7	3.4×10^{-5}	5.005	478	1578

$\log \beta_{101} = 6.05\pm0.02$

Table Am94. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit03-I-0'	0.0	4.950	1361	665
Cit03-I-1'	4.8×10^{-6}	4.958	923	930
Cit03-I-2'	9.7×10^{-6}	4.951	759	1117
Cit03-I-3'	1.5×10^{-5}	4.920	570	1377
Cit03-I-4'	1.9×10^{-5}	4.940	480	1379
Cit03-I-5'	2.4×10^{-5}	4.926	461	1603
Cit03-I-6'	2.9×10^{-5}	4.947	518	1519
Cit03-I-7'	3.4×10^{-5}	5.005	492	1582

$\log \beta_{101} = 5.93\pm0.04$

Table Am95. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit03-II-0	0.0	4.950	1195	661
Cit03-II-1	4.8×10^{-6}	4.958	841	1029
Cit03-II-2	9.7×10^{-6}	4.951	665	1216
Cit03-II-3	1.5×10^{-5}	4.920	565	1324
Cit03-II-4	1.9×10^{-5}	4.940	555	1291
Cit03-II-5	2.4×10^{-5}	4.926	497	1461
Cit03-II-6	2.9×10^{-5}	4.947	425	1577
Cit03-II-7	3.4×10^{-5}	4.947	379	1502

$\log \beta_{101} = 5.87\pm0.03$

Table Am96. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit03-II-0'	0.0	4.950	1168	683
Cit03-II-1'	4.8×10^{-6}	4.958	840	1027
Cit03-II-2'	9.7×10^{-6}	4.951	653	1188
Cit03-II-3'	1.5×10^{-5}	4.920	561	1310
Cit03-II-4'	1.9×10^{-5}	4.940	567	1289
Cit03-II-5'	2.4×10^{-5}	4.926	500	1579
Cit03-II-6'	2.9×10^{-5}	4.947	402	1572
Cit03-II-7'	3.4×10^{-5}	4.947	412	1534

$\log \beta_{101} = 5.83\pm0.04$

Table Am97. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 1 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit10-I-0	0.0	4.672	861	1253
Cit10-I-1	4.8×10^{-6}	4.644	844	1173
Cit10-I-2	9.7×10^{-6}	4.654	801	1324
Cit10-I-3	1.5×10^{-5}	4.663	735	1232
Cit10-I-4	1.9×10^{-5}	4.653	662	1259
Cit10-I-5	2.4×10^{-5}	4.658	649	1404
Cit10-I-6	2.9×10^{-5}	4.631	636	1362
Cit10-I-7	3.4×10^{-5}	4.631	638	1578

$\log \beta_{101} = 4.88\pm0.09$

Table Am98. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 1 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit10-I-0'	0.0	4.672	861	1136
Cit10-I-1'	4.8×10^{-6}	4.644	821	1188
Cit10-I-2'	9.7×10^{-6}	4.654	950	1233
Cit10-I-3'	1.5×10^{-5}	4.663	772	1234
Cit10-I-4'	1.9×10^{-5}	4.653	655	1309
Cit10-I-5'	2.4×10^{-5}	4.658	648	1355
Cit10-I-6'	2.9×10^{-5}	4.631	635	1370
Cit10-I-7'	3.4×10^{-5}	4.631	563	1623

$\log \beta_{101} = 5.15\pm0.08$

Table Am99. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 1 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit10-II-0	0.0	4.671	279	216
Cit10-II-1	4.8×10^{-6}	4.655	299	275
Cit10-II-2	9.7×10^{-6}	4.679	370	318
Cit10-II-3	1.5×10^{-5}	4.673	338	327
Cit10-II-4	1.9×10^{-5}	4.687	369	431
Cit10-II-5	2.4×10^{-5}	4.671	376	493
Cit10-II-6	2.9×10^{-5}	4.685	684	1064
Cit10-II-7	3.4×10^{-5}	4.680	659	1100

log β_{101} = 5.29±0.04

Table Am100. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 1 m NaCl at 25°C. [$^{241}Am^{3+}$] ~ 10^{-8} M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit10-II-0'	0.0	4.671	282	223
Cit10-II-1'	4.8×10^{-6}	4.655	309	240
Cit10-II-2'	9.7×10^{-6}	4.679	379	312
Cit10-II-3'	1.5×10^{-5}	4.673	308	324
Cit10-II-4'	1.9×10^{-5}	4.687	375	425
Cit10-II-5'	2.4×10^{-5}	4.671	381	495
Cit10-II-6'	2.9×10^{-5}	4.685	684	982
Cit10-II-7'	3.4×10^{-5}	4.680	642	1071

log β_{101} = 5.31±0.03

Table Am101. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit10-III-0	0.0	4.709	1408	759
Cit10-III-1	4.8×10^{-6}	4.737	1216	818
Cit10-III-2	9.7×10^{-6}	4.690	1072	998
Cit10-III-3	1.5×10^{-5}	4.680	1025	1149
Cit10-III-4	1.9×10^{-5}	4.714	1081	1024
Cit10-III-5	2.4×10^{-5}	4.729	966	1116
Cit10-III-6	2.9×10^{-5}	4.716	891	1183

$\log \beta_{101} = 5.25\pm0.04$

Table Am102. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit10-III-0'	0.0	4.709	1411	764
Cit10-III-1'	4.8×10^{-6}	4.737	1208	823
Cit10-III-2'	9.7×10^{-6}	4.690	1068	990
Cit10-III-3'	1.5×10^{-5}	4.680	1028	1073
Cit10-III-4'	1.9×10^{-5}	4.714	1067	1013
Cit10-III-5'	2.4×10^{-5}	4.729	957	1268
Cit10-III-6'	2.9×10^{-5}	4.716	884	1149

$\log \beta_{101} = 5.2\pm0.2$

Table Am103. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-I-0	0.0	4.325	384	279
Cit20-I-1	4.8×10^{-6}	4.327	153	143
Cit20-I-2	9.7×10^{-6}	4.320	548	456
Cit20-I-3	1.5×10^{-5}	4.209	230	325
Cit20-I-4	1.9×10^{-5}	4.207	319	610
Cit20-I-5	2.4×10^{-5}	4.302	135	161
Cit20-I-6	2.9×10^{-5}	4.302	147	165
Cit20-I-7	3.4×10^{-5}	4.300	137	182

log β_{101} = 5.10±0.08

Table Am104. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-I-0'	0.0	4.325	420	300
Cit20-I-1'	4.8×10^{-6}	4.327	155	141
Cit20-I-2'	9.7×10^{-6}	4.320	486	463
Cit20-I-3'	1.5×10^{-5}	4.209	250	318
Cit20-I-4'	1.9×10^{-5}	4.207	313	594
Cit20-I-5'	2.4×10^{-5}	4.302	139	165
Cit20-I-6'	2.9×10^{-5}	4.302	135	158
Cit20-I-7'	3.4×10^{-5}	4.300	142	183

log β_{101} = 5.10±0.07

Table Am105. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-II-0	0.0	4.341	1105	966
Cit20-II-1	4.8×10^{-6}	4.339	827	760
Cit20-II-2	9.7×10^{-6}	4.339	1008	900
Cit20-II-3	1.5×10^{-5}	4.325	622	757
Cit20-II-4	1.9×10^{-5}	4.327	799	979
Cit20-II-5	2.4×10^{-5}	4.311	397	463
Cit20-II-6	2.9×10^{-5}	4.321	295	417

$\log \beta_{101} = 4.8\pm0.1$

Table Am106. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-II-0'	0.0	4.341	1147	949
Cit20-II-1'	4.8×10^{-6}	4.339	808	770
Cit20-II-2'	9.7×10^{-6}	4.339	914	996
Cit20-II-3'	1.5×10^{-5}	4.325	631	764
Cit20-II-4'	1.9×10^{-5}	4.327	819	987
Cit20-II-5'	2.4×10^{-5}	4.311	377	483
Cit20-II-6'	2.9×10^{-5}	4.321	296	427

$\log \beta_{101} = 4.84\pm0.07$

Table Am107. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-III-0	0.0	4.529	1430	594
Cit20-III-1	4.8×10^{-6}	4.386	1058	1017
Cit20-III-2	9.7×10^{-6}	4.397	1041	989
Cit20-III-3	1.5×10^{-5}	4.484	1096	773
Cit20-III-4	1.9×10^{-5}	4.427	1026	988
Cit20-III-5	2.4×10^{-5}	4.409	927	1080
Cit20-III-6	2.9×10^{-5}	4.404	872	1172
Cit20-III-7	3.4×10^{-5}	4.346	764	1265

$\log \beta_{101} = 4.85\pm0.04$

Table Am108. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-III-0'	0.0	4.529	1594	609
Cit20-III-1'	4.8×10^{-6}	4.386	1044	945
Cit20-III-2'	9.7×10^{-6}	4.397	1058	986
Cit20-III-3'	1.5×10^{-5}	4.484	1087	771
Cit20-III-4'	1.9×10^{-5}	4.427	1018	995
Cit20-III-5'	2.4×10^{-5}	4.409	935	1067
Cit20-III-6'	2.9×10^{-5}	4.404	886	1185
Cit20-III-7'	3.4×10^{-5}	4.346	777	1252

$\log \beta_{101} = 4.92\pm0.04$

Table Am109. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-IV-0	0.0	4.362	1317	847
Cit20-IV-1	4.8×10^{-6}	4.363	969	739
Cit20-IV-2	9.7×10^{-6}	4.305	983	1121
Cit20-IV-3	1.5×10^{-5}	4.497	1617	691
Cit20-IV-4	1.9×10^{-5}	4.377	975	1091
Cit20-IV-5	2.4×10^{-5}	4.338	1035	1180
Cit20-IV-6	2.9×10^{-5}	4.384	994	1088
Cit20-IV-7	3.4×10^{-5}	4.241	683	1174

log β_{101} = 5.01±0.07

Table Am110. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit20-IV-0'	0.0	4.362	1292	843
Cit20-IV-1'	4.8×10^{-6}	4.363	941	778
Cit20-IV-2'	9.7×10^{-6}	4.305	1004	1222
Cit20-IV-3'	1.5×10^{-5}	4.497	1474	716
Cit20-IV-4'	1.9×10^{-5}	4.377	986	1008
Cit20-IV-5'	2.4×10^{-5}	4.338	1010	1226
Cit20-IV-6'	2.9×10^{-5}	4.384	995	1149
Cit20-IV-7'	3.4×10^{-5}	4.241	692	1160

log β_{101} = 5.00±0.04

Table Am111. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit30-I-0	0.0	4.079	948	1183
Cit30-I-1	4.8×10^{-6}	4.069	840	1168
Cit30-I-2	9.7×10^{-6}	4.066	758	1240
Cit30-I-3	1.5×10^{-5}	4.219	1205	736
Cit30-I-4	1.9×10^{-5}	4.130	909	725
Cit30-I-5	2.4×10^{-5}	4.076	735	1267
Cit30-I-6	2.9×10^{-5}	4.059	805	1005
Cit30-I-7	3.4×10^{-5}	4.062	635	1386

$\log \beta_{101} = 4.86\pm0.08$

Table Am112. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit30-I-0'	0.0	4.079	961	1113
Cit30-I-1'	4.8×10^{-6}	4.069	841	1136
Cit30-I-2'	9.7×10^{-6}	4.066	752	1230
Cit30-I-3'	1.5×10^{-5}	4.219	1213	800
Cit30-I-4'	1.9×10^{-5}	4.130	917	697
Cit30-I-5'	2.4×10^{-5}	4.076	745	1253
Cit30-I-6'	2.9×10^{-5}	4.059	776	997
Cit30-I-7'	3.4×10^{-5}	4.062	695	1382

$\log \beta_{101} = 4.82\pm0.05$

Table Am113. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit30-II-0	0.0	4.163	1138	813
Cit30-II-1	4.8×10^{-6}	4.115	917	855
Cit30-II-2	9.7×10^{-6}	4.168	256	1300
Cit30-II-3	1.5×10^{-5}	4.134	983	793
Cit30-II-4	1.9×10^{-5}	4.225	1171	650
Cit30-II-5	2.4×10^{-5}	4.075	212	712
Cit30-II-6	2.9×10^{-5}	4.053	703	1121
Cit30-II-7	3.4×10^{-5}	4.127	801	1102

$\log \beta_{101} = 4.8\pm0.1$

Table Am114. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit30-II-0'	0.0	4.163	1116	774
Cit30-II-1'	4.8×10^{-6}	4.115	901	829
Cit30-II-2'	9.7×10^{-6}	4.168	262	1279
Cit30-II-3'	1.5×10^{-5}	4.134	925	758
Cit30-II-4'	1.9×10^{-5}	4.225	1159	644
Cit30-II-5'	2.4×10^{-5}	4.075	201	677
Cit30-II-6'	2.9×10^{-5}	4.053	728	1067
Cit30-II-7'	3.4×10^{-5}	4.127	770	1070

$\log \beta_{101} = 4.8\pm0.1$

Table Am115. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit40-I-0	0.0	3.974	1390	640
Cit40-I-1	4.8×10^{-6}	3.989	908	973
Cit40-I-2	9.7×10^{-6}	3.948	1110	808
Cit40-I-3	1.5×10^{-5}	4.015	1289	571
Cit40-I-4	1.9×10^{-5}	3.912	781	1019
Cit40-I-5	2.4×10^{-5}	3.951	821	941
Cit40-I-6	2.9×10^{-5}	3.985	986	1102
Cit40-I-7	3.4×10^{-5}	3.946	753	1003

$\log \beta_{101} = 5.43\pm0.07$

Table Am116. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit40-I-0'	0.0	3.974	1438	647
Cit40-I-1'	4.8×10^{-6}	3.989	920	894
Cit40-I-2'	9.7×10^{-6}	3.948	1078	789
Cit40-I-3'	1.5×10^{-5}	4.015	1289	571
Cit40-I-4'	1.9×10^{-5}	3.912	781	1003
Cit40-I-5'	2.4×10^{-5}	3.951	821	921
Cit40-I-6'	2.9×10^{-5}	3.985	990	1084
Cit40-I-7'	3.4×10^{-5}	3.946	749	1013

$\log \beta_{101} = 5.44\pm0.06$

Table Am117. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit40-II-0	0.0	3.966	887	866
Cit40-II-1	4.8×10^{-6}	3.946	926	1164
Cit40-II-2	9.7×10^{-6}	4.032	1132	604
Cit40-II-3	1.5×10^{-5}	3.967	847	1083
Cit40-II-4	1.9×10^{-5}	4.007	1086	903
Cit40-II-5	2.4×10^{-5}	3.981	684	1212
Cit40-II-6	2.9×10^{-5}	3.967	700	1041

$\log \beta_{101} = 5.1\pm0.2$

Table Am118. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit40-I-0'	0.0	3.966	888	870
Cit40-I-1'	4.8×10^{-6}	3.946	838	1182
Cit40-I-2'	9.7×10^{-6}	4.032	1134	587
Cit40-I-3'	1.5×10^{-5}	3.967	831	1099
Cit40-I-4'	1.9×10^{-5}	4.007	1086	842
Cit40-I-5'	2.4×10^{-5}	3.981	696	1192
Cit40-I-6'	2.9×10^{-5}	3.967	688	1053

$\log \beta_{101} = 5.0\pm0.2$

Table Am119. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit50-I-0	0.0	3.869	1219	771
Cit50-I-1	4.8×10^{-6}	3.861	964	725
Cit50-I-2	9.7×10^{-6}	3.951	1471	587
Cit50-I-3	1.5×10^{-5}	3.942	1230	554
Cit50-I-4	1.9×10^{-5}	3.919	935	831
Cit50-I-5	2.4×10^{-5}	4.018	998	651
Cit50-I-6	2.9×10^{-5}	3.877	964	909
Cit50-I-7	3.4×10^{-5}	3.910	1109	881

$\log \beta_{101} = 5.2\pm0.1$

Table Am120. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit50-I-0'	0.0	3.869	1195	980
Cit50-I-1'	4.8×10^{-6}	3.861	951	726
Cit50-I-2'	9.7×10^{-6}	3.951	1341	613
Cit50-I-3'	1.5×10^{-5}	3.942	1224	561
Cit50-I-4'	1.9×10^{-5}	3.919	1023	849
Cit50-I-5'	2.4×10^{-5}	4.018	1015	633
Cit50-I-6'	2.9×10^{-5}	3.877	979	931
Cit50-I-7'	3.4×10^{-5}	3.910	1078	873

$\log \beta_{101} = 5.0\pm0.2$

Table Am121. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit50-II-0	0.0	3.840	839	813
Cit50-II-1	4.8×10^{-6}	3.835	951	749
Cit50-II-2	9.7×10^{-6}	3.839	993	864
Cit50-II-3	1.5×10^{-5}	3.857	873	815
Cit50-II-4	1.9×10^{-5}	3.876	1001	885
Cit50-II-5	2.4×10^{-5}	3.873	1016	769
Cit50-II-6	2.9×10^{-5}	3.873	772	944
Cit50-II-7	3.4×10^{-5}	3.874	941	961

log β_{101} = 5.1 ±0.1

Table Am122. Solvent Extraction Data for Apparent Stability Constants of Americium with Citrate in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 5×10^{-5} M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
Cit50-II-0'	0.0	3.840	834	834
Cit50-II-1'	4.8×10^{-6}	3.835	780	780
Cit50-II-2'	9.7×10^{-6}	3.839	864	864
Cit50-II-3'	1.5×10^{-5}	3.857	782	782
Cit50-II-4'	1.9×10^{-5}	3.876	895	895
Cit50-II-5'	2.4×10^{-5}	3.873	754	754
Cit50-II-6'	2.9×10^{-5}	3.873	924	924
Cit50-II-7'	3.4×10^{-5}	3.874	916	916

log β_{101} = 5.1±0.1

Table Am123. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 87 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA03-I-1	0.0	2.244	930	250
EDTA03-I-2	1.0×10^{-4}	2.255	304	848
EDTA03-I-3	2.0×10^{-4}	2.256	207	910
EDTA03-I-4	3.0×10^{-4}	2.258	177	969
EDTA03-I-5	4.0×10^{-4}	2.264	160	990
EDTA03-I-6	5.0×10^{-4}	2.269	149	1004

$\log \beta_{101} = 14.97\pm0.02$

Table Am124. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 87 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA03-I-1'	0.0	2.244	940	248
EDTA03-I-2'	1.0×10^{-4}	2.255	306	856
EDTA03-I-3'	2.0×10^{-4}	2.256	205	924
EDTA03-I-4'	3.0×10^{-4}	2.258	181	974
EDTA03-I-5'	4.0×10^{-4}	2.264	156	999
EDTA03-I-6'	5.0×10^{-4}	2.269	154	1020

$\log \beta_{101} = 15.12\pm0.02$

Table Am125. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 87 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA03-II-1	0.0	2.246	951	250
EDTA03-II-2	1.0×10^{-4}	2.254	309	850
EDTA03-II-3	2.0×10^{-4}	2.258	225	930
EDTA03-II-4	3.0×10^{-4}	2.258	182	954
EDTA03-II-5	4.0×10^{-4}	2.260	161	983
EDTA03-II-6	5.0×10^{-4}	2.265	151	995

$\log \beta_{101} = 15.06\pm0.02$

Table Am126. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 0.3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 87 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA03-II-1'	0.0	2.246	928	245
EDTA03-II-2'	1.0×10^{-4}	2.254	308	844
EDTA03-II-3'	2.0×10^{-4}	2.258	221	914
EDTA03-II-4'	3.0×10^{-4}	2.258	181	953
EDTA03-II-5'	4.0×10^{-4}	2.260	154	998
EDTA03-II-6'	5.0×10^{-4}	2.265	144	987

$\log \beta_{101} = 15.23\pm0.02$

Table Am127. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 84 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA10-I-1	0.0	2.073	918	287
EDTA10-I-2	$1.0\text{x}10^{-4}$	2.073	390	761
EDTA10-I-3	$2.0\text{x}10^{-4}$	2.073	280	885
EDTA10-I-4	$3.0\text{x}10^{-4}$	2.070	225	934
EDTA10-I-5	$4.0\text{x}10^{-4}$	2.072	196	934
EDTA10-I-6	$5.0\text{x}10^{-4}$	2.069	191	950

$\log \beta_{101} = 13.99\pm0.01$

Table Am128. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 84 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA10-I-1'	0.0	2.073	1013	261
EDTA10-I-2'	1.0×10^{-4}	2.073	386	826
EDTA10-I-3'	2.0×10^{-4}	2.073	278	881
EDTA10-I-4'	3.0×10^{-4}	2.070	226	937
EDTA10-I-5'	4.0×10^{-4}	2.072	193	951
EDTA10-I-6'	5.0×10^{-4}	2.069	181	933

$\log \beta_{101} = 14.01\pm0.01$

Table Am129. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 84 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA10-II-1	0.0	2.072	855	343
EDTA10-II-2	1.0×10^{-4}	2.070	375	771
EDTA10-II-3	2.0×10^{-4}	2.069	282	871
EDTA10-II-4	3.0×10^{-4}	2.067	240	908
EDTA10-II-5	4.0×10^{-4}	2.070	205	933
EDTA10-II-6	5.0×10^{-4}	2.072	179	947

$\log \beta_{101} = 13.84\pm0.01$

Table Am130. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 1 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 84 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA10-II-1'	0.0	2.072	866	322
EDTA10-II-2'	1.0×10^{-4}	2.074	380	778
EDTA10-II-3'	2.0×10^{-4}	2.069	285	850
EDTA10-II-4'	3.0×10^{-4}	2.067	230	913
EDTA10-II-5'	4.0×10^{-4}	2.070	199	938
EDTA10-II-6'	5.0×10^{-4}	2.072	178	975

$\log \beta_{101} = 13.99\pm0.01$

Table Am131. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 88 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA20-I-1	0.0	1.847	716	376
EDTA20-I-2	1.0×10^{-4}	1.855	398	706
EDTA20-I-3	2.0×10^{-4}	1.858	308	842
EDTA20-I-4	3.0×10^{-4}	1.856	225	897
EDTA20-I-5	4.0×10^{-4}	1.855	237	926
EDTA20-I-6	5.0×10^{-4}	1.856	205	987

$\log \beta_{101} = 13.93 \pm 0.04$

Table Am132. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 88 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA20-I-1'	0.0	1.847	796	376
EDTA20-I-2'	1.0×10^{-4}	1.855	439	776
EDTA20-I-3'	2.0×10^{-4}	1.858	307	899
EDTA20-I-4'	3.0×10^{-4}	1.856	257	897
EDTA20-I-5'	4.0×10^{-4}	1.855	210	936
EDTA20-I-6'	5.0×10^{-4}	1.856	190	921

$\log \beta_{101} = 14.18 \pm 0.01$

Table Am133. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 88 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA20-II-1	0.0	1.855	767	396
EDTA20-II-2	1.0×10^{-4}	1.858	418	713
EDTA20-II-3	2.0×10^{-4}	1.854	291	831
EDTA20-II-4	3.0×10^{-4}	1.856	238	899
EDTA20-II-5	4.0×10^{-4}	1.860	223	907
EDTA20-II-6	5.0×10^{-4}	1.853	187	906

$\log \beta_{101} = 14.07 \pm 0.03$

Table Am134. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 2 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 88 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA20-II-1'	0.0	1.855	791	399
EDTA20-II-2'	1.0×10^{-4}	1.858	422	759
EDTA20-II-3'	2.0×10^{-4}	1.854	295	831
EDTA20-II-4'	3.0×10^{-4}	1.856	244	887
EDTA20-II-5'	4.0×10^{-4}	1.860	224	904
EDTA20-II-6'	5.0×10^{-4}	1.853	194	922

log β_{101} = 13.99±0.02

Table Am135. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA30-I-1	0.0	1.620	713	423
EDTA30-I-2	1.0×10^{-4}	1.621	487	639
EDTA30-I-3	2.0×10^{-4}	1.621	364	752
EDTA30-I-4	3.0×10^{-4}	1.619	319	840
EDTA30-I-5	4.0×10^{-4}	1.619	253	818
EDTA30-I-6	5.0×10^{-4}	1.618	234	845

log β_{101} = 13.79±0.01

Table Am136. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA30-I-1'	0.0	1.620	706	455
EDTA30-I-2'	1.0×10^{-4}	1.621	487	647
EDTA30-I-3'	2.0×10^{-4}	1.621	365	750
EDTA30-I-4'	3.0×10^{-4}	1.619	324	803
EDTA30-I-5'	4.0×10^{-4}	1.619	280	824
EDTA30-I-6'	5.0×10^{-4}	1.618	232	854

log β_{101} = 13.75±0.03

Table Am137. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA30-II-1	0.0	1.624	718	460
EDTA30-II-2	1.0×10^{-4}	1.624	508	670
EDTA30-II-3	2.0×10^{-4}	1.629	358	739
EDTA30-II-4	3.0×10^{-4}	1.620	307	724
EDTA30-II-5	4.0×10^{-4}	1.620	272	794
EDTA30-II-6	5.0×10^{-4}	1.620	238	853

$\log \beta_{101} = 13.73\pm0.02$

Table Am138. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA30-II-1'	0.0	1.624	716	430
EDTA30-II-2'	1.0×10^{-4}	1.624	500	629
EDTA30-II-3'	2.0×10^{-4}	1.629	356	748
EDTA30-II-4'	3.0×10^{-4}	1.620	279	772
EDTA30-II-5'	4.0×10^{-4}	1.620	296	813
EDTA30-II-6'	5.0×10^{-4}	1.620	236	918

$\log \beta_{101} = 13.82\pm0.05$

Table Am139. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA40-I-1	0.0	1.430	649	444
EDTA40-I-2	1.0×10^{-4}	1.424	586	599
EDTA40-I-3	2.0×10^{-4}	1.419	485	658
EDTA40-I-4	3.0×10^{-4}	1.413	480	708
EDTA40-I-5	4.0×10^{-4}	1.409	385	776
EDTA40-I-6	5.0×10^{-4}	1.409	353	816

$\log \beta_{101} = 13.90\pm0.04$

Table Am140. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA40-I-1'	0.0	1.428	704	429
EDTA40-I-2'	1.0×10^{-4}	1.424	581	598
EDTA40-I-3'	2.0×10^{-4}	1.419	445	654
EDTA40-I-4'	3.0×10^{-4}	1.413	448	664
EDTA40-I-5'	4.0×10^{-4}	1.409	356	734
EDTA40-I-6'	5.0×10^{-4}	1.409	334	741

$\log \beta_{101} = 13.90\pm0.04$

Table Am141. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 4 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 81 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA40-II-1	0.0	1.435	707	429
EDTA40-II-2	1.0×10^{-4}	1.435	542	575
EDTA40-II-3	2.0×10^{-4}	1.428	477	679
EDTA40-II-4	3.0×10^{-4}	1.420	401	687
EDTA40-II-5	4.0×10^{-4}	1.417	391	711
EDTA40-II-6	5.0×10^{-4}	1.406	369	770

$\log \beta_{101} = 13.87\pm0.05$

Table Am142. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 75 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA50-I-1	0.0	1.295	1753	700
EDTA50-I-2	1.0×10^{-4}	1.295	1405	926
EDTA50-I-3	2.0×10^{-4}	1.295	1265	1089
EDTA50-I-4	3.0×10^{-4}	1.295	1204	1112
EDTA50-I-5	4.0×10^{-4}	1.295	1184	1170
EDTA50-I-6	5.0×10^{-4}	1.295	1051	1170

$\log \beta_{101} = 14.32\pm0.07$

Table Am143. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 75 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA50-I-1'	0.0	1.295	1745	697
EDTA50-I-2'	1.0×10^{-4}	1.295	1366	950
EDTA50-I-3'	2.0×10^{-4}	1.295	1262	1085
EDTA50-I-4'	3.0×10^{-4}	1.295	1214	1101
EDTA50-I-5'	4.0×10^{-4}	1.295	1155	1216
EDTA50-I-6'	5.0×10^{-4}	1.295	1038	1157

$\log \beta_{101} = 14.34\pm0.06$

Table Am144. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 75 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA50-II-1	0.0	1.295	1612	759
EDTA50-II-2	1.0×10^{-4}	1.295	1480	904
EDTA50-II-3	2.0×10^{-4}	1.295	1333	1019
EDTA50-II-4	3.0×10^{-4}	1.295	1185	1118
EDTA50-II-5	4.0×10^{-4}	1.295	1110	1239
EDTA50-II-6	5.0×10^{-4}	1.295	967	1219

$\log \beta_{101} = 14.40\pm0.01$

Table Am145. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 75 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA50-II-1'	0.0	1.295	1625	773
EDTA50-II-2'	1.0×10^{-4}	1.295	1460	881
EDTA50-II-3'	2.0×10^{-4}	1.295	1345	1009
EDTA50-II-4'	3.0×10^{-4}	1.295	1146	1096
EDTA50-II-5'	4.0×10^{-4}	1.295	1099	1264
EDTA50-II-6'	5.0×10^{-4}	1.295	974	1282

$\log \beta_{101} = 14.45\pm0.02$

Table Am146. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 5 m NaCl at 25°C. $[^{241}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 75 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA50-0-1	0.0	1.281	2197	180
EDTA50-0-2	1.0×10^{-4}	1.278	2179	231
EDTA50-0-3	2.0×10^{-4}	1.287	2086	237
EDTA50-0-4	3.0×10^{-4}	1.283	2129	305
EDTA50-0-5	4.0×10^{-4}	1.283	2091	305
EDTA50-0-6	5.0×10^{-4}	1.286	1974	347

$\log \beta_{101} = 14.35\pm0.04$

Table Am147. Solvent Extraction Data for Apparent Stability Constants of Americium with EDTA in 5 m NaCl at 25°C. $[^{231}Am^{3+}] \sim 10^{-8}$ M, [HDEHP] = 0.020 M in *n*-Heptane. Background = 75 cpm.

Sample #	L_T, M	pHr	Organic, cpm	Aqueous, cpm
EDTA50-0-1'	0.0	1.281	2204	177
EDTA50-0-2'	1.0×10^{-4}	1.278	2172	227
EDTA50-0-3'	2.0×10^{-4}	1.287	2149	234
EDTA50-0-4'	3.0×10^{-4}	1.283	2156	307
EDTA50-0-5'	4.0×10^{-4}	1.283	2119	285
EDTA50-0-6'	5.0×10^{-4}	1.286	1996	338

$\log \beta_{101} = 14.32\pm0.06$

Table Mg1. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.7843 mmol Mg^{2+}, 0.07395 mmol Sodium Acetate, 0.0326 mmol excess HCl, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.977pHr + 0.221.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.499	0.450	3.738	0.900	4.959
0.030	2.532	0.480	3.830	0.930	5.074
0.050	2.561	0.500	3.891	0.950	5.160
0.080	2.611	0.530	3.979	0.980	5.320
0.100	2.644	0.550	4.031	1.000	5.457
0.130	2.699	0.580	4.110	1.030	5.778
0.150	2.739	0.600	4.159	1.050	6.166
0.180	2.807	0.630	4.235	1.080	9.223
0.200	2.857	0.650	4.283	1.100	9.594
0.230	2.938	0.680	4.360	1.130	9.831
0.250	2.997	0.700	4.406	1.140	9.873
0.280	3.099	0.730	4.476	1.150	9.903
0.300	3.174	0.750	4.528	1.162	9.932
0.330	3.288	0.780	4.605	1.172	9.955
0.350	3.370	0.800	4.656	1.180	9.965
0.380	3.490	0.830	4.739	1.190	9.989
0.400	3.565	0.850	4.794	1.200	10.004
0.430	3.672	0.880	4.890		

$\log \beta_{101} = 0.561$, $\log \beta_{1\text{-}10} = -11.748$

Table Mg2. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.07395mmol Sodium Acetate, 0.03265 mmol excess HCl, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.977pHr + 0.221.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.499	0.500	3.959	1.000	5.778
0.030	2.534	0.532	4.052	1.030	6.677
0.050	2.566	0.550	4.100	1.050	9.639
0.080	2.615	0.580	4.179	1.080	10.202
0.100	2.652	0.600	4.231	1.100	10.378
0.130	2.710	0.630	4.306	1.130	10.556
0.150	2.752	0.650	4.359	1.150	10.644
0.180	2.822	0.680	4.430	1.160	10.679
0.200	2.874	0.700	4.480	1.170	10.712
0.230	2.965	0.730	4.555	1.180	10.740
0.250	3.026	0.750	4.606		
0.280	3.132	0.780	4.685		
0.300	3.211	0.802	4.746		
0.330	3.336	0.830	4.828		
0.350	3.420	0.850	4.891		
0.380	3.545	0.880	4.997		
0.400	3.624	0.900	5.076		
0.430	3.734	0.930	5.212		
0.450	3.803	0.950	5.318		
0.480	3.900	0.980	5.548		

$pK_a = 4.518$

Table Mg3. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.78432 mmol Mg^{2+}, 0.07395 mmol Sodium Acetate, 0.03265 mmol excess HCl, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.977pHr + 0.221.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.504	0.402	3.570	0.800	4.665
0.020	2.526	0.420	3.635	0.822	4.724
0.040	2.553	0.440	3.706	0.840	4.776
0.060	2.584	0.460	3.773	0.860	4.837
0.080	2.615	0.480	3.837	0.880	4.904
0.100	2.649	0.500	3.896	0.900	4.974
0.120	2.685	0.520	3.954	0.920	5.054
0.140	2.723	0.540	4.010	0.940	5.145
0.162	2.770	0.560	4.065	0.960	5.252
0.180	2.810	0.580	4.116	0.980	5.375
0.200	2.860	0.600	4.167	1.000	5.535
0.222	2.918	0.620	4.217	1.020	5.719
0.240	2.971	0.640	4.266	1.040	6.062
0.260	3.033	0.660	4.313	1.060	7.399
0.280	3.100	0.680	4.362	1.082	9.248
0.300	3.172	0.700	4.410	1.100	9.531
0.320	3.250	0.720	4.461	1.120	9.719
0.340	3.326	0.740	4.510	1.130	9.778
0.360	3.407	0.760	4.559	1.140	9.822
0.380	3.485	0.780	4.610	1.150	9.862

$\log \beta_{101} = 0.498$, $\log \beta_{1\text{-}10} = -11.814$

Table Mg4. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 1 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.7317 mmol Mg^{2+}, 0.07353 mmol Sodium Acetate, 0.0254 mmol excess HCl, Titrant = 0.0973 M NaOH in 1 m NaCl, pcH = 0.979pHr + 0.368.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.438	0.600	4.104	1.010	5.655
0.050	2.516	0.630	4.173	1.040	6.942
0.100	2.615	0.650	4.218	1.070	9.299
0.150	2.737	0.680	4.286	1.100	9.636
0.200	2.885	0.700	4.331	1.130	9.776
0.250	3.062	0.730	4.400	1.160	9.808
0.302	3.261	0.750	4.448	1.200	9.800
0.350	3.435	0.780	4.523	1.250	9.845
0.400	3.597	0.800	4.574	1.300	9.770
0.450	3.740	0.830	4.658	1.350	9.845
0.480	3.820	0.850	4.716	1.400	9.883
0.500	3.869	0.890	4.852	1.450	9.900
0.530	3.943	0.930	5.017	1.500	9.900
0.550	3.990	0.950	5.122		
0.580	4.059	0.980	5.326		

$\log \beta_{101} = 0.564$, $\log \beta_{1\text{-}10} = -11.285$

Table Mg5. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 1 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.7317 mmol Mg^{2+}, 0.07353 mmol Sodium Acetate, 0.0254 mmol excess HCl, Titrant = 0.09716 M NaOH in 1 m NaCl, pcH = 0.984pHr + 0.377.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.417	0.450	3.721	0.904	4.911
0.030	2.462	0.480	3.801	0.930	5.030
0.050	2.496	0.500	3.852	0.950	5.139
0.080	2.555	0.530	3.925	0.980	5.355
0.100	2.597	0.550	3.974	1.000	5.570
0.130	2.666	0.580	4.043	1.030	6.349
0.150	2.719	0.600	4.087	1.050	8.883
0.180	2.804	0.630	4.156	1.082	9.554
0.200	2.867	0.650	4.202	1.100	9.698
0.230	2.969	0.680	4.270	1.130	9.824
0.250	3.042	0.700	4.317	1.150	9.869
0.280	3.155	0.732	4.393	1.180	9.907
0.300	3.230	0.750	4.437	1.200	9.920
0.330	3.343	0.780	4.512	1.210	9.922
0.350	3.414	0.800	4.566	1.220	9.924
0.380	3.514	0.830	4.652	1.230	9.926
0.402	3.583	0.850	4.714	1.240	9.929
0.430	3.666	0.880	4.817	1.250	9.932

$\log \beta_{101} = 0.534$, $\log \beta_{1\text{-}10} = -11.794$

Table Mg6. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 1 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.07353 mmol Sodium Acetate, 0.0254 mmol excess HCl, Titrant = 0.0973 M NaOH in 1 m NaCl, pcH = 0.984pHr + 0.377.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.488	0.550	4.081	1.020	7.200
0.050	2.567	0.580	4.151	1.030	8.975
0.100	2.670	0.600	4.198	1.040	9.435
0.130	2.741	0.630	4.268	1.050	9.682
0.150	2.796	0.650	4.311	1.060	9.850
0.180	2.884	0.680	4.378	1.070	9.958
0.200	2.949	0.700	4.425	1.080	10.055
0.230	3.058	0.730	4.497	1.100	10.214
0.250	3.134	0.750	4.547		
0.280	3.253	0.780	4.625		
0.300	3.332	0.800	4.680		
0.330	3.448	0.830	4.764		
0.350	3.520	0.850	4.830		
0.380	3.623	0.880	4.938		
0.400	3.685	0.900	5.020		
0.440	3.801	0.930	5.168		
0.450	3.829	0.950	5.294		
0.480	3.909	0.980	5.560		
0.500	3.960	1.000	5.895		
0.530	4.033	1.010	6.260		

$pK_a = 4.544$

Table Mg7. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 1 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.07353 mmol Sodium Acetate, 0.0254 mmol excess HCl, Titrant = 0.1008 M NaOH in 1 m NaCl, pcH = 0.984pHr + 0.377.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.385	0.500	3.903	1.000	9.271
0.034	2.435	0.530	3.979	1.030	9.929
0.050	2.463	0.550	4.029	1.050	10.127
0.080	2.525	0.580	4.102	1.080	10.315
0.100	2.567	0.600	4.148	1.100	10.408
0.130	2.641	0.630	4.222	1.130	10.519
0.150	2.696	0.650	4.270	1.150	10.579
0.180	2.786	0.680	4.345		
0.200	2.852	0.700	4.397		
0.230	2.963	0.730	4.476		
0.250	3.042	0.750	4.529		
0.280	3.165	0.780	4.617		
0.300	3.249	0.800	4.678		
0.330	3.369	0.830	4.780		
0.350	3.444	0.850	4.854		
0.382	3.556	0.880	4.983		
0.402	3.615	0.900	5.090		
0.430	3.709	0.930	5.299		
0.450	3.768	0.950	5.523		
0.480	3.851	0.980	6.239		

$pK_a = 4.502$

Table Mg8. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 2 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6966 mmol Mg^{2+}, 0.07305 mmol Sodium Acetate, 0.0324 mmol excess HCl, Titrant = 0.09768 M NaOH in 2 m NaCl, pcH = 0.989pHr + 0.646.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.104	0.480	3.513	0.950	4.729
0.030	2.139	0.502	3.578	0.980	4.848
0.050	2.171	0.530	3.655	1.000	4.942
0.080	2.220	0.550	3.708	1.030	5.121
0.100	2.255	0.580	3.784	1.050	5.279
0.130	2.314	0.600	3.834	1.080	5.675
0.150	2.358	0.630	3.904	1.100	6.480
0.180	2.428	0.650	3.952	1.130	9.126
0.200	2.482	0.680	4.022	1.150	9.421
0.230	2.568	0.700	4.066	1.160	9.522
0.250	2.633	0.730	4.134	1.170	9.599
0.280	2.743	0.750	4.178	1.180	9.654
0.302	2.830	0.780	4.248	1.190	9.699
0.330	2.948	0.800	4.298	1.200	9.732
0.352	3.040	0.830	4.372	1.210	9.754
0.380	3.156	0.850	4.423	1.220	9.772
0.400	3.235	0.880	4.504	1.230	9.787
0.430	3.346	0.900	4.563	1.240	9.794
0.450	3.417	0.930	4.659	1.250	9.803

$\log \beta_{101} = 0.635$, $\log \beta_{1\text{-}10} = -11.874$

Table Mg9. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 2 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6966 mmol Mg^{2+}, 0.07305 mmol Sodium Acetate, 0.0310 mmol excess HCl, Titrant = 0.09553 M NaOH in 2 m NaCl, pcH = 0.978pHr + 0.583.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.151	0.500	3.631	1.000	5.031
0.030	2.188	0.530	3.713	1.030	5.226
0.050	2.219	0.550	3.764	1.050	5.408
0.080	2.270	0.580	3.839	1.080	5.948
0.100	2.305	0.600	3.888	1.100	7.824
0.130	2.364	0.630	3.957	1.130	9.094
0.150	2.408	0.650	4.003	1.140	9.238
0.180	2.481	0.680	4.072	1.150	9.337
0.200	2.536	0.700	4.118	1.160	9.431
0.232	2.633	0.730	4.187	1.170	9.512
0.250	2.695	0.750	4.233	1.180	9.573
0.280	2.806	0.780	4.302	1.190	9.618
0.300	2.886	0.800	4.352	1.200	9.650
0.330	3.014	0.830	4.428	1.210	9.676
0.350	3.102	0.850	4.481	1.220	9.690
0.380	3.224	0.880	4.565	1.230	9.705
0.400	3.302	0.900	4.624	1.240	9.718
0.430	3.412	0.930	4.726	1.250	9.727
0.450	3.479	0.950	4.802		
0.480	3.574	0.982	4.937		

$\log \beta_{101} = 0.506$, $\log \beta_{1\text{-}10} = -11.838$

Table Mg10. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 2 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6966 mmol Mg^{2+}, 0.07305 mmol Sodium Acetate, 0.0310 mmol excess HCl, Titrant = 0.08462 M NaOH in 2 m NaCl, pcH = 0.971pHr + 0.613.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.130	0.550	3.546	1.100	4.774
0.030	2.160	0.580	3.618	1.130	4.876
0.050	2.185	0.600	3.666	1.150	4.955
0.080	2.227	0.630	3.736	1.180	5.103
0.106	2.266	0.650	3.782	1.200	5.218
0.130	2.306	0.680	3.844	1.230	5.465
0.150	2.340	0.700	3.886	1.250	5.719
0.182	2.401	0.730	3.948	1.280	8.055
0.202	2.443	0.750	3.987	1.300	9.067
0.230	2.508	0.780	4.050	1.332	9.485
0.250	2.558	0.800	4.089	1.350	9.577
0.280	2.640	0.830	4.149	1.370	9.655
0.300	2.704	0.850	4.186	1.380	9.679
0.330	2.801	0.880	4.248	1.390	9.699
0.350	2.874	0.900	4.293	1.400	9.717
0.380	2.985	0.930	4.350	1.412	9.734
0.400	3.061	0.950	4.394	1.420	9.743
0.430	3.170	0.980	4.460	1.430	9.749
0.450	3.239	1.000	4.506	1.444	9.759
0.482	3.345	1.030	4.580	1.450	9.763
0.500	3.400	1.050	4.635		
0.530	3.488	1.080	4.716		

$\log \beta_{101} = 0.705$, $\log \beta_{1\text{-}10} = -11.759$

Table Mg11. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 2 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.07305 mmol Sodium Acetate, 0.03235 mmol excess HCl, Titrant = 0.09768 M NaOH in 2 m NaCl, pcH = 0.971pHr + 0.613.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.120	0.502	3.656	1.000	5.146
0.030	2.159	0.530	3.733	1.030	5.407
0.050	2.190	0.550	3.787	1.050	5.708
0.080	2.242	0.580	3.862	1.080	8.479
0.100	2.278	0.600	3.913	1.100	9.437
0.130	2.338	0.630	3.983	1.130	9.894
0.150	2.383	0.650	4.031	1.150	10.062
0.180	2.458	0.680	4.100	1.180	10.232
0.200	2.515	0.700	4.148	1.202	10.325
0.230	2.608	0.730	4.218	1.230	10.419
0.250	2.678	0.750	4.266	1.250	10.472
0.280	2.798	0.780	4.341		
0.300	2.884	0.800	4.392		
0.330	3.018	0.830	4.469		
0.350	3.108	0.850	4.526		
0.380	3.238	0.880	4.616		
0.400	3.317	0.900	4.682		
0.432	3.434	0.930	4.790		
0.450	3.495	0.950	4.873		
0.480	3.590	0.980	5.023		

$pK_a = 4.6457$

Table Mg12. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.7317 mmol Mg^{2+}, 0.07353 mmol Sodium Acetate, 0.0254 mmol excess HCl, Titrant = 0.09338 M NaOH in 3 m NaCl, pcH = 0.982pHr + 0.762.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.022	0.480	3.562	0.900	4.583
0.050	2.097	0.500	3.616	0.930	4.685
0.100	2.197	0.530	3.693	0.950	4.761
0.130	2.268	0.550	3.741	0.980	4.895
0.150	2.321	0.580	3.813	1.000	5.006
0.180	2.411	0.600	3.861	1.030	5.222
0.200	2.475	0.630	3.927	1.050	5.448
0.230	2.587	0.650	3.970	1.060	5.604
0.250	2.675	0.680	4.037	1.070	5.825
0.280	2.804	0.700	4.081	1.080	6.297
0.300	2.898	0.730	4.148	1.090	8.080
0.330	3.031	0.750	4.194	1.100	8.735
0.350	3.118	0.780	4.263	1.110	8.936
0.380	3.241	0.800	4.310	1.120	9.052
0.400	3.313	0.830	4.385	1.130	9.152
0.430	3.414	0.850	4.439	1.140	9.232
0.450	3.476	0.880	4.528		

$\log \beta_{101} = 0.737$, $\log \beta_{1\text{-}10} = -11.858$

Table Mg13. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6975 mmol Mg^{2+}, 0.07167 mmol Sodium Acetate, 0.0255 mmol excess HCl, Titrant = 0.09582 M NaOH in 3 m NaCl, pcH = 0.972pHr + 0.837.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.990	0.480	3.602	0.950	4.856
0.032	2.039	0.500	3.655	0.980	5.037
0.050	2.072	0.530	3.734	1.000	5.197
0.080	2.132	0.550	3.784	1.030	5.546
0.100	2.176	0.580	3.851	1.050	6.099
0.130	2.251	0.600	3.897	1.080	9.053
0.150	2.306	0.630	3.963	1.100	9.342
0.180	2.403	0.650	4.001	1.110	9.408
0.200	2.476	0.680	4.071	1.120	9.461
0.234	2.621	0.700	4.111	1.130	9.495
0.250	2.699	0.730	4.179	1.140	9.525
0.280	2.839	0.750	4.225	1.150	9.547
0.300	2.938	0.780	4.295	1.160	9.559
0.330	3.081	0.800	4.347	1.170	9.573
0.350	3.167	0.830	4.427	1.180	9.584
0.380	3.284	0.852	4.483	1.190	9.592
0.400	3.355	0.880	4.578	1.200	9.600
0.430	3.454	0.900	4.649		
0.450	3.516	0.930	4.766		

$\log \beta_{101} = 0.735$, $\log \beta_{1\text{-}10} = -11.853$

Table Mg14. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.07353 mmol Sodium Acetate, 0.02537 mmol excess HCl, Titrant = 0.09338 M NaOH in 3 m NaCl, pcH = 0.972pHr + 0.837.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.146	0.550	3.879	1.050	6.200
0.050	2.225	0.580	3.946	1.060	8.415
0.100	2.326	0.600	3.990	1.070	9.110
0.130	2.397	0.630	4.056	1.080	9.382
0.150	2.452	0.650	4.098	1.090	9.543
0.180	2.545	0.680	4.163	1.100	9.666
0.200	2.616	0.700	4.210	1.120	9.836
0.230	2.737	0.730	4.274	1.140	9.959
0.250	2.825	0.750	4.321	1.160	10.054
0.280	2.967	0.780	4.391	1.180	10.130
0.300	3.065	0.800	4.442	1.200	10.196
0.330	3.202	0.830	4.519		
0.350	3.288	0.850	4.572		
0.380	3.403	0.880	4.663		
0.400	3.471	0.900	4.728		
0.430	3.568	0.930	4.839		
0.450	3.625	0.950	4.926		
0.480	3.705	0.980	5.086		
0.500	3.756	1.000	5.229		
0.530	3.829	1.030	5.575		

$pK_a = 4.776$

Table Mg15. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.07167 mmol Sodium Acetate, 0.02547 mmol excess HCl, Titrant = 0.09582 M NaOH in 3 m NaCl, pcH = 0.972pHr + 0.837.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.977	0.500	3.712	1.000	5.752
0.030	2.023	0.530	3.789	1.030	9.039
0.050	2.060	0.550	3.840	1.050	9.607
0.080	2.122	0.580	3.912	1.080	9.918
0.100	2.170	0.600	3.959	1.100	10.055
0.132	2.254	0.630	4.030	1.130	10.202
0.150	2.307	0.650	4.076	1.150	10.274
0.180	2.411	0.680	4.148		
0.200	2.489	0.700	4.197		
0.230	2.624	0.730	4.271		
0.250	2.727	0.750	4.322		
0.280	2.882	0.780	4.402		
0.300	2.988	0.800	4.459		
0.330	3.135	0.830	4.550		
0.350	3.225	0.852	4.624		
0.380	3.342	0.880	4.725		
0.400	3.412	0.900	4.811		
0.430	3.512	0.930	4.963		
0.450	3.575	0.950	5.095		
0.480	3.659	0.980	5.393		

$pK_a = 4.778$

Table Mg16. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 4 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6684 mmol Mg^{2+}, 0.06948 mmol Sodium Acetate, 0.0377 mmol excess HCl, Titrant = 0.09320 M NaOH in 4 m NaCl, pcH = 0.973pHr + 1.024.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.622	0.500	3.183	1.000	4.521
0.030	1.649	0.530	3.300	1.030	4.616
0.050	1.675	0.550	3.368	1.050	4.690
0.080	1.715	0.580	3.463	1.080	4.820
0.100	1.744	0.600	3.525	1.100	4.915
0.130	1.789	0.630	3.606	1.130	5.087
0.150	1.823	0.650	3.654	1.150	5.231
0.180	1.878	0.680	3.729	1.180	5.599
0.200	1.918	0.700	3.778	1.200	6.895
0.230	1.988	0.730	3.849	1.230	8.884
0.250	2.035	0.750	3.898	1.250	9.144
0.280	2.120	0.780	3.968	1.260	9.212
0.300	2.188	0.800	4.014	1.270	9.267
0.330	2.302	0.830	4.078	1.280	9.303
0.350	2.389	0.850	4.122	1.290	9.329
0.380	2.546	0.880	4.194	1.300	9.349
0.400	2.661	0.900	4.239	1.310	9.366
0.430	2.843	0.930	4.326	1.320	9.373
0.450	2.947	0.950	4.382		
0.480	3.093	0.980	4.463		

$\log \beta_{101} = 0.756$, $\log \beta_{1\text{-}10} = -11.818$

Table Mg17. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 4 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6684 mmol Mg^{2+}, 0.06948 mmol Sodium Acetate, 0.03612 mmol excess HCl, Titrant = 0.09702 M NaOH in 4 m NaCl, pcH = 0.973pHr +1.024.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.702	0.400	2.875	0.800	4.190	1.190	9.394
0.020	1.726	0.420	2.991	0.820	4.240	1.200	9.415
0.040	1.751	0.440	3.097	0.840	4.295	1.210	9.434
0.060	1.778	0.460	3.195	0.862	4.351	1.220	9.448
0.080	1.807	0.480	3.282	0.880	4.398	1.230	9.460
0.100	1.838	0.500	3.364	0.900	4.456	1.240	9.466
0.120	1.872	0.520	3.439	0.920	4.516	1.250	9.472
0.140	1.907	0.540	3.507	0.940	4.577		
0.160	1.945	0.560	3.570	0.960	4.648		
0.180	1.988	0.580	3.632	0.980	4.722		
0.200	2.032	0.600	3.690	1.000	4.804		
0.220	2.082	0.620	3.744	1.020	4.904		
0.240	2.137	0.640	3.797	1.040	5.016		
0.260	2.199	0.660	3.847	1.060	5.155		
0.280	2.264	0.680	3.898	1.080	5.353		
0.300	2.344	0.702	3.952	1.100	5.690		
0.320	2.429	0.720	3.996	1.120	6.998		
0.340	2.528	0.740	4.045	1.140	8.934		
0.360	2.640	0.760	4.094	1.160	9.228		
0.380	2.775	0.780	4.141	1.180	9.356		

log β_{101} = 0.691, log $\beta_{1\text{-}10}$ = -11.949

Table Mg18. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 4 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.06948 mmol Sodium Acetate, 0.03772 mmol excess HCl, Titrant = 0.0932 M NaOH in 4 m NaCl, pcH = 0.973pHr + 1.024.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.625	0.500	3.287	1.000	4.689
0.030	1.658	0.530	3.397	1.030	4.821
0.050	1.685	0.550	3.464	1.050	4.921
0.080	1.726	0.580	3.557	1.080	5.115
0.100	1.757	0.600	3.615	1.100	5.308
0.130	1.805	0.630	3.698	1.132	5.995
0.150	1.842	0.650	3.750	1.150	8.649
0.180	1.900	0.680	3.825	1.180	9.606
0.200	1.943	0.700	3.875	1.200	9.832
0.230	2.018	0.730	3.948	1.210	9.911
0.250	2.073	0.750	3.998	1.220	9.980
0.280	2.168	0.780	4.067	1.230	10.038
0.300	2.243	0.800	4.115	1.240	10.089
0.330	2.374	0.830	4.188	1.250	10.135
0.350	2.476	0.850	4.238		
0.380	2.653	0.880	4.315		
0.400	2.776	0.900	4.368		
0.430	2.954	0.930	4.453		
0.450	3.060	0.950	4.513		
0.480	3.203	0.980	4.616		

$pK_a = 4.958$

Table Mg19. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6654 mmol Mg^{2+}, 0.06846 mmol Sodium Acetate, 0.0268 mmol excess HCl, Titrant = 0.09157 M NaOH in 5 m NaCl, pcH = 0.981pHr + 1.127.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.628	0.450	3.445	0.850	4.467
0.050	1.711	0.480	3.536	0.880	4.563
0.100	1.821	0.500	3.592	0.900	4.635
0.130	1.899	0.530	3.673	0.930	4.761
0.150	1.961	0.550	3.723	0.950	4.863
0.180	2.068	0.580	3.798	0.980	5.064
0.200	2.154	0.600	3.845	1.000	5.242
0.230	2.306	0.630	3.915	1.030	5.806
0.250	2.428	0.650	3.961	1.050	8.198
0.280	2.631	0.680	4.030	1.060	8.730
0.300	2.769	0.700	4.078	1.072	8.991
0.330	2.955	0.730	4.148	1.080	9.074
0.350	3.058	0.752	4.201	1.090	9.147
0.380	3.196	0.780	4.272	1.100	9.192
0.400	3.274	0.800	4.323	1.120	9.254
0.430	3.382	0.830	4.407	1.140	9.291

$\log \beta_{101} = 0.724$, $\log \beta_{1\text{-}10} = -12.198$

Table Mg20. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6654 mmol Mg^{2+}, 0.06816 mmol Sodium Acetate, 0.0271 mmol excess HCl, Titrant = 0.09060 M NaOH in 5 m NaCl, pcH = 0.968pHr + 1.269.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.533	0.450	3.333	0.900	4.519
0.030	1.576	0.480	3.432	0.930	4.627
0.050	1.609	0.500	3.491	0.950	4.709
0.080	1.666	0.530	3.576	0.980	4.850
0.104	1.716	0.550	3.629	1.000	4.968
0.130	1.776	0.580	3.707	1.030	5.197
0.150	1.828	0.600	3.758	1.050	5.432
0.180	1.920	0.630	3.829	1.080	6.605
0.200	1.992	0.650	3.876	1.100	8.714
0.230	2.121	0.680	3.946	1.130	9.165
0.250	2.226	0.700	3.994	1.150	9.245
0.280	2.410	0.730	4.064	1.160	9.266
0.300	2.559	0.750	4.112	1.170	9.282
0.330	2.765	0.780	4.184	1.180	9.297
0.350	2.888	0.800	4.233	1.190	9.310
0.380	3.049	0.830	4.314	1.200	9.321
0.400	3.136	0.850	4.368		
0.430	3.259	0.880	4.456		

$\log \beta_{101} = 0.539$, $\log \beta_{1\text{-}10} = -12.064$

Table Mg21. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.6654 mmol Mg^{2+}, 0.0681 mmol Sodium Acetate, 0.0272 mmol excess HCl, Titrant = 0.09124 M NaOH in 5 m NaCl, pcH = 0.976pHr + 1.203.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.539	0.450	3.299	0.902	4.525
0.030	1.576	0.480	3.410	0.930	4.621
0.050	1.605	0.500	3.476	0.950	4.696
0.080	1.658	0.530	3.571	0.980	4.827
0.100	1.696	0.550	3.626	1.000	4.926
0.132	1.765	0.580	3.704	1.030	5.128
0.150	1.805	0.600	3.755	1.050	5.309
0.180	1.886	0.630	3.828	1.080	5.869
0.200	1.946	0.650	3.875	1.100	8.139
0.230	2.054	0.680	3.948	1.130	9.023
0.252	2.148	0.700	3.994	1.150	9.149
0.280	2.292	0.730	4.065	1.160	9.182
0.300	2.415	0.750	4.112	1.170	9.207
0.330	2.620	0.780	4.187	1.180	9.227
0.350	2.761	0.800	4.237	1.190	9.240
0.380	2.958	0.830	4.315	1.200	9.249
0.400	3.069	0.850	4.368		
0.430	3.213	0.882	4.463		

log β_{101} = 0.704, log $\beta_{1\text{-}10}$ = -11.951

Table Mg22. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.06846 mmol Sodium Acetate, 0.02677 mmol excess HCl, Titrant = 0.09157 M NaOH in 5 m NaCl, pcH = 0.976pHr + 1.203.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.607	0.550	3.761	1.030	8.359
0.050	1.695	0.580	3.836	1.040	9.038
0.100	1.808	0.600	3.881	1.050	9.365
0.130	1.891	0.630	3.954	1.060	9.559
0.150	1.956	0.650	4.000	1.070	9.689
0.182	2.084	0.680	4.070	1.080	9.788
0.200	2.164	0.700	4.118	1.100	9.941
0.230	2.334	0.730	4.189	1.140	10.143
0.250	2.467	0.750	4.240		
0.280	2.687	0.780	4.318		
0.302	2.838	0.800	4.373		
0.330	3.009	0.830	4.464		
0.350	3.109	0.850	4.524		
0.380	3.242	0.880	4.629		
0.400	3.320	0.900	4.713		
0.430	3.424	0.930	4.853		
0.450	3.488	0.950	4.973		
0.480	3.575	0.980	5.226		
0.500	3.632	1.000	5.503		
0.530	3.710	1.020	6.239		

$pK_a = 5.120$

Table Mg23. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.06816 mmol Sodium Acetate, 0.02707 mmol excess HCl, Titrant = 0.0906 M NaOH in 5 m NaCl, pcH = 0.976pHr + 1.203.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.535	0.500	3.552	1.000	5.177
0.030	1.575	0.530	3.638	1.030	5.590
0.050	1.609	0.550	3.692	1.050	6.700
0.080	1.666	0.580	3.769	1.080	9.439
0.100	1.709	0.600	3.817	1.100	9.736
0.130	1.778	0.630	3.891	1.110	9.82
0.150	1.831	0.650	3.939	1.120	9.899
0.180	1.927	0.680	4.011	1.130	9.967
0.200	2.001	0.702	4.064	1.140	10.023
0.230	2.131	0.730	4.130		
0.250	2.242	0.750	4.180		
0.280	2.437	0.780	4.255		
0.300	2.590	0.800	4.310		
0.330	2.809	0.830	4.395		
0.350	2.939	0.850	4.454		
0.380	3.098	0.880	4.548		
0.400	3.200	0.900	4.620		
0.430	3.322	0.930	4.745		
0.450	3.392	0.950	4.839		
0.482	3.498	0.980	5.012		

pK_a = 5.124

Table Mg24. Potentiometric Titration Data for the Stability Constants of Magnesium with Acetate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.06816 mmol Sodium Acetate, 0.02724 mmol excess HCl, Titrant = 0.08953 M NaOH in 5 m NaCl, pcH = 0.976pHr + 1.203.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.506	0.500	3.473	1.000	5.138
0.030	1.542	0.530	3.570	1.030	5.518
0.050	1.573	0.550	3.629	1.050	6.499
0.080	1.622	0.580	3.714	1.080	9.378
0.100	1.659	0.602	3.771	1.100	9.674
0.130	1.719	0.630	3.844	1.110	9.773
0.150	1.765	0.650	3.895	1.120	9.856
0.180	1.845	0.680	3.968	1.130	9.924
0.200	1.905	0.702	4.020	1.140	9.983
0.230	2.008	0.730	4.095	1.150	10.037
0.250	2.090	0.752	4.151		
0.280	2.246	0.780	4.224		
0.300	2.370	0.800	4.277		
0.330	2.583	0.830	4.363		
0.350	2.735	0.850	4.422		
0.380	2.938	0.880	4.520		
0.400	3.055	0.900	4.592		
0.430	3.204	0.930	4.714		
0.450	3.289	0.950	4.807		
0.482	3.406	0.980	4.984		

$pK_a = 5.144$

Table Mg25. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 0.3 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.09804 mmol Mg^{2+}, 0.1906 mmol Oxalic Acid, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.989pHr + 0.179.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.878	1.500	2.442	3.000	3.588
0.050	1.891	1.550	2.470	3.050	3.635
0.106	1.905	1.600	2.499	3.100	3.684
0.150	1.918	1.650	2.530	3.150	3.736
0.200	1.931	1.700	2.563	3.200	3.790
0.252	1.945	1.750	2.596	3.250	3.846
0.300	1.960	1.800	2.629	3.300	3.906
0.350	1.975	1.850	2.662	3.350	3.970
0.400	1.989	1.900	2.698	3.400	4.040
0.450	2.004	1.950	2.733	3.450	4.117
0.500	2.020	2.000	2.769	3.500	4.204
0.550	2.036	2.050	2.806	3.552	4.311
0.600	2.051	2.100	2.844	3.600	4.426
0.650	2.068	2.150	2.882	3.650	4.581
0.700	2.086	2.200	2.920	3.700	4.801
0.750	2.104	2.250	2.960	3.750	5.237
0.800	2.122	2.300	2.999	3.800	9.176
0.850	2.142	2.350	3.039	3.850	10.088
0.900	2.160	2.400	3.079	3.870	10.221
0.950	2.180	2.450	3.119	3.892	10.334
1.000	2.200	2.500	3.160	3.910	10.407
1.050	2.221	2.550	3.201	3.924	10.453
1.100	2.242	2.600	3.241	3.930	10.467
1.150	2.266	2.650	3.283	3.942	10.500
1.200	2.288	2.700	3.324	3.950	10.522
1.250	2.312	2.750	3.367	3.960	10.547
1.302	2.337	2.800	3.409	3.970	10.571
1.350	2.361	2.850	3.453	3.980	10.595
1.400	2.388	2.900	3.496	3.990	10.617
1.450	2.414	2.950	3.542	4.000	10.635

$\log \beta_{101} = 2.287$ $\log \beta_{102} = 3.994$ $\log \beta_{1\text{-}10} = -11.149$

Table Mg26. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 0.3 m NaCl at 25°C. Initial Volume = 21.0 mL, 0.1961 mmol Mg^{2+}, 0.1906 mmol Oxalic Acid, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.987pHr + 0.168.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.898	1.500	2.414	3.000	3.451
0.050	1.910	1.550	2.439	3.050	3.496
0.106	1.923	1.600	2.464	3.100	3.546
0.150	1.936	1.650	2.490	3.150	3.596
0.200	1.947	1.700	2.519	3.200	3.649
0.250	1.962	1.750	2.546	3.250	3.702
0.300	1.975	1.800	2.574	3.300	3.764
0.350	1.989	1.850	2.603	3.350	3.826
0.400	2.002	1.900	2.632	3.400	3.894
0.450	2.016	1.950	2.663	3.450	3.967
0.500	2.031	2.000	2.698	3.500	4.047
0.550	2.046	2.050	2.729	3.550	4.142
0.600	2.062	2.100	2.761	3.600	4.253
0.650	2.077	2.150	2.795	3.650	4.390
0.700	2.093	2.200	2.827	3.700	4.585
0.750	2.109	2.250	2.862	3.750	4.881
0.800	2.126	2.300	2.897	3.800	6.025
0.850	2.143	2.350	2.933	3.850	9.784
0.900	2.160	2.400	2.968	3.900	10.203
0.950	2.179	2.450	3.006	3.920	10.287
1.000	2.197	2.500	3.043	3.942	10.365
1.050	2.217	2.550	3.079	3.950	10.385
1.100	2.235	2.600	3.119	3.960	10.412
1.150	2.255	2.650	3.159	3.970	10.439
1.200	2.277	2.700	3.198	3.982	10.469
1.250	2.297	2.750	3.238	3.990	10.483
1.300	2.319	2.800	3.279	4.002	10.504
1.350	2.343	2.850	3.321	4.010	10.514
1.400	2.366	2.900	3.362	4.020	10.533
1.450	2.390	2.950	3.405		

$\log \beta_{101} = 2.369$ $\log \beta_{102} = 4.009$ $\log \beta_{1\text{-}10} = -11.251$

Table Mg27. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.15045 mmol Oxalic Acid, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.974pHr + 0.820.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.905	1.000	2.379	2.000	3.403	3.000	9.799
0.050	1.921	1.050	2.417	2.050	3.458	3.050	10.377
0.100	1.938	1.100	2.456	2.100	3.510	3.100	10.624
0.150	1.956	1.150	2.497	2.150	3.565	3.150	10.778
0.200	1.974	1.200	2.539	2.200	3.619	3.200	10.889
0.252	1.994	1.250	2.585	2.250	3.678	3.250	10.976
0.300	2.012	1.300	2.633	2.300	3.732	3.300	11.046
0.350	2.033	1.350	2.683	2.350	3.789		
0.400	2.054	1.402	2.736	2.400	3.849		
0.450	2.076	1.450	2.787	2.450	3.910		
0.500	2.098	1.500	2.841	2.504	3.981		
0.550	2.121	1.550	2.898	2.550	4.043		
0.600	2.145	1.600	2.954	2.600	4.116		
0.650	2.169	1.650	3.011	2.650	4.198		
0.700	2.196	1.700	3.068	2.700	4.290		
0.750	2.223	1.750	3.125	2.750	4.396		
0.800	2.250	1.800	3.181	2.800	4.525		
0.850	2.281	1.850	3.236	2.850	4.687		
0.900	2.312	1.900	3.292	2.900	4.925		
0.950	2.345	1.950	3.348	2.950	5.429		

pK_{a1} = 1.121 pK_{a2} = 3.667

Table Mg28. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 1 m NaCl at 25°C. Initial Volume = 15.6 mL, 0.1463 mmol Mg^{2+}, 0.1476 mmol Oxalic Acid, Titrant = 0.09731 M NaOH in 1 m NaCl, pcH = 0.980pHr + 0.378.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.663	1.250	2.209	2.500	3.284
0.050	1.677	1.300	2.241	2.550	3.344
0.100	1.693	1.350	2.274	2.600	3.410
0.150	1.710	1.400	2.308	2.650	3.478
0.200	1.726	1.450	2.343	2.700	3.553
0.250	1.743	1.500	2.379	2.750	3.635
0.300	1.760	1.552	2.418	2.802	3.731
0.350	1.777	1.600	2.455	2.850	3.836
0.400	1.796	1.650	2.493	2.900	3.970
0.450	1.814	1.700	2.533	2.950	4.142
0.500	1.836	1.750	2.574	3.000	4.406
0.550	1.854	1.800	2.615	3.050	4.982
0.600	1.874	1.852	2.658	3.100	9.188
0.650	1.895	1.900	2.700	3.150	9.957
0.700	1.918	1.950	2.742	3.200	10.229
0.752	1.941	2.000	2.786	3.220	10.295
0.800	1.963	2.050	2.832	3.242	10.354
0.850	1.986	2.100	2.876	3.260	10.392
0.900	2.012	2.150	2.923	3.280	10.425
0.950	2.037	2.200	2.970	3.300	10.451
1.000	2.063	2.250	3.018	3.320	10.469
1.050	2.090	2.300	3.068	3.340	10.484
1.100	2.119	2.350	3.119	3.360	10.496
1.150	2.148	2.400	3.172	3.380	10.505
1.200	2.178	2.450	3.225	3.400	10.509

$\log \beta_{101} = 2.010$ $\log \beta_{102} = 3.716$ $\log \beta_{1\text{-}10} = -11.372$

Table Mg29. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 1 m NaCl at 25°C. Initial Volume = 15.6 mL, 0.1463 mmol Mg^{2+}, 0.1476 mmol Oxalic Acid, Titrant = 0.09716 M NaOH in 1 m NaCl, pcH = 0.987pHr + 0.381.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.674	1.250	2.210	2.500	3.283
0.050	1.688	1.300	2.242	2.550	3.343
0.100	1.703	1.350	2.275	2.600	3.407
0.150	1.719	1.400	2.308	2.650	3.475
0.200	1.735	1.450	2.343	2.700	3.547
0.250	1.752	1.500	2.379	2.750	3.628
0.300	1.768	1.550	2.416	2.800	3.719
0.350	1.787	1.600	2.454	2.850	3.825
0.400	1.805	1.650	2.494	2.900	3.952
0.450	1.823	1.700	2.532	2.950	4.120
0.500	1.843	1.750	2.573	3.000	4.355
0.550	1.861	1.800	2.614	3.050	4.816
0.600	1.881	1.850	2.656	3.100	8.643
0.650	1.903	1.900	2.699	3.150	9.819
0.700	1.923	1.950	2.742	3.200	10.154
0.750	1.945	2.000	2.786	3.250	10.327
0.800	1.969	2.050	2.831	3.260	10.350
0.850	1.991	2.100	2.877	3.280	10.392
0.900	2.016	2.150	2.922	3.300	10.425
0.950	2.041	2.200	2.970	3.320	10.443
1.000	2.067	2.252	3.021	3.340	10.455
1.050	2.093	2.300	3.068	3.360	10.463
1.100	2.121	2.350	3.119	3.380	10.470
1.150	2.149	2.400	3.170	3.400	10.471
1.200	2.179	2.450	3.225		

$\log \beta_{101} = 1.995$ $\log \beta_{102} = 3.711$ $\log \beta_{102} = -11.452$

Table Mg30. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 1 m NaCl at 25°C. Initial Volume = 15.6 mL, 0.0 mmol Mg^{2+}, 0.1476 mmol Oxalic Acid, Titrant = 0.09731 M NaOH in 1 m NaCl, pcH = 0.987pHr + 0.381.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.668	1.000	2.100	2.000	2.970	3.002	4.763
0.050	1.681	1.050	2.131	2.050	3.020	3.050	5.857
0.100	1.697	1.100	2.164	2.100	3.07	3.100	9.766
0.150	1.714	1.150	2.199	2.150	3.119	3.150	10.187
0.200	1.731	1.200	2.237	2.200	3.168	3.200	10.402
0.250	1.748	1.250	2.274	2.252	3.221	3.250	10.541
0.300	1.765	1.300	2.316	2.300	3.27	3.300	10.645
0.350	1.785	1.350	2.355	2.350	3.325	3.350	10.733
0.400	1.803	1.400	2.399	2.400	3.377	3.400	10.799
0.450	1.824	1.450	2.443	2.450	3.433		
0.500	1.844	1.500	2.487	2.500	3.493		
0.550	1.865	1.550	2.533	2.550	3.554		
0.600	1.888	1.600	2.580	2.600	3.618		
0.650	1.910	1.650	2.629	2.650	3.69		
0.700	1.933	1.700	2.677	2.700	3.769		
0.750	1.959	1.750	2.725	2.750	3.855		
0.800	1.985	1.800	2.774	2.800	3.955		
0.850	2.012	1.852	2.825	2.850	4.065		
0.900	2.040	1.900	2.871	2.900	4.206		
0.950	2.071	1.950	2.921	2.950	4.413		

$pK_{a1} = 0.725$ $pK_{a2} = 3.536$

Table Mg31. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 1 m NaCl at 25°C. Initial Volume = 15.6 mL, 0.14634 mmol Mg^{2+}, 0.1476 mmol Oxalic Acid, Titrant = 0.1008 M NaOH in 1 m NaCl, pcH = 0.987pHr + 0.381.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.680	1.000	2.122	2.000	3.021	3.000	9.120
0.050	1.693	1.050	2.155	2.050	3.072	3.050	10.044
0.100	1.709	1.100	2.190	2.100	3.122	3.100	10.333
0.150	1.726	1.152	2.229	2.150	3.173	3.150	10.505
0.200	1.742	1.200	2.265	2.200	3.224	3.202	10.630
0.250	1.760	1.250	2.305	2.250	3.278	3.250	10.717
0.300	1.779	1.300	2.346	2.300	3.332	3.300	10.793
0.350	1.798	1.352	2.391	2.350	3.387		
0.400	1.817	1.400	2.433	2.400	3.443		
0.450	1.838	1.450	2.479	2.450	3.504		
0.500	1.859	1.500	2.525	2.500	3.566		
0.550	1.881	1.550	2.573	2.550	3.632		
0.600	1.903	1.600	2.622	2.600	3.705		
0.650	1.927	1.650	2.670	2.650	3.785		
0.700	1.952	1.700	2.721	2.700	3.875		
0.750	1.978	1.750	2.770	2.750	3.976		
0.800	2.004	1.800	2.820	2.802	4.104		
0.850	2.032	1.850	2.871	2.850	4.252		
0.900	2.060	1.900	2.920	2.900	4.475		
0.950	2.091	1.950	2.971	2.950	4.879		

$pK_{a1} = 1.156$ $pK_{a2} = 3.522$

Table Mg32. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 2 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.2322 mmol Mg^{2+}, 0.1852 mmol Oxalic Acid, Titrant = 0.08462 M NaOH in 2 m NaCl, pcH = 0.974pHr + 0.582.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.485	1.750	1.999	3.500	2.992
0.070	1.499	1.820	2.028	3.570	3.045
0.140	1.514	1.890	2.059	3.640	3.101
0.210	1.528	1.960	2.092	3.710	3.160
0.280	1.545	2.030	2.125	3.780	3.223
0.350	1.561	2.100	2.158	3.850	3.290
0.422	1.578	2.170	2.192	3.920	3.365
0.490	1.594	2.240	2.229	3.990	3.447
0.560	1.610	2.310	2.264	4.060	3.538
0.632	1.630	2.380	2.301	4.130	3.648
0.700	1.647	2.450	2.338	4.200	3.781
0.770	1.667	2.520	2.378	4.270	3.956
0.840	1.685	2.590	2.416	4.340	4.223
0.910	1.705	2.660	2.456	4.410	4.876
0.980	1.725	2.730	2.496	4.480	9.263
1.050	1.747	2.800	2.536	4.552	9.832
1.120	1.768	2.870	2.578	4.620	10.079
1.190	1.790	2.940	2.619	4.650	10.146
1.260	1.814	3.010	2.663	4.680	10.195
1.330	1.838	3.080	2.707	4.700	10.213
1.400	1.862	3.150	2.750	4.720	10.231
1.470	1.888	3.220	2.798	4.740	10.248
1.540	1.914	3.292	2.845	4.760	10.262
1.610	1.941	3.360	2.892	4.780	10.268
1.680	1.969	3.430	2.941	4.800	10.271

$\log \beta_{101} = 1.970$ $\log \beta_{102} = 3.818$ $\log \beta_{1\text{-}10} = -11.461$

Table Mg33. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 2 m NaCl at 25°C. Initial Volume = 19.4 mL, 0.09288 mmol Mg^{2+}, 0.1852 mmol Oxalic Acid, Titrant = 0.08462 M NaOH in 2 m NaCl, pcH = 0.971pHr + 0.634.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.444	1.800	2.023	3.600	3.172
0.060	1.455	1.860	2.052	3.660	3.223
0.120	1.468	1.920	2.084	3.720	3.276
0.180	1.483	1.980	2.115	3.784	3.335
0.240	1.496	2.042	2.148	3.840	3.390
0.300	1.510	2.100	2.181	3.900	3.454
0.360	1.525	2.160	2.216	3.960	3.525
0.420	1.540	2.220	2.249	4.020	3.602
0.480	1.556	2.280	2.284	4.080	3.688
0.540	1.571	2.340	2.320	4.140	3.790
0.600	1.587	2.400	2.356	4.200	3.910
0.660	1.604	2.462	2.393	4.260	4.067
0.720	1.620	2.520	2.430	4.320	4.300
0.780	1.637	2.580	2.468	4.380	4.739
0.840	1.655	2.642	2.509	4.440	7.979
0.900	1.673	2.700	2.545	4.500	9.433
0.960	1.692	2.760	2.584	4.520	9.634
1.020	1.712	2.820	2.622	4.520	9.634
1.080	1.732	2.880	2.662	4.540	9.794
1.140	1.752	2.940	2.701	4.550	9.850
1.200	1.774	3.000	2.740	4.560	9.896
1.260	1.794	3.062	2.781	4.570	9.938
1.320	1.818	3.120	2.820	4.580	9.969
1.380	1.842	3.180	2.862	4.590	9.997
1.440	1.866	3.240	2.904	4.600	10.024
1.500	1.889	3.300	2.946	4.610	10.050
1.562	1.915	3.360	2.988	4.620	10.074
1.620	1.940	3.420	3.032	4.630	10.096
1.680	1.967	3.480	3.078	4.640	10.110
1.740	1.995	3.540	3.125	4.650	10.125

$\log \beta_{101} = 1.936$ $\log \beta_{102} = 3.670$ $\log \beta_{1\text{-}10} = -11.110$

Table Mg34. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 2 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.1462 mmol Oxalic Acid, Titrant = 0.09553 M NaOH in 2 m NaCl, pcH = 0.971pHr + 0.634.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.447	1.000	1.880	2.000	2.762	3.000	4.568
0.050	1.462	1.050	1.912	2.050	2.813	3.050	6.280
0.100	1.478	1.100	1.945	2.100	2.862	3.100	8.769
0.150	1.495	1.150	1.980	2.150	2.912	3.150	9.449
0.200	1.511	1.200	2.016	2.200	2.963	3.200	9.915
0.250	1.530	1.250	2.055	2.250	3.014	3.250	10.171
0.300	1.548	1.300	2.095	2.300	3.066	3.280	10.281
0.350	1.566	1.350	2.137	2.350	3.120	3.300	10.339
0.400	1.586	1.400	2.179	2.400	3.175	3.320	10.392
0.450	1.606	1.450	2.224	2.450	3.232	3.340	10.439
0.500	1.626	1.500	2.270	2.500	3.290	3.360	10.483
0.550	1.647	1.550	2.316	2.550	3.351	3.380	10.520
0.600	1.670	1.600	2.365	2.600	3.420	3.400	10.554
0.650	1.692	1.650	2.414	2.650	3.491		
0.700	1.716	1.700	2.464	2.700	3.566		
0.750	1.740	1.750	2.513	2.750	3.652		
0.802	1.767	1.800	2.562	2.800	3.751		
0.850	1.793	1.850	2.612	2.850	3.866		
0.900	1.821	1.900	2.661	2.900	4.017		
0.950	1.850	1.950	2.712	2.950	4.213		

$pK_{a1} = 0.644$ $pK_{a2} = 3.544$

Table Mg35. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 3 m NaCl at 25°C. Initial Volume = 15.6 mL, 0.1395 mmol Mg^{2+}, 0.1483 mmol Oxalic Acid, Titrant = 0.09555 M NaOH in 3 m NaCl, pcH = 0.974pHr + 0.820.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.240	1.250	1.774	2.500	2.838
0.050	1.253	1.300	1.805	2.550	2.891
0.100	1.269	1.350	1.840	2.600	2.947
0.150	1.284	1.400	1.874	2.650	3.005
0.202	1.300	1.450	1.909	2.700	3.068
0.250	1.317	1.500	1.947	2.750	3.134
0.300	1.333	1.550	1.984	2.800	3.207
0.360	1.355	1.600	2.024	2.850	3.286
0.400	1.369	1.650	2.064	2.900	3.376
0.450	1.388	1.700	2.104	2.950	3.478
0.500	1.406	1.750	2.146	3.000	3.601
0.550	1.426	1.800	2.188	3.050	3.760
0.600	1.446	1.850	2.231	3.100	3.985
0.650	1.466	1.900	2.275	3.150	4.428
0.700	1.487	1.950	2.319	3.200	8.995
0.750	1.509	2.000	2.363	3.240	9.684
0.800	1.532	2.050	2.409	3.260	9.835
0.850	1.555	2.100	2.452	3.280	9.948
0.900	1.579	2.150	2.498	3.300	10.032
0.950	1.604	2.200	2.544	3.320	10.088
1.000	1.630	2.250	2.591	3.340	10.126
1.050	1.656	2.300	2.638	3.360	10.152
1.102	1.685	2.350	2.687	3.380	10.170
1.150	1.712	2.400	2.736	3.400	10.180
1.200	1.743	2.450	2.786		

log β_{101} = 1.851 log β_{102} = 3.879 log β_{1-10} = -11.478

Table Mg36. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 3 m NaCl at 25°C. Initial Volume = 15.6 mL, 0.0 mmol Mg^{2+}, 0.1483 mmol Oxalic Acid, Titrant = 0.09555 M NaOH in 3 m NaCl, pcH = 0.974pHr + 0.820.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.303	1.000	1.723	2.000	2.588	3.000	3.894
0.050	1.317	1.050	1.754	2.050	2.637	3.050	4.088
0.100	1.333	1.100	1.786	2.100	2.685	3.100	4.388
0.150	1.349	1.150	1.819	2.150	2.734	3.150	5.328
0.200	1.366	1.200	1.855	2.200	2.783	3.200	9.634
0.250	1.383	1.250	1.891	2.250	2.832	3.250	10.002
0.300	1.400	1.300	1.929	2.300	2.880	3.300	10.199
0.350	1.418	1.350	1.969	2.350	2.931	3.350	10.338
0.400	1.438	1.400	2.011	2.400	2.981	3.400	10.437
0.450	1.457	1.450	2.055	2.450	3.034		
0.500	1.478	1.500	2.099	2.500	3.088		
0.550	1.498	1.550	2.147	2.550	3.142		
0.602	1.519	1.600	2.192	2.600	3.199		
0.650	1.541	1.650	2.240	2.650	3.259		
0.700	1.564	1.700	2.290	2.700	3.323		
0.750	1.588	1.752	2.342	2.750	3.391		
0.800	1.613	1.800	2.389	2.800	3.465		
0.850	1.638	1.850	2.438	2.850	3.548		
0.900	1.665	1.900	2.488	2.900	3.642		
0.956	1.698	1.950	2.537	2.950	3.750		

$pK_{a1} = 0.788$ $pK_{a2} = 3.552$

Table Mg37. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 3 m NaCl at 25°C. Initial Volume = 19.4 mL, 0.093 mmol Mg^{2+}, 0.1879 mmol Oxalic Acid, Titrant = 0.09347 M NaOH in 3 m NaCl, pcH = 0.974pHr + 0.820.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.258	1.500	1.767	3.000	2.774	4.300	10.238
0.060	1.271	1.560	1.798	3.060	2.819	4.320	10.270
0.120	1.286	1.620	1.829	3.120	2.868	4.340	10.285
0.180	1.301	1.682	1.864	3.180	2.916	4.350	10.292
0.240	1.317	1.740	1.896	3.240	2.965	4.360	10.298
0.300	1.333	1.800	1.931	3.300	3.018	4.370	10.305
0.360	1.350	1.860	1.966	3.360	3.071		
0.420	1.366	1.920	2.004	3.420	3.126		
0.480	1.382	1.980	2.043	3.480	3.186		
0.540	1.401	2.042	2.083	3.540	3.248		
0.600	1.419	2.100	2.123	3.600	3.317		
0.660	1.437	2.160	2.163	3.660	3.390		
0.720	1.456	2.220	2.205	3.722	3.472		
0.780	1.475	2.280	2.247	3.780	3.567		
0.840	1.495	2.340	2.289	3.840	3.678		
0.900	1.516	2.400	2.332	3.900	3.815		
0.960	1.538	2.460	2.375	3.960	3.999		
1.020	1.560	2.520	2.418	4.020	4.286		
1.080	1.583	2.580	2.462	4.080	5.114		
1.140	1.607	2.640	2.506	4.140	9.541		
1.200	1.630	2.700	2.550	4.200	9.962		
1.260	1.656	2.760	2.593	4.220	10.037		
1.320	1.683	2.820	2.638	4.240	10.099		
1.380	1.710	2.880	2.683	4.260	10.155		
1.440	1.738	2.940	2.728	4.280	10.199		

$\log \beta_{101} = 1.700$ $\log \beta_{102} = 3.707$ $\log \beta_{1\text{-}10} = -11.478$

$pK_{a1} = 0.9458$ $pK_{a2} = 3.5520$

Table Mg38. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 4 m NaCl at 25°C. Initial Volume = 19.8 mL, 0.1782 mmol Mg^{2+}, 0.18105 mmol Oxalic Acid, Titrant = 0.08659 M NaOH in 4 m NaCl, pcH = 0.971pHr + 1.041.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.056	1.620	1.608	3.240	2.718
0.060	1.069	1.680	1.639	3.300	2.769
0.120	1.083	1.740	1.671	3.360	2.822
0.180	1.097	1.800	1.705	3.420	2.879
0.240	1.113	1.860	1.739	3.480	2.938
0.300	1.127	1.920	1.774	3.540	3.000
0.362	1.146	1.980	1.810	3.600	3.070
0.420	1.160	2.040	1.847	3.660	3.144
0.480	1.177	2.100	1.886	3.720	3.225
0.540	1.193	2.160	1.926	3.780	3.319
0.600	1.212	2.220	1.966	3.840	3.428
0.660	1.230	2.280	2.005	3.900	3.562
0.720	1.248	2.340	2.046	3.960	3.740
0.780	1.268	2.400	2.088	4.020	4.010
0.840	1.287	2.468	2.135	4.080	4.725
0.900	1.307	2.528	2.178	4.140	8.699
0.960	1.329	2.580	2.215	4.200	9.453
1.020	1.350	2.640	2.259	4.230	9.658
1.080	1.373	2.700	2.301	4.260	9.799
1.140	1.395	2.760	2.345	4.280	9.860
1.200	1.418	2.820	2.389	4.300	9.897
1.260	1.443	2.880	2.434	4.310	9.908
1.322	1.470	2.942	2.482	4.320	9.912
1.380	1.494	3.000	2.524	4.330	9.915
1.440	1.521	3.060	2.572	4.340	9.911
1.500	1.550	3.120	2.619	4.350	9.913
1.560	1.578	3.180	2.667		

$\log \beta_{101} = 1.993$ $\log \beta_{102} = 3.997$ $\log \beta_{1\text{-}10} = -11.596$

Table Mg39. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 4 m NaCl at 25°C. Initial Volume = 19.4 mL, 0.08912 mmol Mg^{2+}, 0.18105 mmol Oxalic Acid, Titrant = 0.08659 M NaOH in 4 m NaCl, pcH = 0.971pHr + 1.041.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.062	1.680	1.669	3.360	2.931
0.060	1.075	1.740	1.706	3.420	2.990
0.120	1.089	1.802	1.743	3.480	3.050
0.180	1.104	1.860	1.779	3.540	3.114
0.242	1.120	1.920	1.819	3.600	3.184
0.300	1.134	1.980	1.859	3.660	3.260
0.360	1.151	2.040	1.901	3.720	3.348
0.420	1.167	2.100	1.942	3.780	3.444
0.480	1.184	2.160	1.987	3.840	3.560
0.540	1.200	2.220	2.031	3.900	3.703
0.600	1.219	2.280	2.075	3.960	3.899
0.660	1.239	2.340	2.119	4.020	4.235
0.720	1.257	2.400	2.164	4.080	5.750
0.782	1.277	2.460	2.210	4.140	8.933
0.840	1.297	2.520	2.256	4.200	9.548
0.900	1.317	2.580	2.301	4.230	9.723
0.960	1.339	2.640	2.347	4.250	9.816
1.020	1.361	2.700	2.393	4.260	9.856
1.080	1.385	2.760	2.438	4.270	9.895
1.140	1.408	2.822	2.486	4.280	9.926
1.200	1.432	2.880	2.531	4.290	9.951
1.260	1.458	2.940	2.579	4.300	9.975
1.320	1.485	3.000	2.626	4.310	9.999
1.380	1.513	3.060	2.674	4.320	10.017
1.440	1.542	3.120	2.722	4.330	10.035
1.500	1.571	3.180	2.772	4.340	10.053
1.564	1.606	3.240	2.824	4.350	10.068
1.620	1.635	3.300	2.876		

$\log \beta_{101} = 1.982$ $\log \beta_{102} = 4.152$ $\log \beta_{1\text{-}10} = -11.152$

Table Mg40. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 4 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.14294 mmol Oxalic Acid, Titrant = 0.08659 M NaOH in 4 m NaCl, pcH = 0.974pHr + 1.015.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.051	1.000	1.468	2.000	2.378	3.000	3.608
0.050	1.065	1.050	1.498	2.050	2.430	3.050	3.738
0.100	1.080	1.100	1.530	2.100	2.482	3.100	3.908
0.150	1.096	1.150	1.565	2.150	2.533	3.150	4.192
0.200	1.113	1.200	1.600	2.200	2.584	3.200	4.785
0.250	1.129	1.250	1.636	2.250	2.634	3.250	8.819
0.300	1.147	1.300	1.676	2.300	2.685	3.300	9.720
0.352	1.166	1.350	1.717	2.350	2.735	3.350	10.041
0.400	1.184	1.400	1.761	2.400	2.786	3.400	10.220
0.450	1.202	1.450	1.807	2.450	2.837	3.422	10.280
0.500	1.222	1.500	1.853	2.500	2.890	3.440	10.324
0.550	1.243	1.550	1.904	2.550	2.943	3.460	10.367
0.600	1.265	1.600	1.953	2.600	3.000	3.480	10.405
0.650	1.287	1.650	2.004	2.650	3.057	3.500	10.440
0.700	1.309	1.700	2.059	2.700	3.117		
0.750	1.333	1.750	2.112	2.750	3.181		
0.800	1.358	1.800	2.165	2.800	3.249		
0.850	1.383	1.850	2.220	2.850	3.324		
0.900	1.410	1.900	2.273	2.902	3.410		
0.950	1.439	1.950	2.326	2.950	3.498		

pK_{a1} = 1.0442 pK_{a2} = 3.7383

Table Mg41. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 5 m NaCl at 25°C. Initial Volume = 15.4 mL, 0.08872 mmol Mg^{2+}, 0.09152 mmol Oxalic Acid, Titrant = 0.08258 M NaOH in 5 m NaCl, pcH = 0.996pHr + 1.074.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.196	1.000	1.846	2.000	3.265
0.050	1.215	1.052	1.902	2.050	3.407
0.100	1.237	1.100	1.955	2.100	3.593
0.150	1.259	1.150	2.014	2.130	3.740
0.200	1.281	1.200	2.072	2.150	3.878
0.250	1.305	1.250	2.133	2.182	4.207
0.300	1.331	1.300	2.196	2.200	4.645
0.350	1.355	1.350	2.258	2.230	8.538
0.400	1.382	1.400	2.321	2.250	9.174
0.450	1.410	1.450	2.383	2.280	9.563
0.500	1.441	1.500	2.448	2.300	9.712
0.550	1.472	1.550	2.514	2.330	9.834
0.600	1.506	1.600	2.582	2.350	9.872
0.650	1.540	1.650	2.650	2.360	9.886
0.710	1.585	1.700	2.722	2.370	9.898
0.750	1.616	1.750	2.796	2.380	9.909
0.800	1.656	1.800	2.873	2.390	9.912
0.850	1.701	1.850	2.956	2.400	9.912
0.900	1.748	1.900	3.046	2.410	9.914
0.950	1.796	1.950	3.149	2.420	9.914

$\log \beta_{101} = 2.060$ $\log \beta_{102} = 4.051$ $\log \beta_{1\text{-}10} = -11.754$

$pK_{a1} = 1.410$ $pK_{a2} = 3.852$

Table Mg42. Potentiometric Titration Data for the Stability Constants of Magnesium with Oxalate in 5 m NaCl at 25°C. Initial Volume = 19.4 mL, 0.08872 mmol Mg^{2+}, 0.17389 mmol Oxalic Acid, Titrant = 0.09124 M NaOH in 5 m NaCl, pcH = 0.996pHr + 1.074.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	0.921	1.200	1.346	2.400	2.240	3.540	3.451
0.060	0.936	1.260	1.378	2.460	2.291	3.600	3.596
0.120	0.952	1.320	1.410	2.500	2.325	3.660	3.785
0.194	0.972	1.380	1.444	2.560	2.376	3.722	4.103
0.240	0.985	1.440	1.481	2.620	2.426	3.780	5.204
0.300	1.003	1.500	1.519	2.680	2.477	3.840	9.427
0.360	1.020	1.560	1.557	2.742	2.530	3.900	9.855
0.420	1.039	1.620	1.599	2.800	2.579	3.922	9.932
0.480	1.058	1.680	1.642	2.862	2.634	3.940	9.977
0.540	1.077	1.740	1.688	2.920	2.685	3.960	10.006
0.600	1.097	1.800	1.733	2.960	2.721	3.980	10.011
0.660	1.119	1.860	1.781	3.000	2.759	3.990	10.020
0.730	1.143	1.920	1.830	3.060	2.815	4.000	10.019
0.780	1.163	1.980	1.880	3.120	2.876	4.010	10.026
0.840	1.185	2.040	1.932	3.180	2.939	4.020	10.030
0.900	1.210	2.100	1.984	3.240	3.004		
0.960	1.235	2.160	2.035	3.300	3.075		
1.020	1.261	2.220	2.085	3.360	3.153		
1.080	1.288	2.282	2.139	3.420	3.237		
1.142	1.317	2.340	2.189	3.480	3.335		

$\log \beta_{101} = 1.946$ $\log \beta_{102} = 3.935$ $\log \beta_{1\text{-}10} = -11.896$

$pK_{a1} = 1.046$ $pK_{a2} = 3.852$

Table Mg43. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0735 mmol Mg^{2+}, 0.741 mmol Citric Acid, Titrant = 0.1051 M NaOH in 0.3 m NaCl, pcH = 1.000pHr + 0.245.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.535	0.750	3.545	1.500	4.870	2.102	6.623
0.024	2.555	0.778	3.594	1.524	4.916	2.126	7.049
0.078	2.608	0.828	3.683	1.574	5.009	2.152	9.466
0.102	2.634	0.850	3.722	1.626	5.110	2.174	10.039
0.150	2.683	0.900	3.811	1.650	5.155	2.200	10.318
0.178	2.712	0.926	3.861	1.702	5.256	2.224	10.477
0.226	2.767	0.978	3.948	1.726	5.303	2.250	10.603
0.250	2.794	1.002	3.988	1.774	5.400	2.274	10.692
0.300	2.855	1.050	4.071	1.804	5.462	2.302	10.778
0.326	2.887	1.076	4.115	1.824	5.505	2.350	10.891
0.378	2.955	1.124	4.198	1.852	5.568	2.400	10.985
0.400	2.984	1.152	4.246	1.874	5.621	2.474	11.093
0.450	3.055	1.200	4.330	1.900	5.685	2.550	11.180
0.474	3.090	1.224	4.370	1.926	5.754	2.650	11.273
0.524	3.165	1.276	4.463	1.952	5.830	2.750	11.348
0.550	3.207	1.300	4.505	1.978	5.915	2.950	11.465
0.600	3.286	1.350	4.595	2.002	6.003	3.150	11.554
0.626	3.329	1.378	4.646	2.026	6.102		
0.678	3.417	1.428	4.737	2.052	6.231		
0.704	3.464	1.454	4.785	2.074	6.368		

$\log \beta_{101} = 2.976$ $\log \beta_{111} = 6.894$ $\log \beta_{1\text{-}10} = -11.206$

Table Mg44. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0735 mmol Mg^{2+}, 0.0741 mmol Citric Acid, Titrant = 0.1051 M NaOH in 0.3 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.525	0.750	3.481	1.476	4.489	2.152	8.342
0.024	2.543	0.776	3.522	1.526	4.560	2.174	9.802
0.078	2.594	0.824	3.598	1.550	4.594	2.200	10.159
0.102	2.618	0.850	3.636	1.600	4.669	2.226	10.349
0.152	2.669	0.900	3.712	1.624	4.708	2.250	10.462
0.178	2.698	0.926	3.749	1.674	4.788	2.276	10.550
0.224	2.748	0.978	3.826	1.702	4.835	2.300	10.612
0.252	2.781	1.000	3.855	1.750	4.921	2.330	10.672
0.300	2.835	1.050	3.925	1.774	4.967	2.350	10.705
0.324	2.864	1.074	3.957	1.828	5.075	2.378	10.745
0.374	2.928	1.126	4.027	1.854	5.133	2.428	10.805
0.406	2.970	1.150	4.058	1.902	5.248	2.478	10.856
0.452	3.032	1.200	4.123	1.926	5.312	2.530	10.902
0.478	3.069	1.226	4.157	1.976	5.465	2.600	10.957
0.530	3.144	1.276	4.222	2.000	5.551	2.674	11.009
0.550	3.173	1.304	4.259	2.028	5.662	2.750	11.057
0.600	3.248	1.354	4.324	2.056	5.799		
0.626	3.288	1.378	4.357	2.076	5.920		
0.676	3.364	1.428	4.423	2.102	6.133		
0.700	3.403	1.454	4.459	2.124	6.414		

$\log \beta_{101} = 2.972$ $\log \beta_{111} = 7.256$ $\log \beta_{1\text{-}10} = -12.014$

Table Mg45. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0741 mmol Citric Acid, Titrant = 0.1051 M NaOH in 0.3 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.535	0.750	3.545	1.500	4.870	2.102	6.623
0.024	2.555	0.778	3.594	1.524	4.916	2.126	7.049
0.078	2.608	0.828	3.683	1.574	5.009	2.152	9.466
0.102	2.634	0.850	3.722	1.626	5.110	2.174	10.039
0.150	2.683	0.900	3.811	1.650	5.155	2.200	10.318
0.178	2.712	0.926	3.861	1.702	5.256	2.224	10.477
0.226	2.767	0.978	3.948	1.726	5.303	2.250	10.603
0.250	2.794	1.002	3.988	1.774	5.400	2.274	10.692
0.300	2.855	1.050	4.071	1.804	5.462	2.302	10.778
0.326	2.887	1.076	4.115	1.824	5.505	2.350	10.891
0.378	2.955	1.124	4.198	1.852	5.568	2.400	10.985
0.400	2.984	1.152	4.246	1.874	5.621	2.474	11.093
0.450	3.055	1.200	4.330	1.900	5.685	2.550	11.180
0.474	3.090	1.224	4.370	1.926	5.754	2.650	11.273
0.524	3.165	1.276	4.463	1.952	5.830	2.750	11.348
0.550	3.207	1.300	4.505	1.978	5.915	2.950	11.465
0.600	3.286	1.350	4.595	2.002	6.003	3.150	11.554
0.626	3.329	1.378	4.646	2.026	6.102		
0.678	3.417	1.428	4.737	2.052	6.231		
0.704	3.464	1.454	4.785	2.074	6.368		

$pK_{a1} = 2.886$ $pK_{a2} = 4.262$ $pK_{a3} = 5.472$

Table Mg46. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 0.3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0741 mmol Citric Acid, Titrant = 0.1031 M NaOH in 0.3 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.558	0.750	3.519	1.500	4.799	2.100	6.162
0.024	2.576	0.774	3.561	1.528	4.848	2.126	6.301
0.074	2.623	0.826	3.650	1.580	4.942	2.152	6.487
0.100	2.649	0.848	3.688	1.602	4.983	2.172	6.682
0.150	2.698	0.900	3.777	1.650	5.070	2.202	7.490
0.176	2.725	0.930	3.828	1.678	5.121	2.228	9.760
0.224	2.776	0.974	3.903	1.724	5.206	2.250	10.116
0.252	2.807	1.000	3.946	1.750	5.256	2.278	10.361
0.300	2.863	1.050	4.029	1.802	5.354	2.300	10.448
0.326	2.895	1.078	4.075	1.824	5.397	2.350	10.688
0.374	2.953	1.124	4.152	1.852	5.454	2.400	10.822
0.400	2.986	1.152	4.198	1.874	5.500	2.450	10.923
0.452	3.056	1.200	4.278	1.902	5.560	2.550	11.071
0.480	3.095	1.228	4.325	1.926	5.614	2.650	11.181
0.524	3.158	1.274	4.402	1.954	5.683	2.750	11.267
0.550	3.197	1.300	4.447	1.980	5.751		
0.600	3.273	1.350	4.535	2.004	5.816		
0.630	3.320	1.378	4.582	2.024	5.875		
0.674	3.391	1.428	4.669	2.052	5.966		
0.700	3.435	1.452	4.713	2.082	6.084		

$pK_{a1} = 2.956$ $pK_{a2} = 4.262$ $pK_{a3} = 5.472$

Table Mg47. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 1 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.1463 mmol Mg^{2+}, 0.1468 mmol Citric Acid, Titrant = 0.0973 M NaOH in 1 m NaCl, pcH = 1.000pHr + 0.245.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.225	2.852	4.057	4.776	10.032
0.074	2.258	2.926	4.101	4.800	10.073
0.124	2.284	3.000	4.147	4.826	10.113
0.176	2.312	3.074	4.193	4.854	10.148
0.250	2.352	3.150	4.240	4.900	10.197
0.330	2.396	3.224	4.287	4.950	10.241
0.402	2.437	3.302	4.338	5.000	10.278
0.476	2.481	3.376	4.388	5.050	10.312
0.550	2.525	3.450	4.438	5.100	10.345
0.626	2.569	3.526	4.491	5.200	10.403
0.700	2.615	3.600	4.544	5.300	10.459
0.776	2.665	3.676	4.601	5.400	10.507
0.850	2.713	3.750	4.660	5.502	10.556
0.926	2.775	3.826	4.723	5.600	10.600
0.952	2.783	3.904	4.792	5.700	10.644
1.026	2.831	3.952	4.837	5.800	10.685
1.102	2.882	4.002	4.885		
1.174	2.932	4.050	4.934		
1.250	2.987	4.100	4.990		
1.300	3.022	4.150	5.048		
1.374	3.075	4.200	5.111		
1.450	3.129	4.250	5.179		
1.526	3.185	4.300	5.256		
1.574	3.219	4.350	5.343		
1.650	3.274	4.374	5.389		
1.736	3.342	4.402	5.448		
1.800	3.383	4.428	5.509		
1.876	3.436	4.452	5.571		
1.950	3.486	4.474	5.634		
2.026	3.537	4.500	5.722		
2.102	3.589	4.524	5.816		
2.176	3.639	4.552	5.945		
2.250	3.686	4.574	6.101		
2.326	3.734	4.600	6.367		
2.400	3.781	4.624	7.141		
2.474	3.826	4.650	9.099		
2.552	3.874	4.676	9.588		
2.630	3.922	4.700	9.767		
2.700	3.964	4.726	9.894		
2.784	4.014	4.750	9.971		

$\log \beta_{101} = 2.310$, $\log \beta_{111} = 5.663$, $\log \beta_{1\text{-}10} = -11.289$

Table Mg48. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 1 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.1463 mmol Mg^{2+}, 0.1470 mmol Citric Acid, Titrant = 0.1008 M NaOH in 1 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.101	2.100	3.540	4.000	4.949
0.028	2.113	2.150	3.575	4.052	5.012
0.076	2.137	2.202	3.610	4.102	5.080
0.148	2.178	2.250	3.643	4.128	5.117
0.226	2.221	2.300	3.674	4.152	5.150
0.300	2.264	2.348	3.707	4.178	5.194
0.376	2.308	2.402	3.742	4.200	5.233
0.452	2.355	2.454	3.777	4.226	5.279
0.500	2.385	2.504	3.808	4.250	5.323
0.550	2.417	2.550	3.838	4.276	5.376
0.600	2.448	2.602	3.873	4.302	5.435
0.652	2.481	2.652	3.904	4.326	5.494
0.702	2.514	2.700	3.935	4.350	5.560
0.752	2.549	2.750	3.968	4.374	5.634
0.800	2.580	2.802	4.001	4.400	5.727
0.850	2.616	2.850	4.033	4.426	5.843
0.900	2.650	2.900	4.065	4.450	5.976
0.950	2.685	2.952	4.099	4.476	6.188
1.002	2.722	3.000	4.130	4.502	6.566
1.052	2.757	3.052	4.165	4.526	8.170
1.100	2.792	3.100	4.196	4.550	9.475
1.150	2.829	3.150	4.231	4.574	9.782
1.200	2.865	3.202	4.266	4.600	9.957
1.250	2.904	3.260	4.306	4.624	10.056
1.300	2.942	3.300	4.334	4.650	10.127
1.354	2.983	3.354	4.373	4.674	10.175
1.402	3.020	3.402	4.408	4.700	10.217
1.450	3.056	3.450	4.444	4.728	10.256
1.500	3.095	3.500	4.483	4.750	10.274
1.552	3.135	3.550	4.522	4.800	10.326
1.604	3.176	3.600	4.564	4.850	10.364
1.650	3.211	3.652	4.608	4.900	10.401
1.700	3.249	3.700	4.647	4.952	10.438
1.750	3.286	3.750	4.692	5.000	10.468
1.802	3.325	3.778	4.718	5.050	10.499
1.850	3.360	3.804	4.744	5.100	10.528
1.900	3.397	3.828	4.766	5.176	10.570
1.950	3.433	3.876	4.814	5.252	10.611
2.002	3.472	3.900	4.838	5.324	10.646
2.052	3.507	3.950	4.891	5.402	10.686

$\log \beta_{101} = 2.372$, $\log \beta_{111} = 6.427$, $\log \beta_{1\text{-}10} = -11.173$

Table Mg49. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 1.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.735 mmol Citric Acid, Titrant = 0.0973 M NaOH in 1.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.357	1.030	3.615	1.776	4.750	2.525	10.663
0.028	2.368	1.052	3.647	1.800	4.790	2.552	10.712
0.076	2.406	1.074	3.680	1.824	4.831	2.576	10.752
0.126	2.452	1.100	3.720	1.850	4.877	2.626	10.830
0.200	2.521	1.128	3.759	1.876	4.923	2.676	10.890
0.250	2.571	1.150	3.793	1.900	4.966	2.724	10.942
0.300	2.622	1.176	3.832	1.924	5.010	2.802	11.014
0.350	2.676	1.202	3.870	1.952	5.064	2.874	11.070
0.400	2.734	1.226	3.904	1.978	5.177	2.950	11.124
0.450	2.792	1.250	3.939	2.000	5.163	3.028	11.170
0.474	2.820	1.276	3.981	2.024	5.214	3.126	11.222
0.500	2.853	1.300	4.011	2.050	5.274	3.326	11.311
0.528	2.888	1.326	4.050	2.076	5.343	3.534	11.384
0.554	2.937	1.350	4.086	2.100	5.409		
0.576	2.952	1.374	4.121	2.130	5.498		
0.625	3.014	1.400	4.161	2.152	5.570		
0.650	3.053	1.426	4.199	2.174	5.655		
0.676	3.086	1.452	4.240	2.200	5.783		
0.702	3.125	1.474	4.274	2.228	5.941		
0.724	3.158	1.500	4.313	2.252	6.179		
0.750	3.192	1.526	4.352	2.276	6.557		
0.774	3.229	1.550	4.389	2.304	8.767		
0.800	3.266	1.576	4.430	2.326	9.644		
0.826	3.307	1.600	4.469	2.350	9.967		
0.850	3.343	1.626	4.510	2.376	10.158		
0.876	3.388	1.650	4.548	2.400	10.285		
0.900	3.419	1.676	4.589	2.428	10.397		
0.926	3.479	1.700	4.628	2.450	10.471		
0.950	3.496	1.728	4.671	2.474	10.544		
1.000	3.568	1.750	4.707	2.500	10.605		

$pK_{a1} = 2.851$ $pK_{a2} = 4.086$ $pK_{a3} = 5.174$

Table Mg50. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 1.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.735 mmol Citric Acid, Titrant = 0.1008 M NaOH in 1.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.271	0.776	3.191	1.400	4.161	2.028	5.290
0.026	2.284	0.800	3.228	1.424	4.200	2.050	5.350
0.074	2.326	0.826	3.271	1.450	4.239	2.074	5.422
0.124	2.372	0.850	3.313	1.482	4.290	2.100	5.509
0.174	2.420	0.876	3.355	1.500	4.320	2.126	5.609
0.224	2.470	0.900	3.396	1.528	4.362	2.150	5.715
0.248	2.496	0.924	3.433	1.552	4.399	2.176	5.857
0.274	2.522	0.952	3.476	1.574	4.434	2.204	6.075
0.302	2.553	0.974	3.510	1.600	4.476	2.228	6.387
0.330	2.584	1.000	3.550	1.624	4.515	2.256	7.790
0.352	2.610	1.024	3.589	1.652	4.563	2.276	9.505
0.374	2.636	1.052	3.631	1.682	4.611	2.300	9.921
0.426	2.698	1.078	3.672	1.700	4.640	2.326	10.166
0.454	2.733	1.100	3.707	1.728	4.688	2.350	10.311
0.476	2.763	1.126	3.745	1.752	4.728	2.374	10.423
0.500	2.794	1.152	3.786	1.774	4.767	2.400	10.519
0.526	2.827	1.176	3.821	1.800	4.813	2.426	10.597
0.552	2.862	1.202	3.863	1.826	4.859	2.476	10.715
0.574	2.893	1.224	3.895	1.850	4.905	2.550	10.845
0.600	2.929	1.250	3.933	1.876	4.955	2.652	10.976
0.624	2.963	1.274	3.970	1.900	5.001		
0.658	3.014	1.300	4.009	1.924	5.050		
0.678	3.043	1.326	4.049	1.950	5.106		
0.700	3.076	1.352	4.088	1.974	5.161		
0.750	3.152	1.378	4.128	2.000	5.220		

$pK_{a1} = 2.886$ $pK_{a2} = 4.134$ $pK_{a3} = 5.184$

Table Mg51. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 2.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.728 mmol Citric Acid, Titrant = 0.0846 M NaOH in 2.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.084	0.900	2.986	1.850	4.193	2.650	8.418
0.028	2.100	0.952	3.054	1.878	4.231	2.674	8.957
0.074	2.135	0.974	3.081	1.924	4.292	2.700	9.312
0.102	2.155	1.026	3.149	1.950	4.326	2.724	9.592
0.152	2.195	1.050	3.180	2.002	4.398	2.750	9.829
0.178	2.217	1.104	3.251	2.026	4.430	2.778	9.998
0.226	2.257	1.130	3.286	2.078	4.504	2.830	10.219
0.250	2.278	1.178	3.346	2.104	4.544	2.874	10.347
0.274	2.299	1.200	3.374	2.152	4.614	2.928	10.465
0.324	2.343	1.250	3.437	2.176	4.651	3.000	10.585
0.350	2.369	1.276	3.470	2.224	4.730	3.076	10.683
0.400	2.416	1.328	3.536	2.250	4.772	3.150	10.758
0.426	2.442	1.354	3.567	2.300	4.863	3.252	10.841
0.478	2.493	1.400	3.625	2.324	4.911	3.350	10.906
0.500	2.517	1.424	3.654	2.378	5.026	3.450	10.966
0.550	2.571	1.476	3.720	2.400	5.077		
0.576	2.599	1.500	3.751	2.424	5.138		
0.626	2.654	1.550	3.811	2.450	5.212		
0.654	2.685	1.580	3.850	2.486	5.328		
0.700	2.739	1.628	3.910	2.504	5.398		
0.724	2.762	1.650	3.937	2.524	5.488		
0.776	2.831	1.700	3.999	2.550	5.627		
0.800	2.860	1.724	4.030	2.574	5.794		
0.824	2.891	1.774	4.096	2.602	6.116		
0.874	2.953	1.800	4.129	2.626	6.879		

$pK_{a1} = 2.799$ $pK_{a2} = 4.081$ $pK_{a3} = 5.071$

Table Mg52. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 2.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0697 mmol Mg^{2+}, 0.728 mmol Citric Acid, Titrant = 0.0846 M NaOH in 2.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.089	0.926	3.009	1.876	4.146	2.678	8.537
0.026	2.106	0.976	3.073	1.902	4.179	2.700	8.858
0.076	2.141	1.000	3.102	1.950	4.238	2.728	9.182
0.100	2.159	1.050	3.165	1.974	4.269	2.750	9.406
0.150	2.199	1.074	3.194	2.026	4.337	2.774	9.621
0.176	2.219	1.126	3.260	2.050	4.368	2.800	9.801
0.228	2.262	1.150	3.289	2.102	4.440	2.824	9.928
0.256	2.286	1.200	3.350	2.128	4.477	2.850	10.032
0.300	2.325	1.224	3.379	2.174	4.544	2.878	10.109
0.326	2.348	1.278	3.445	2.200	4.585	2.902	10.160
0.376	2.396	1.304	3.475	2.250	4.666	2.950	10.241
0.400	2.418	1.350	3.535	2.280	4.717	3.000	10.303
0.450	2.467	1.378	3.563	2.332	4.814	3.076	10.379
0.474	2.491	1.424	3.617	2.352	4.855	3.150	10.441
0.526	2.544	1.450	3.647	2.376	4.904	3.250	10.523
0.554	2.574	1.500	3.704	2.426	5.022	3.350	10.564
0.602	2.625	1.528	3.737	2.450	5.088	3.452	10.614
0.628	2.654	1.578	3.796	2.474	5.159		
0.678	2.709	1.604	3.825	2.502	5.255		
0.702	2.737	1.650	3.878	2.526	5.354		
0.752	2.796	1.678	3.911	2.552	5.482		
0.778	2.828	1.724	3.965	2.576	5.634		
0.826	2.886	1.750	3.996	2.604	5.911		
0.852	2.919	1.802	4.059	2.626	6.385		
0.900	2.977	1.824	4.084	2.650	7.775		

$\log \beta_{101} = 1.926$ $\log \beta_{111} = 5.897$ $\log \beta_{1\text{-}10} = -11.516$

Table Mg53. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 2.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.728 mmol Citric Acid, Titrant = 0.0978 M NaOH in 2.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.094	0.750	2.959	1.500	4.049	2.226	5.731
0.028	2.114	0.774	2.994	1.526	4.087	2.252	6.023
0.076	2.156	0.826	3.071	1.574	4.158	2.274	6.611
0.100	2.178	0.850	3.105	1.600	4.196	2.300	9.342
0.152	2.226	0.902	3.182	1.652	4.273	2.326	9.812
0.178	2.253	0.924	3.215	1.680	4.317	2.350	10.024
0.224	2.298	0.976	3.291	1.724	4.388	2.378	10.182
0.250	2.324	1.000	3.328	1.752	4.429	2.400	10.278
0.300	2.381	1.050	3.401	1.800	4.507	2.424	10.360
0.324	2.405	1.078	3.441	1.828	4.554	2.474	10.495
0.374	2.465	1.128	3.514	1.874	4.635	2.526	10.600
0.400	2.494	1.150	3.545	1.904	4.688	2.602	10.715
0.450	2.553	1.204	3.624	1.926	4.729	2.676	10.803
0.476	2.585	1.228	3.658	1.974	4.826	2.780	10.902
0.524	2.645	1.274	3.728	2.002	4.888	2.884	10.980
0.554	2.685	1.300	3.764	2.052	5.003	3.000	11.051
0.600	2.748	1.352	3.840	2.076	5.065		
0.628	2.786	1.374	3.868	2.126	5.217		
0.676	2.853	1.424	3.941	2.150	5.308		
0.700	2.886	1.450	3.978	2.200	5.542		

$pK_{a1} = 2.873$ $pK_{a2} = 4.100$ $pK_{a3} = 5.082$

Table Mg54. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 2.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0697 mmol Mg^{2+}, 0.0728 mmol Citric Acid, Titrant = 0.0978 M NaOH in 2.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.102	0.902	3.175	1.850	4.495	2.600	10.426
0.028	2.123	0.952	3.246	1.878	4.540	2.626	10.450
0.074	2.162	0.978	3.283	1.928	4.630	2.650	10.472
0.100	2.185	1.026	3.349	1.952	4.675	2.674	10.493
0.150	2.233	1.050	3.382	2.000	4.774	2.728	10.539
0.174	2.255	1.100	3.451	2.026	4.833	2.800	10.594
0.200	2.280	1.126	3.486	2.076	4.959		
0.250	2.331	1.178	3.555	2.102	5.032		
0.276	2.358	1.200	3.585	2.152	5.202		
0.328	2.414	1.250	3.652	2.174	5.299		
0.354	2.443	1.278	3.689	2.200	5.432		
0.374	2.465	1.324	3.750	2.226	5.609		
0.426	2.526	1.354	3.789	2.250	5.885		
0.450	2.554	1.404	3.855	2.272	6.345		
0.500	2.616	1.424	3.881	2.302	9.312		
0.528	2.651	1.474	3.948	2.326	9.683		
0.574	2.711	1.502	3.985	2.352	9.913		
0.602	2.749	1.550	4.051	2.374	10.030		
0.652	2.817	1.578	4.091	2.402	10.129		
0.678	2.854	1.626	4.157	2.428	10.196		
0.724	2.918	1.652	4.193	2.450	10.240		
0.752	2.958	1.700	4.263	2.474	10.282		
0.800	3.027	1.728	4.303	2.500	10.318		
0.828	3.068	1.778	4.378	2.550	10.381		
0.874	3.134	1.804	4.418	2.576	10.401		

$\log \beta_{101} = 2.017$ $\log \beta_{111} = 5.885$ $\log \beta_{1\text{-}10} = -11.516$

Table Mg55. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.1463 mmol Mg^{2+}, 0.1470 mmol Citric Acid, Titrant = 0.0934 M NaOH in 3 m NaCl, pcH = 0.986pHr + 0.726.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.796	2.200	3.257	4.652	5.545
0.028	1.809	2.252	3.292	4.674	5.667
0.076	1.834	2.300	3.324	4.700	5.886
0.152	1.876	2.350	3.356	4.726	6.393
0.224	1.915	2.400	3.387	4.752	8.484
0.300	1.959	2.478	3.438	4.774	9.179
0.374	2.002	2.552	3.483	4.800	9.448
0.450	2.049	2.624	3.529	4.828	9.579
0.526	2.095	2.730	3.594	4.850	9.640
0.576	2.126	2.802	3.637	4.874	9.687
0.626	2.158	2.874	3.681	4.900	9.725
0.676	2.189	2.950	3.728	4.926	9.754
0.726	2.221	3.026	3.775	4.952	9.785
0.774	2.252	3.102	3.821	5.000	9.836
0.850	2.303	3.174	3.866	5.050	9.880
0.874	2.319	3.250	3.913	5.102	9.921
0.928	2.356	3.326	3.962	5.150	9.957
0.978	2.389	3.400	4.010	5.204	9.993
1.026	2.423	3.474	4.058	5.250	10.022
1.074	2.455	3.552	4.110	5.300	10.051
0.124	2.491	3.626	4.161	5.354	10.084
1.174	2.526	3.702	4.216	5.428	10.127
1.226	2.564	3.776	4.270	5.500	10.171
1.274	2.598	3.850	4.327	5.574	10.215
1.326	2.634	3.928	4.382	5.650	10.258
1.374	2.669	4.028	4.467	5.726	10.301
1.430	2.710	4.074	4.510	5.802	10.342
1.474	2.743	4.150	4.584	5.880	10.383
1.526	2.781	4.200	4.637	5.952	10.419
1.578	2.819	4.250	4.692		
1.628	2.855	4.324	4.784		
1.702	2.909	4.374	4.854		
1.774	2.962	4.426	4.936		
1.828	3.001	4.450	4.994		
1.876	3.035	4.474	5.021		
1.926	3.071	4.528	5.133		
1.976	3.105	4.550	5.185		
2.050	3.157	4.574	5.272		
2.100	3.190	4.600	5.334		
2.150	3.224	4.624	5.419		

$\log \beta_{101} = 1.972$, $\log \beta_{111} = 6.134$, $\log \beta_{1\text{-}10} = -11.251$

Table Mg56. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0698 mmol Mg^{2+}, 0.0591 mmol Citric Acid, Titrant = 0.0958 M NaOH in 3 m NaCl, pcH = 0.968pHr + 0.866.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.942	0.630	2.832	1.130	3.688	1.652	4.712
0.024	1.961	0.650	2.869	1.154	3.727	1.676	4.788
0.074	2.014	0.676	2.916	1.178	3.766	1.700	4.876
0.126	2.073	0.704	2.968	1.202	3.804	1.726	4.981
0.178	2.136	0.728	3.009	1.228	3.847	1.750	5.098
0.224	2.193	0.754	3.055	1.256	3.893	1.778	5.272
0.276	2.262	0.778	3.099	1.280	3.933	1.804	5.521
0.302	2.299	0.802	3.141	1.304	3.975	1.828	5.885
0.330	2.338	0.828	3.187	1.338	4.033	1.852	8.309
0.350	2.368	0.852	3.230	1.360	4.073	1.878	9.474
0.376	2.406	0.878	3.274	1.384	4.115	1.904	9.781
0.404	2.451	0.908	3.324	1.404	4.151	1.928	9.937
0.428	2.491	0.928	3.358	1.450	4.237	1.952	10.034
0.450	2.524	0.950	3.393	1.474	4.285	1.976	10.101
0.478	2.568	0.976	3.438	1.500	4.338	2.000	10.152
0.502	2.609	1.004	3.484	1.528	4.397	2.050	10.238
0.528	2.653	1.032	3.528	1.520	4.451	2.100	10.306
0.550	2.693	1.056	3.568	1.576	4.508	2.150	10.363
0.578	2.741	1.078	3.603	1.602	4.572	2.200	10.411
0.604	2.787	1.102	3.641	1.628	4.642	2.306	10.500

$\log \beta_{101} = 2.060$, $\log \beta_{111} = 6.170$, $\log \beta_{1\text{-}10} = -11.397$

Table Mg57. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 3.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0735 mmol Citric Acid, Titrant = 0.0934 M NaOH in 3.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.958	0.776	2.836	1.430	3.754	2.054	4.709
0.030	1.978	0.804	2.897	1.452	3.785	2.080	4.761
0.076	2.016	0.826	2.912	1.476	3.827	2.102	4.816
0.128	2.064	0.850	2.944	1.500	3.852	2.124	4.880
0.150	2.084	0.874	2.977	1.524	3.883	2.152	4.951
0.202	2.133	0.900	3.015	1.554	3.922	2.174	5.021
0.228	2.158	0.926	3.054	1.580	3.958	2.200	5.118
0.250	2.182	0.950	3.088	1.604	3.990	2.226	5.226
0.276	2.207	0.976	3.143	1.628	4.024	2.254	5.359
0.300	2.233	1.004	3.181	1.650	4.055	2.274	5.478
0.332	2.267	1.028	3.210	1.678	4.094	2.300	5.752
0.376	2.317	1.054	3.244	1.702	4.123	2.326	7.263
0.426	2.375	1.074	3.274	1.724	4.156	2.354	9.357
0.472	2.429	1.100	3.312	1.752	4.199	2.376	9.659
0.500	2.464	1.126	3.347	1.776	4.234	2.400	9.879
0.526	2.497	1.152	3.385	1.804	4.276	2.428	10.043
0.550	2.548	1.176	3.417	1.826	4.311	2.452	10.183
0.574	2.562	1.200	3.449	1.850	4.344	2.500	10.301
0.602	2.599	1.224	3.486	1.876	4.398	2.550	10.417
0.628	2.629	1.250	3.514	1.904	4.434	2.602	10.497
0.650	2.659	1.300	3.597	1.924	4.467		
0.676	2.697	1.330	3.634	1.952	4.515		
0.702	2.731	1.352	3.654	1.974	4.554		
0.724	2.762	1.374	3.681	2.000	4.604		
0.750	2.800	1.402	3.718	2.024	4.664		

$pK_{a1} = 2.803$ $pK_{a2} = 4.114$ $pK_{a3} = 5.079$

Table Mg58. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 3.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0591 mmol Citric Acid, Titrant = 0.0978 M NaOH in 3.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.957	0.730	3.050	1.374	4.196	2.000	10.397
0.026	1.979	0.750	3.087	1.402	4.253	2.026	10.462
0.074	2.031	0.776	3.135	1.426	4.297	2.052	10.519
0.126	2.092	0.804	3.187	1.450	4.345	2.100	10.608
0.156	2.127	0.830	3.234	1.474	4.395	2.150	10.683
0.176	2.153	0.850	3.273	1.500	4.450	2.200	10.746
0.200	2.182	0.876	3.321	1.526	4.509	2.300	10.850
0.228	2.219	0.900	3.362	1.550	4.566	2.400	10.933
0.258	2.257	0.926	3.407	1.578	4.635	2.604	11.060
0.274	2.280	0.950	3.448	1.600	4.693	2.800	11.152
0.302	2.320	0.974	3.488	1.628	4.774		
0.326	2.355	1.000	3.533	1.652	4.847		
0.350	2.390	1.030	3.584	1.674	4.922		
0.400	2.467	1.050	3.619	1.702	5.033		
0.426	2.508	1.100	3.705	1.730	5.168		
0.478	2.594	1.126	3.749	1.750	5.283		
0.500	2.632	1.150	3.792	1.778	5.481		
0.526	2.677	1.176	3.836	1.800	5.724		
0.550	2.719	1.202	3.882	1.828	6.498		
0.576	2.767	1.230	3.933	1.850	9.226		
0.600	2.811	1.250	3.970	1.876	9.736		
0.626	2.858	1.278	4.018	1.900	9.962		
0.652	2.907	1.302	4.062	1.928	10.131		
0.676	2.951	1.326	4.108	1.952	10.240		
0.702	2.999	1.350	4.150	1.974	10.320		

pK_{a1} = 2.777 pK_{a2} = 4.119 pK_{a3} = 5.090

Table Mg59. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 4 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0668 mmol Mg^{2+}, 0.0549 mmol Citric Acid, Titrant = 0.0932 M NaOH in 4 m NaCl, pcH = 0.979pHr + 0.987.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.824	0.650	2.823	1.252	3.866	1.850	9.614
0.074	1.904	7.000	2.916	1.300	3.951	1.878	9.793
0.124	1.964	0.726	2.964	1.326	3.999	1.900	9.877
0.176	2.031	0.752	3.010	1.350	4.044	1.924	9.942
0.202	2.068	0.778	3.058	1.400	4.139	1.950	9.993
0.250	2.135	0.802	3.100	1.428	4.194	1.974	10.035
0.274	2.171	0.824	3.138	1.452	4.246	2.000	10.072
0.326	2.250	0.852	3.188	1.500	4.352	2.030	10.112
0.354	2.294	0.878	3.233	1.528	4.418	2.050	10.138
0.378	2.332	0.906	3.282	1.556	4.490	2.100	10.197
0.400	2.369	0.928	3.318	1.600	4.619	2.150	10.250
0.428	2.417	0.974	3.397	1.626	4.705	2.202	10.289
0.450	2.455	1.000	3.441	1.650	4.796	2.252	10.316
0.474	2.498	1.024	3.484	1.674	4.901	2.352	10.347
0.500	2.544	1.076	3.570	1.700	5.041	2.450	10.388
0.528	2.597	1.100	3.608	1.726	5.230	2.550	10.419
0.554	2.641	1.124	3.649	1.750	5.494		
0.576	2.683	1.150	3.693	1.776	6.107		
0.602	2.731	1.200	3.777	1.800	8.503		
0.628	2.780	1.228	3.824	1.824	9.233		

$\log \beta_{101} = 2.103$, $\log \beta_{111} = 6.357$, $\log \beta_{1\text{-}10} = -11.341$

Table Mg60. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 4 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0891 mmol Mg^{2+}, 0.0915 mmol Citric Acid, Titrant = 0.0866 M NaOH in 4 m NaCl, pcH = 0.968pHr + 0.996.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.660	1.500	3.132	2.902	4.671
0.024	1.675	1.532	3.163	2.926	4.721
0.074	1.713	1.574	3.206	2.950	4.774
0.102	1.733	1.600	3.231	2.974	4.832
0.150	1.772	1.650	3.280	3.004	4.918
0.180	1.797	1.678	3.308	3.026	4.982
0.224	1.832	1.726	3.353	3.052	5.072
0.252	1.856	1.750	3.377	3.076	5.173
0.302	1.900	1.800	3.425	3.104	5.321
0.328	1.922	1.828	3.452	3.130	5.508
0.374	1.964	1.878	3.498	3.154	5.792
0.400	1.986	1.902	3.522	3.176	6.491
0.448	2.030	1.952	3.567	3.200	8.808
0.476	2.056	1.978	3.593	3.224	9.322
0.524	2.099	2.024	3.635	3.250	9.535
0.552	2.127	2.054	3.663	3.276	9.644
0.600	2.173	2.100	3.707	3.300	9.711
0.628	2.200	2.128	3.734	3.326	9.764
0.676	2.248	2.178	3.782	3.350	9.802
0.704	2.277	2.204	3.807	3.400	9.874
0.752	2.326	2.250	3.851	3.450	9.931
0.778	2.354	2.274	3.875	3.502	9.982
0.824	2.402	2.328	3.929	3.550	10.026
0.852	2.433	2.354	3.956	3.626	10.092
0.900	2.484	2.400	4.002	3.700	10.154
0.930	2.517	2.424	4.027	3.800	10.229
0.978	2.570	2.474	4.080	3.900	10.301
1.000	2.594	2.502	4.111	4.002	10.364
1.050	2.649	2.552	4.168		
1.078	2.681	2.578	4.197		
1.126	2.736	2.626	4.256		
1.154	2.766	2.650	4.285		
1.202	2.819	2.700	4.349		
1.250	2.870	2.728	4.388		
1.274	2.896	2.754	4.424		
1.326	2.951	2.776	4.457		
1.350	2.976	2.802	4.497		
1.402	3.031	2.830	4.541		
1.428	3.059	2.854	4.582		
1.476	3.108	2.874	4.618		

$\log \beta_{101} = 2.061$, $\log \beta_{111} = 6.549$, $\log \beta_{1\text{-}10} = -11.407$

Table Mg61. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 4.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0549 mmol Citric Acid, Titrant = 0.0932 M NaOH in 4.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.809	0.726	2.972	1.374	4.162	2.100	10.646
0.024	1.831	0.750	3.018	1.402	4.220	2.178	10.742
0.076	1.892	0.776	3.066	1.426	4.270	2.250	10.814
0.102	1.922	0.802	3.116	1.454	4.331	2.352	10.898
0.150	1.984	0.828	3.164	1.478	4.386	2.454	10.965
0.176	2.019	0.852	3.208	1.504	4.447	2.650	11.070
0.226	2.087	0.876	3.252	1.532	4.517		
0.252	2.124	0.902	3.298	1.552	4.570		
0.274	2.159	0.928	3.346	1.576	4.640		
0.304	2.203	0.952	3.389	1.600	4.715		
0.330	2.244	0.978	3.436	1.626	4.806		
0.374	2.315	1.000	3.475	1.650	4.901		
0.400	2.360	1.026	3.521	1.674	5.014		
0.426	2.404	1.050	3.564	1.702	5.177		
0.452	2.450	1.074	3.609	1.728	5.391		
0.476	2.494	1.102	3.657	1.752	5.711		
0.502	2.542	1.126	3.701	1.774	6.690		
0.526	2.588	1.152	3.745	1.800	9.050		
0.552	2.636	1.176	3.788	1.826	9.623		
0.576	2.683	1.204	3.839	1.852	9.899		
0.600	2.729	1.228	3.884	1.874	10.048		
0.628	2.783	1.252	3.928	1.900	10.176		
0.652	2.831	1.276	3.972	1.926	10.275		
0.676	2.877	1.302	4.022	1.974	10.415		
0.702	2.926	1.350	4.116	2.026	10.525		

pK_{a1} = 2.869 pK_{a2} = 4.219 pK_{a3} = 5.156

Table Mg62. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 4.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0732 mmol Citric Acid, Titrant = 0.0932 M NaOH in 4.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.745	0.926	2.906	1.876	4.230	2.578	10.243
0.030	1.771	0.974	2.978	1.900	4.268	2.626	10.368
0.052	1.792	1.000	3.016	1.950	4.350	2.674	10.463
0.102	1.840	1.054	3.093	1.976	4.396	2.752	10.584
0.150	1.888	1.078	3.126	2.026	4.486	2.824	10.699
0.176	1.915	1.128	3.197	2.056	4.546	2.900	10.743
0.224	1.966	1.150	3.228	2.102	4.645	3.000	10.823
0.250	1.994	1.200	3.296	2.128	4.707	3.106	10.894
0.300	2.051	1.224	3.329	2.150	4.762	3.202	10.947
0.326	2.082	1.276	3.398	2.176	4.834		
0.374	2.137	1.304	3.436	2.202	4.915		
0.402	2.171	1.352	3.502	2.226	5.000		
0.450	2.232	1.380	3.539	2.250	5.096		
0.478	2.267	1.426	3.600	2.280	5.246		
0.528	2.334	1.450	3.632	2.302	5.391		
0.550	2.363	1.500	3.698	2.326	5.617		
0.600	2.432	1.532	3.740	2.352	6.109		
0.624	2.466	1.574	3.797	2.378	7.920		
0.680	2.546	1.604	3.839	2.400	8.580		
0.700	2.573	1.652	3.904	2.424	9.052		
0.750	2.647	1.674	3.934	2.450	9.448		
0.780	2.690	1.724	4.005	2.475	9.715		
0.826	2.758	1.750	4.042	2.502	9.922		
0.850	2.795	1.800	4.115	2.528	10.057		
0.900	2.868	1.828	4.157	2.552	10.157		

$pK_{a1} = 2.986$ $pK_{a2} = 4.262$ $pK_{a3} = 5.240$

Table Mg63. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 5 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0776 mmol Mg^{2+}, 0.0740 mmol Citric Acid, Titrant = 0.0895 M NaOH in 5 m NaCl, pcH = 0.979pHr + 1.202.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.553	0.804	2.531	1.750	3.733	2.626	9.630
0.024	1.573	0.852	2.599	1.780	3.769	2.654	9.684
0.074	1.621	0.876	2.632	1.830	3.833	2.678	9.725
0.128	1.677	0.926	2.703	1.850	3.858	2.726	9.794
0.178	1.729	0.950	2.736	1.900	3.923	2.778	9.857
0.226	1.782	1.000	2.806	1.928	3.959	2.826	9.911
0.250	1.809	1.024	2.839	1.976	4.026	2.874	9.962
0.300	1.865	1.074	2.906	2.004	4.065	2.924	10.006
0.350	1.923	1.104	2.945	2.050	4.133	3.000	10.083
0.378	1.957	1.148	3.003	2.074	4.171	3.076	10.144
0.404	1.988	1.178	3.041	2.124	4.254	3.153	10.191
0.428	2.018	1.228	3.104	2.150	4.297		
0.450	2.046	1.258	3.142	2.202	4.394		
0.476	2.080	1.302	3.169	2.226	4.444		
0.500	2.111	1.328	3.228	2.278	4.561		
0.528	2.148	1.374	3.285	2.304	4.627		
0.552	2.179	1.402	3.318	2.350	4.764		
0.574	2.210	1.450	3.375	2.380	4.872		
0.600	2.244	1.480	3.411	2.428	5.102		
0.626	2.279	1.528	3.467	2.452	5.270		
0.654	2.319	1.554	3.497	2.502	6.119		
0.680	2.358	1.600	3.552	2.526	8.709		
0.702	2.387	1.624	3.581	2.550	9.280		
0.726	2.421	1.676	3.643	2.574	9.465		
0.776	2.491	1.704	3.676	2.600	9.566		

$\log \beta_{101} = 2.055$, $\log \beta_{111} = 6.672$, $\log \beta_{1\text{-}10} = -11.315$

Table Mg64. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 5.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0675 mmol Citric Acid, Titrant = 0.0916 M NaOH in 5.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.660	0.800	2.742	1.480	3.729	2.224	6.005
0.025	1.681	0.826	2.785	1.520	3.787	2.252	8.910
0.076	1.735	0.850	2.823	1.560	3.843	2.276	9.505
0.128	1.789	0.876	2.865	1.602	3.903	2.324	9.950
0.176	1.843	0.902	2.906	1.630	3.942	2.352	10.088
0.224	1.901	0.924	2.941	1.668	3.994	2.380	10.192
0.250	1.933	0.950	2.981	1.702	4.044	2.400	10.252
0.280	1.973	0.976	3.021	1.738	4.100	2.450	10.375
0.324	2.027	1.000	3.057	1.772	4.154	2.500	10.470
0.378	2.098	1.024	3.094	1.812	4.219	2.550	10.560
0.400	2.126	1.052	3.133	1.842	4.271		
0.442	2.186	1.078	3.173	1.870	4.322		
0.476	2.234	1.102	3.208	1.900	4.377		
0.500	2.269	1.126	3.243	1.926	4.426		
0.524	2.305	1.150	3.277	1.952	4.480		
0.550	2.344	1.174	3.310	1.974	4.528		
0.574	2.381	1.200	3.348	2.000	4.590		
0.600	2.420	1.228	3.387	2.026	4.653		
0.624	2.459	1.250	3.417	2.050	4.718		
0.652	2.504	1.274	3.450	2.078	4.806		
0.674	2.539	1.300	3.484	2.104	4.903		
0.700	2.580	1.340	3.539	2.124	4.981		
0.724	2.620	1.380	3.594	2.150	5.107		
0.752	2.664	1.420	3.648	2.176	5.273		
0.774	2.700	1.452	3.691	2.200	5.505		

$pK_{a1} = 2.873$ $pK_{a2} = 4.269$ $pK_{a3} = 5.164$

Table Mg65. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 5.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0675 mmol Citric Acid, Titrant = 0.0826 M NaOH in 5.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.604	0.900	2.717	1.820	3.923	2.624	10.094
0.026	1.625	0.924	2.751	1.852	3.967	2.650	10.181
0.074	1.670	0.952	2.792	1.880	4.005	2.674	10.247
0.130	1.727	0.976	2.827	1.914	4.052	2.726	10.363
0.182	1.781	1.000	2.861	1.942	4.091	2.774	10.447
0.224	1.825	1.026	2.898	1.970	4.133	2.824	10.518
0.276	1.884	1.054	2.938	2.002	4.181	2.876	10.582
0.300	1.910	1.076	2.969	2.026	4.218	2.950	10.659
0.326	1.940	1.102	3.004	2.050	4.256	3.026	10.724
0.350	1.968	1.126	3.037	2.080	4.306	3.106	10.783
0.378	2.002	1.152	3.071	2.112	4.361	3.204	10.845
0.400	2.028	1.176	3.104	2.142	4.416		
0.452	2.093	1.200	3.135	2.176	4.481		
0.474	2.121	1.224	3.166	2.200	4.530		
0.498	2.152	1.250	3.200	2.226	4.589		
0.526	2.188	1.276	3.232	2.250	4.645		
0.550	2.221	1.300	3.263	2.276	4.711		
0.576	2.256	1.340	3.314	2.302	4.786		
0.600	2.289	1.374	3.358	2.326	4.864		
0.624	2.322	1.416	3.410	2.350	4.950		
0.650	2.360	1.452	3.456	2.376	5.065		
0.676	2.395	1.490	3.503	2.402	5.205		
0.702	2.431	1.530	3.553	2.426	5.381		
0.726	2.466	1.572	3.605	2.450	5.658		
0.750	2.500	1.608	3.651	2.474	6.349		
0.774	2.535	1.640	3.690	2.500	8.661		
0.800	2.571	1.682	3.744	2.524	9.321		
0.828	2.612	1.712	3.782	2.552	9.685		
0.850	2.646	1.740	3.819	2.574	9.853		
0.876	2.683	1.780	3.870	2.600	9.995		

$pK_{a1} = 2.974$ $pK_{a2} = 4.329$ $pK_{a3} = 5.228$

Table Mg66. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 5.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.0740 mmol Citric Acid, Titrant = 0.0826 M NaOH in 5.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.561	0.952	2.648	1.776	3.654	2.528	4.798
0.026	1.579	0.974	2.678	1.800	3.683	2.552	4.872
0.076	1.625	1.000	2.711	1.824	3.711	2.578	4.963
0.124	1.670	1.024	2.745	1.852	3.744	2.602	5.045
0.174	1.720	1.052	2.784	1.876	3.773	2.628	5.172
0.224	1.770	1.074	2.813	1.900	3.802	2.650	5.313
0.278	1.825	1.100	2.844	1.926	3.828	2.674	5.544
0.300	1.849	1.126	2.879	1.950	3.857	2.702	6.077
0.352	1.906	1.150	2.912	1.976	3.890	2.726	7.837
0.378	1.934	1.178	2.948	2.002	3.923	2.752	8.580
0.400	1.959	1.200	2.976	2.024	3.950	2.778	9.092
0.426	1.988	1.228	3.008	2.050	3.983	2.802	9.438
0.452	2.018	1.256	3.043	2.074	4.011	2.826	9.677
0.474	2.041	1.300	3.094	2.100	4.045	2.850	9.828
0.526	2.102	1.350	3.157	2.128	4.082	2.874	9.960
0.550	2.135	1.376	3.188	2.154	4.118	2.900	10.068
0.600	2.191	1.402	3.221	2.178	4.151	2.924	10.145
0.626	2.224	1.428	3.246	2.200	4.180	2.950	10.216
0.650	2.254	1.452	3.275	2.224	4.215	2.976	10.264
0.676	2.287	1.472	3.301	2.250	4.254	3.000	10.317
0.700	2.318	1.502	3.338	2.274	4.292	3.026	10.357
0.726	2.352	1.550	3.394	2.302	4.337	3.076	10.441
0.750	2.383	1.576	3.425	2.328	4.380	3.124	10.507
0.776	2.413	1.604	3.458	2.350	4.416	3.176	10.562
0.800	2.442	1.630	3.486	2.374	4.460	3.224	10.613
0.824	2.473	1.654	3.513	2.400	4.508	3.302	10.683
0.852	2.511	1.674	3.538	2.424	4.556	3.400	10.755
0.874	2.542	1.704	3.573	2.450	4.612	3.504	10.821
0.900	2.577	1.724	3.596	2.474	4.668		
0.928	2.615	1.752	3.628	2.502	4.727		

$pK_{a1} = 3.038$ $pK_{a2} = 4.349$ $pK_{a3} = 5.268$

Table Mg67. Potentiometric Titration Data for the Stability Constants of Magnesium with Citrate in 5.0 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0776 mmol Mg^{2+}, 0.0740 mmol Citric Acid, Titrant = 0.0912 M NaOH in 5.0 m NaCl, pcH = 0.972pHr + 0.434.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.581	0.752	2.483	1.502	3.469	2.250	4.575
0.028	1.604	0.774	2.514	1.528	3.500	2.278	4.648
0.074	1.650	0.824	2.585	1.580	3.562	2.324	4.792
0.100	1.675	0.850	2.623	1.602	3.589	2.352	4.900
0.150	1.725	0.900	2.693	1.650	3.653	2.400	5.153
0.174	1.752	0.928	2.733	1.678	3.684	2.428	5.389
0.224	1.805	0.976	2.801	1.726	3.742	2.454	5.808
0.252	1.837	1.000	2.835	1.750	3.772	2.474	7.897
0.300	1.891	1.050	2.902	1.802	3.837	2.500	9.257
0.328	1.923	1.074	2.935	1.826	3.868	2.524	9.457
0.376	1.980	1.124	3.001	1.874	3.932	2.550	9.559
0.400	2.009	1.150	3.035	1.902	3.968	2.574	9.623
0.450	2.072	1.200	3.099	1.948	4.032	2.600	9.673
0.478	2.107	1.228	3.135	1.976	4.072	2.650	9.752
0.524	2.168	1.276	3.196	2.028	4.151	2.676	9.786
0.550	2.202	1.304	3.230	2.062	4.204	2.728	9.853
0.600	2.270	1.348	3.283	2.100	4.269	2.774	9.907
0.628	2.308	1.374	3.316	2.124	4.311	2.826	9.965
0.678	2.377	1.426	3.378	2.174	4.406	2.900	10.039
0.700	2.408	1.450	3.407	2.202	4.464	2.980	10.117

$\log \beta_{101} = 2.086$ $\log \beta_{111} = 6.412$ $\log \beta_{1\text{-}10} = -11.220$

Table Mg68. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 0.3 m NaCl at 25°C. Initial Volume = 19.0 mL, 0.0 mmol Mg^{2+}, 0.078816 mmol EDTA, Titrant = 0.1051 M NaOH in 0.3 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.848	1.520	2.284	2.920	3.988	3.800	8.341
0.050	1.857	1.580	2.307	2.940	4.182	3.852	8.546
0.100	1.868	1.650	2.336	2.960	4.419	3.880	8.637
0.180	1.886	1.720	2.367	2.980	4.638	3.900	8.695
0.264	1.906	1.790	2.399	3.000	4.805	3.930	8.779
0.340	1.925	1.860	2.433	3.040	5.062	3.960	8.857
0.420	1.944	1.930	2.468	3.080	5.252	4.000	8.955
0.500	1.965	2.000	2.506	3.100	5.327	4.050	9.072
0.570	1.983	2.060	2.540	3.140	5.462	4.100	9.187
0.640	2.001	2.120	2.577	3.180	5.581	4.150	9.301
0.710	2.019	2.180	2.615	3.200	5.638	4.200	9.420
0.780	2.039	2.240	2.657	3.240	5.739	4.250	9.549
0.850	2.060	2.300	2.701	3.260	5.788	4.300	9.691
0.900	2.074	2.350	2.743	3.300	5.887	4.350	9.855
0.950	2.090	2.400	2.786	3.330	5.958	4.400	10.033
1.000	2.105	2.450	2.832	3.360	6.029	4.450	10.224
1.050	2.120	2.500	2.883	3.392	6.110	4.500	10.403
1.100	2.136	2.550	2.939	3.430	6.204	4.550	10.554
1.150	2.153	2.600	3.005	3.470	6.313	4.600	10.677
1.200	2.169	2.660	3.090	3.500	6.398		
1.250	2.185	2.720	3.198	3.550	6.566		
1.300	2.202	2.782	3.338	3.600	6.777		
1.352	2.222	2.820	3.448	3.650	7.098		
1.400	2.238	2.860	3.608	3.700	7.612		
1.460	2.260	2.900	3.833	3.750	8.065		

$pK_{a1} = 2.140$ $pK_{a2} = 2.557$ $pK_{a3} = 6.019$ $pK_{a4} = 9.178$

Table Mg69. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 0.3 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.09804 mmol Mg^{2+}, 0.078816 mmol EDTA, Titrant = 0.1051 M NaOH in 0.3 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.864	1.740	2.384	3.250	4.674	4.500	10.070
0.070	1.877	1.810	2.416	3.300	4.729	4.550	10.374
0.140	1.893	1.880	2.449	3.350	4.780	4.570	10.451
0.210	1.909	1.950	2.486	3.400	4.826	4.592	10.528
0.280	1.924	2.020	2.524	3.450	4.871	4.600	10.546
0.350	1.940	2.090	2.566	3.500	4.915	4.620	10.597
0.420	1.957	2.160	2.610	3.550	4.957	4.640	10.646
0.490	1.975	2.230	2.657	3.600	4.999	4.660	10.688
0.560	1.993	2.308	2.712	3.650	5.043	4.680	10.727
0.630	2.012	2.370	2.758	3.700	5.091	4.700	10.761
0.700	2.030	2.440	2.820	3.750	5.127	4.720	10.792
0.774	2.050	2.510	2.889	3.800	5.170	4.740	10.823
0.840	2.068	2.580	2.971	3.850	5.213	4.764	10.856
0.910	2.088	2.650	3.066	3.900	5.260	4.780	10.876
0.980	2.108	2.720	3.184	3.950	5.310	4.800	10.901
1.050	2.130	2.750	3.244	4.000	5.358		
1.120	2.152	2.800	3.365	4.050	5.413		
1.190	2.174	2.850	3.516	4.100	5.473		
1.260	2.198	2.900	3.731	4.150	5.541		
1.330	2.221	2.950	3.990	4.200	5.614		
1.400	2.247	3.000	4.209	4.250	5.705		
1.470	2.272	3.050	4.353	4.300	5.818		
1.540	2.298	3.100	4.461	4.350	5.971		
1.610	2.327	3.150	4.543	4.400	6.239		
1.670	2.353	3.200	4.616	4.450	9.033		

$\log \beta_{101} = 7.447$ $\log \beta_{111} = 11.584$ $\log \beta_{1\text{-}10} = -11.832$

$pK_{a1} = 2.140$ $pK_{a2} = 3.550$

Table Mg70. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 1 m NaCl at 25°C. Initial Volume = 19.0 mL, 0.0 mmol Mg^{2+}, 0.077576 mmol EDTA, Titrant = 0.1012 M NaOH in 1 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.714	1.750	2.367	3.110	5.447	3.910	8.312
0.070	1.728	1.820	2.385	3.140	5.531	3.940	8.385
0.140	1.745	1.890	2.400	3.170	5.607	3.970	8.456
0.210	1.763	1.960	2.411	3.200	5.679	4.000	8.524
0.280	1.783	2.030	2.427	3.230	5.752	4.030	8.589
0.350	1.808	2.100	2.441	3.260	5.821	4.060	8.655
0.420	1.832	2.170	2.465	3.300	5.915	4.090	8.724
0.500	1.856	2.242	2.510	3.370	6.084	4.120	8.793
0.560	1.875	2.310	2.563	3.400	6.160	4.150	8.864
0.630	1.899	2.380	2.625	3.430	6.240	4.180	8.940
0.700	1.924	2.450	2.693	3.470	6.358	4.220	9.048
0.770	1.950	2.520	2.775	3.500	6.455	4.260	9.168
0.840	1.977	2.590	2.873	3.530	6.568	4.300	9.308
0.910	2.006	2.660	2.996	3.570	6.749	4.350	9.518
0.980	2.036	2.730	3.162	3.600	6.916	4.400	9.776
1.050	2.064	2.800	3.417	3.630	7.109	4.450	10.039
1.120	2.095	2.830	3.589	3.670	7.393	4.500	10.245
1.190	2.128	2.860	3.844	3.700	7.580	4.550	10.396
1.260	2.160	2.890	4.199	3.730	7.735	4.600	10.509
1.330	2.195	2.920	4.544	3.770	7.902		
1.400	2.229	2.950	4.796	3.800	8.006		
1.470	2.267	2.980	4.968	3.830	8.098		
1.540	2.304	3.000	5.066	3.850	8.156		
1.610	2.333	3.050	5.264	3.870	8.211		
1.680	2.350	3.080	5.358	3.890	8.262		

$pK_{a1} = 2.323$ $pK_{a2} = 2.380$ $pK_{a3} = 6.060$ $pK_{a4} = 8.7810$

Table Mg71. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 1 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04878 mmol Mg^{2+}, 0.048485mmol EDTA, Titrant = 0.1012 M NaOH in 1 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.080	0.880	3.307	1.500	5.308	2.140	10.673
0.050	2.105	0.900	3.449	1.540	5.373	2.160	10.701
0.100	2.134	0.930	3.749	1.580	5.443	2.182	10.733
0.150	2.165	0.960	4.093	1.620	5.521	2.200	10.757
0.200	2.197	0.990	4.310	1.660	5.607		
0.250	2.233	1.020	4.449	1.700	5.710		
0.300	2.269	1.040	4.517	1.740	5.832		
0.350	2.308	1.070	4.602	1.780	5.991		
0.400	2.351	1.100	4.674	1.820	6.230		
0.450	2.399	1.130	4.736	1.860	6.716		
0.506	2.456	1.160	4.792	1.900	9.247		
0.540	2.494	1.200	4.860	1.930	9.873		
0.580	2.543	1.240	4.924	1.950	10.057		
0.620	2.598	1.272	4.973	1.980	10.247		
0.668	2.671	1.300	5.013	2.000	10.335		
0.700	2.728	1.330	5.057	2.020	10.408		
0.740	2.808	1.370	5.114	2.040	10.470		
0.780	2.907	1.400	5.158	2.060	10.525		
0.820	3.027	1.430	5.200	2.080	10.573		
0.860	3.196	1.470	5.260	2.100	10.614		

$\log \beta_{101} = 6.837$ $\log \beta_{111} = 11.320$ $\log \beta_{1\text{-}10} = -9.881$

$pK_{a1} = 1.867$ $pK_{a2} = 2.219$

Table Mg72. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 1 m NaCl at 25°C. Initial Volume = 16.0 mL, 0.0 mmol Mg^{2+}, 0.048485 mmol EDTA, Titrant = 0.1012 M NaOH in 1 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.093	0.600	2.581	1.200	5.870	1.800	9.142
0.030	2.105	0.630	2.625	1.230	5.986	1.830	9.313
0.060	2.122	0.660	2.671	1.260	6.107	1.860	9.515
0.090	2.140	0.690	2.724	1.290	6.238	1.890	9.766
0.120	2.158	0.720	2.784	1.320	6.385	1.920	9.992
0.150	2.176	0.750	2.851	1.350	6.568	1.950	10.170
0.180	2.195	0.780	2.928	1.380	6.808	1.980	10.307
0.210	2.215	0.810	3.022	1.410	7.116	2.010	10.417
0.240	2.236	0.840	3.137	1.440	7.446	2.040	10.504
0.270	2.257	0.870	3.295	1.472	7.727	2.070	10.577
0.300	2.280	0.900	3.521	1.500	7.902	2.100	10.643
0.330	2.304	0.930	3.928	1.530	8.062	2.130	10.698
0.360	2.327	0.960	4.472	1.560	8.196	2.160	10.748
0.390	2.353	0.990	4.839	1.590	8.318		
0.420	2.380	1.020	5.071	1.620	8.431		
0.450	2.409	1.050	5.251	1.650	8.538		
0.480	2.439	1.080	5.399	1.680	8.648		
0.510	2.471	1.110	5.526	1.710	8.760		
0.540	2.504	1.140	5.644	1.740	8.878		
0.570	2.542	1.170	5.759	1.770	9.002		
pK_{a1} = 2.0652		pK_{a2} = 2.3423		pK_{a3} = 6.0189		pK_{a4} = 8.7396	

Table Mg73. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 1 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04878 mmol Mg^{2+}, 0.048485 mmol EDTA, Titrant = 0.1012 M NaOH in 1 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	2.111	0.600	2.601	1.200	4.889	1.800	6.172
0.030	2.124	0.630	2.645	1.230	4.937	1.830	6.429
0.060	2.142	0.660	2.692	1.260	4.982	1.860	6.999
0.090	2.159	0.690	2.746	1.290	5.026	1.894	9.432
0.120	2.178	0.720	2.805	1.320	5.067	1.920	9.860
0.150	2.196	0.750	2.872	1.350	5.111	1.950	10.112
0.180	2.214	0.780	2.950	1.382	5.156	1.980	10.286
0.210	2.236	0.810	3.046	1.410	5.198	2.010	10.402
0.240	2.257	0.840	3.160	1.440	5.242	2.040	10.489
0.270	2.279	0.870	3.318	1.472	5.293	2.070	10.565
0.300	2.301	0.900	3.545	1.500	5.336	2.100	10.632
0.330	2.325	0.936	3.968	1.530	5.385		
0.360	2.349	0.962	4.215	1.560	5.438		
0.390	2.374	0.990	4.375	1.590	5.493		
0.420	2.401	1.020	4.503	1.620	5.554		
0.450	2.429	1.050	4.593	1.650	5.619		
0.480	2.459	1.080	4.666	1.680	5.692		
0.510	2.490	1.110	4.731	1.710	5.776		
0.540	2.525	1.140	4.788	1.740	5.881		
0.570	2.561	1.170	4.840	1.770	6.008		

$\log \beta_{101} = 6.621$ $\log \beta_{111} = 10.690$ $\log \beta_{1\text{-}10} = -14.101$

$pK_{a1} = 2.096$ $pK_{a2} = 2.414$

Table Mg74. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 2 m NaCl at 25°C. Initial Volume = 16.0 mL, 0.0 mmol Mg^{2+}, 0.04756 mmol EDTA, Titrant = 0.09672 M NaOH in 2 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.833	0.800	2.566	1.400	6.296	1.800	8.381
0.040	1.851	0.840	2.657	1.420	6.392	1.820	8.449
0.080	1.873	0.880	2.769	1.440	6.498	1.840	8.522
0.128	1.900	0.920	2.918	1.460	6.620	1.860	8.597
0.160	1.918	0.960	3.133	1.480	6.755	1.880	8.677
0.200	1.942	1.000	3.580	1.500	6.916	1.900	8.759
0.240	1.966	1.040	4.398	1.520	7.074	1.930	8.896
0.280	1.993	1.080	4.877	1.540	7.235	1.960	9.058
0.320	2.021	1.120	5.159	1.560	7.380	1.990	9.248
0.360	2.050	1.150	5.316	1.580	7.508	2.020	9.465
0.400	2.081	1.182	5.458	1.600	7.618	2.050	9.703
0.440	2.112	1.200	5.531	1.622	7.725	2.080	9.915
0.480	2.146	1.220	5.608	1.640	7.810	2.100	10.030
0.520	2.183	1.240	5.683	1.660	7.887	2.130	10.168
0.560	2.223	1.270	5.792	1.682	7.971	2.160	10.276
0.600	2.266	1.300	5.902	1.700	8.037	2.200	10.391
0.640	2.314	1.320	5.973	1.720	8.110		
0.680	2.365	1.340	6.048	1.740	8.177		
0.720	2.423	1.360	6.126	1.760	8.247		
0.760	2.489	1.380	6.210	1.780	8.314		
pK_{a1} = 1.786		pK_{a2} = 2.440		pK_{a3} = 6.310		pK_{a4} = 8.697	

Table Mg75. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 2 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04644 mmol Mg^{2+}, 0.04756 mmol EDTA, Titrant = 0.09672 M NaOH in 2 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.842	0.600	2.266	1.200	4.709	1.800	5.721
0.030	1.854	0.630	2.300	1.230	4.765	1.830	5.810
0.060	1.869	0.660	2.337	1.260	4.818	1.860	5.917
0.092	1.886	0.692	2.380	1.290	4.865	1.890	6.050
0.120	1.902	0.720	2.420	1.320	4.913	1.920	6.243
0.150	1.918	0.750	2.468	1.350	4.956	1.950	6.536
0.180	1.936	0.780	2.522	1.380	5.002	1.980	7.181
0.210	1.953	0.810	2.580	1.410	5.044	2.012	8.437
0.240	1.971	0.840	2.650	1.440	5.086	2.040	9.092
0.270	1.991	0.870	2.729	1.470	5.127	2.070	9.565
0.300	2.011	0.900	2.824	1.500	5.171	2.100	9.864
0.330	2.031	0.930	2.952	1.530	5.215	2.130	10.057
0.360	2.053	0.960	3.115	1.560	5.258	2.160	10.195
0.392	2.076	0.990	3.368	1.590	5.304	2.190	10.300
0.420	2.098	1.022	3.808	1.620	5.353	2.220	10.381
0.450	2.124	1.050	4.152	1.650	5.404	2.250	10.452
0.480	2.149	1.080	4.351	1.680	5.459	2.280	10.512
0.510	2.176	1.110	4.476	1.710	5.515	2.300	10.548
0.540	2.204	1.140	4.569	1.740	5.575		
0.570	2.233	1.170	4.644	1.770	5.644		

$\log \beta_{101} = 6.474$ $\log \beta_{111} = 10.576$ $\log \beta_{1\text{-}10} = -9.518$

$pK_{a1} = 1.777$ $pK_{a2} = 2.403$

Table Mg76. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 2 m NaCl at 25°C. Initial Volume = 16.0 mL, 0.0 mmol Mg^{2+}, 0.04756 mmol EDTA, Titrant = 0.09971 M NaOH in 2 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.845	0.600	2.293	1.200	5.659	1.800	8.573
0.030	1.858	0.630	2.329	1.230	5.772	1.830	8.700
0.060	1.874	0.660	2.369	1.260	5.881	1.860	8.840
0.090	1.891	0.690	2.413	1.290	5.993	1.890	9.006
0.120	1.907	0.720	2.460	1.320	6.112	1.920	9.213
0.150	1.925	0.750	2.513	1.350	6.237	1.950	9.473
0.180	1.944	0.780	2.571	1.380	6.378	1.980	9.751
0.210	1.962	0.810	2.639	1.410	6.539	2.010	9.979
0.240	1.982	0.840	2.719	1.440	6.739	2.040	10.144
0.270	2.002	0.870	2.813	1.470	6.969	2.070	10.268
0.300	2.022	0.900	2.933	1.500	7.212	2.100	10.364
0.330	2.044	0.930	3.100	1.530	7.432	2.130	10.443
0.360	2.066	0.960	3.344	1.560	7.612	2.160	10.510
0.392	2.091	0.990	3.839	1.590	7.767	2.200	10.584
0.420	2.115	1.022	4.524	1.620	7.898		
0.450	2.140	1.050	4.862	1.650	8.018		
0.480	2.167	1.080	5.092	1.680	8.131		
0.510	2.195	1.110	5.269	1.710	8.242		
0.540	2.226	1.140	5.415	1.740	8.349		
0.570	2.258	1.170	5.541	1.770	8.456		

$pK_{a1} = 1.934$ $pK_{a2} = 2.407$ $pK_{a3} = 6.274$ $pK_{a4} = 8.660$

Table Mg77. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 2 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04644 mmol Mg^{2+}, 0.04756 mmol EDTA, Titrant = 0.09971 M NaOH in 2 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.870	0.600	2.313	1.200	4.792	1.800	5.882
0.030	1.882	0.630	2.349	1.230	4.844	1.830	5.998
0.060	1.897	0.660	2.389	1.260	4.895	1.860	6.155
0.090	1.913	0.690	2.433	1.290	4.943	1.890	6.389
0.120	1.930	0.720	2.480	1.320	4.988	1.920	6.824
0.150	1.948	0.750	2.533	1.350	5.032		
0.180	1.966	0.780	2.593	1.382	5.077		
0.210	1.984	0.810	2.658	1.410	5.119		
0.240	2.004	0.840	2.738	1.440	5.161		
0.270	2.024	0.870	2.833	1.470	5.206		
0.300	2.044	0.900	2.951	1.500	5.250		
0.330	2.066	0.930	3.109	1.530	5.297		
0.360	2.088	0.960	3.360	1.560	5.342		
0.390	2.111	0.990	3.775	1.590	5.393		
0.420	2.137	1.020	4.159	1.620	5.446		
0.450	2.162	1.050	4.362	1.650	5.500		
0.480	2.188	1.080	4.494	1.680	5.559		
0.510	2.217	1.110	4.590	1.710	5.624		
0.540	2.248	1.140	4.666	1.740	5.697		
0.570	2.279	1.170	4.734	1.770	5.782		

$\log \beta_{101} = 6.410$ $\log \beta_{111} = 9.499$

$pK_{a1} = 2.0170$ $pK_{a2} = 2.446$

Table Mg78. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.0 mmol Mg^{2+}, 0.01862 mmol EDTA, Titrant = 0.09347 M NaOH in 3 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.542	0.750	2.172	1.350	8.234	2.252	11.022
0.026	1.554	0.778	2.221	1.374	8.440		
0.078	1.579	0.826	2.318	1.404	8.760		
0.104	1.594	0.850	2.374	1.424	9.026		
0.150	1.619	0.900	2.523	1.452	9.490		
0.174	1.634	0.926	2.628	1.474	9.739		
0.226	1.665	0.976	2.930	1.500	9.955		
0.250	1.680	1.000	3.201	1.524	10.088		
0.300	1.712	1.050	4.879	1.550	10.199		
0.326	1.730	1.074	5.270	1.572	10.275		
0.374	1.765	1.100	5.549	1.600	10.357		
0.400	1.785	1.124	5.763	1.625	10.419		
0.452	1.827	1.150	5.981	1.652	10.473		
0.478	1.849	1.176	6.219	1.674	10.515		
0.524	1.892	1.200	6.472	1.724	10.597		
0.550	1.918	1.226	6.847	1.774	10.664		
0.600	1.969	1.252	7.255	1.856	10.755		
0.626	1.999	1.274	7.536	1.926	10.819		
0.676	2.061	1.300	7.796	2.000	10.875		
0.700	2.094	1.324	8.008	2.102	10.942		

pK_{a1} = 2.042 pK_{a2} = 2.526 pK_{a3} = 6.510 pK_{a4} = 8.684

Table Mg79. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 3 m NaCl at 25°C. Initial Volume = 15.0 mL, 0.01743 mmol Mg^{2+}, 0.01862 mmol EDTA, Titrant = 0.09347 M NaOH in 3 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.489	0.674	2.015	1.174	5.169	1.678	10.561
0.024	1.499	0.702	2.053	1.200	5.259	1.700	10.598
0.076	1.527	0.724	2.088	1.224	5.343	1.75	10.670
0.102	1.540	0.750	2.132	1.252	5.448	1.800	10.732
0.152	1.569	0.776	2.178	1.276	5.540	1.876	10.811
0.178	1.584	0.800	2.227	1.302	5.656	1.950	10.877
0.224	1.611	0.824	2.281	1.328	5.797	2.050	10.951
0.250	1.628	0.852	2.352	1.354	5.972	2.154	11.015
0.276	1.645	0.876	2.424	1.376	6.181	2.250	11.065
0.300	1.661	0.904	2.532	1.400	6.614	2.352	11.112
0.326	1.679	0.928	2.632	1.424	7.855	2.452	11.154
0.350	1.696	0.950	2.760	1.450	9.357	2.602	11.208
0.374	1.714	0.974	2.950	1.478	9.800	2.750	11.255
0.428	1.757	1.000	3.340	1.502	9.993	2.902	11.296
0.452	1.777	1.024	4.136	1.524	10.120	3.106	11.346
0.500	1.819	1.050	4.553	1.550	10.236	3.304	11.388
0.526	1.845	1.074	4.738	1.574	10.318	3.504	11.425
0.550	1.869	1.100	4.878	1.600	10.396	3.758	11.469
0.600	1.923	1.126	4.992	1.626	10.458	4.008	11.506
0.626	1.953	1.150	5.082	1.652	10.513		

$\log \beta_{101} = 6.338$ $\log \beta_{111} = 10.300$ $\log \beta_{1\text{-}10} = -10.325$
$pK_{a1} = 2.030$ $pK_{a2} = 2.510$

Table Mg80. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 4 m NaCl at 25°C. Initial Volume = 16.0 mL, 0.0 mmol Mg^{2+}, 0.04576 mmol EDTA, Titrant = 0.09597 M NaOH in 4 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.446	0.600	1.868	1.200	5.500	1.800	8.082
0.030	1.459	0.630	1.901	1.230	5.624	1.830	8.182
0.064	1.477	0.660	1.935	1.260	5.740	1.860	8.286
0.090	1.492	0.690	1.973	1.290	5.851	1.890	8.395
0.120	1.508	0.720	2.015	1.320	5.962	1.920	8.515
0.150	1.525	0.750	2.059	1.350	6.071	1.950	8.645
0.180	1.543	0.780	2.108	1.380	6.184	1.980	8.798
0.210	1.561	0.810	2.161	1.410	6.304	2.010	8.974
0.240	1.579	0.840	2.222	1.442	6.445	2.040	9.194
0.270	1.599	0.870	2.293	1.470	6.585	2.070	9.450
0.300	1.619	0.900	2.371	1.500	6.747	2.100	9.694
0.330	1.639	0.930	2.471	1.530	6.929	2.130	9.884
0.360	1.661	0.960	2.597	1.560	7.108	2.160	10.030
0.392	1.684	0.990	2.767	1.590	7.272	2.190	10.144
0.420	1.706	1.020	3.045	1.620	7.418	2.220	10.233
0.450	1.730	1.050	3.709	1.650	7.548	2.250	10.307
0.480	1.753	1.080	4.568	1.680	7.668	2.280	10.370
0.510	1.781	1.110	4.950	1.710	7.777	2.300	10.406
0.540	1.808	1.140	5.182	1.740	7.881		
0.570	1.837	1.170	5.355	1.770	7.980		
pK_{a1} = 1.956		pK_{a2} = 2.512		pK_{a3} = 6.775		pK_{a4} = 8.837	

Table Mg81. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 4 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04456 mmol Mg^{2+}, 0.04576 mmol EDTA, Titrant = 0.09597 M NaOH in 4 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.425	0.750	2.033	1.490	5.063	2.220	10.238
0.030	1.438	0.780	2.081	1.520	5.107	2.250	10.320
0.064	1.454	0.810	2.138	1.550	5.151	2.280	10.388
0.090	1.469	0.840	2.198	1.580	5.196	2.310	10.446
0.120	1.485	0.870	2.266	1.610	5.244	2.340	10.496
0.150	1.502	0.900	2.348	1.640	5.293	2.370	10.541
0.180	1.518	0.930	2.452	1.670	5.346	2.400	10.583
0.210	1.536	0.960	2.582	1.700	5.401		
0.240	1.555	0.990	2.753	1.730	5.459		
0.270	1.580	1.020	3.038	1.760	5.525		
0.308	1.599	1.050	3.639	1.790	5.596		
0.330	1.613	1.080	4.104	1.800	5.622		
0.360	1.635	1.110	4.300	1.830	5.708		
0.390	1.657	1.140	4.438	1.860	5.807		
0.420	1.679	1.170	4.517	1.890	5.931		
0.450	1.705	1.200	4.591	1.920	6.099		
0.480	1.730	1.230	4.655	1.950	6.351		
0.510	1.756	1.260	4.712	1.980	6.852		
0.540	1.783	1.290	4.747	2.010	7.889		
0.570	1.812	1.310	4.798	2.040	8.618		
0.600	1.844	1.342	4.849	2.070	9.149		
0.630	1.876	1.370	4.889	2.100	9.559		
0.660	1.911	1.400	4.935	2.130	9.829		
0.690	1.949	1.430	4.979	2.160	10.012		
0.720	1.990	1.460	5.021	2.190	10.139		

$\log \beta_{101} = 6.443$ $\log \beta_{111} = 10.918$ $\log \beta_{1\text{-}10} = -9.276$

$pK_{a1} = 1.957$ $pK_{a2} = 2.512$

Table Mg82. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 4 m NaCl at 25°C. Initial Volume = 16.0 mL, 0.0 mmol Mg^{2+}, 0.04576 mmol EDTA, Titrant = 0.0973 M NaOH in 4 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.458	0.600	1.877	1.200	5.529	1.800	8.160
0.030	1.471	0.630	1.911	1.230	5.654	1.830	8.271
0.060	1.488	0.660	1.946	1.260	5.768	1.860	8.392
0.090	1.502	0.690	1.984	1.290	5.879	1.890	8.526
0.120	1.518	0.720	2.024	1.320	5.988	1.920	8.686
0.150	1.536	0.750	2.069	1.350	6.098	1.950	8.874
0.180	1.553	0.780	2.120	1.380	6.214	1.980	9.128
0.210	1.571	0.810	2.175	1.410	6.338	2.010	9.451
0.240	1.589	0.840	2.236	1.440	6.474	2.040	9.739
0.270	1.609	0.870	2.307	1.470	6.626	2.070	9.948
0.300	1.627	0.900	2.394	1.500	6.795	2.100	10.093
0.330	1.649	0.930	2.494	1.530	6.979	2.130	10.202
0.360	1.670	0.960	2.627	1.560	7.157	2.160	10.292
0.392	1.692	0.990	2.822	1.590	7.324	2.190	10.365
0.420	1.714	1.020	3.146	1.620	7.469	2.220	10.427
0.450	1.739	1.050	3.919	1.650	7.602	2.160	10.292
0.480	1.765	1.080	4.655	1.680	7.721	2.190	10.365
0.510	1.790	1.110	4.997	1.710	7.834	2.220	10.427
0.540	1.817	1.140	5.220	1.740	7.942		
0.570	1.846	1.170	5.386	1.770	8.049		
pK_{a1} = 2.226		pK_{a2} = 2.493		pK_{a3} = 6.738		pK_{a4} = 8.803	

Table Mg83. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 4 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04456 mmol Mg^{2+}, 0.04576 mmol EDTA, Titrant = 0.0973 M NaOH in 4 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.464	0.750	2.071	1.500	5.103	2.250	10.465
0.030	1.476	0.780	2.120	1.530	5.148	2.280	10.514
0.060	1.491	0.810	2.173	1.560	5.191	2.310	10.557
0.090	1.507	0.840	2.235	1.590	5.238	2.340	10.593
0.120	1.523	0.870	2.304	1.620	5.286	2.370	10.633
0.150	1.540	0.900	2.387	1.650	5.335	2.400	10.666
0.180	1.556	0.930	2.487	1.680	5.387		
0.210	1.574	0.960	2.612	1.712	5.449		
0.240	1.592	0.990	2.791	1.740	5.507		
0.270	1.612	1.020	3.083	1.770	5.574		
0.300	1.631	1.050	3.669	1.800	5.648		
0.330	1.652	1.080	4.125	1.830	5.735		
0.360	1.672	1.110	4.332	1.860	5.842		
0.392	1.694	1.140	4.451	1.890	5.973		
0.420	1.718	1.170	4.542	1.920	6.142		
0.450	1.742	1.200	4.616	1.950	6.423		
0.480	1.767	1.230	4.680	1.982	7.165		
0.510	1.793	1.260	4.736	2.010	8.769		
0.540	1.821	1.290	4.788	2.040	9.536		
0.570	1.850	1.320	4.836	2.070	9.848		
0.600	1.881	1.350	4.883	2.100	10.035		
0.630	1.913	1.380	4.928	2.130	10.164		
0.660	1.948	1.410	4.972	2.160	10.261		
0.690	1.986	1.440	5.015	2.190	10.342		
0.720	2.028	1.470	5.059	2.222	10.412		

$\log \beta_{101} = 6.384$ $\log \beta_{111} = 10.500$ $\log \beta_{1\text{-}10} = -10.896$

$pK_{a1} = 2.226$ $pK_{a2} = 2.495$

Table Mg84. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 5 m NaCl at 25°C. Initial Volume = 16.0 mL, 0.0 mmol Mg^{2+}, 0.04445 mmol EDTA, Titrant = 0.09071 M NaOH in 5 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.360	0.600	1.816	1.200	5.733	1.800	8.139
0.030	1.373	0.630	1.852	1.230	5.842	1.830	8.244
0.060	1.389	0.660	1.892	1.260	5.947	1.860	8.358
0.090	1.407	0.690	1.936	1.290	6.050	1.890	8.483
0.120	1.424	0.720	1.983	1.320	6.154	1.920	8.626
0.150	1.443	0.750	2.036	1.350	6.261	1.950	8.796
0.180	1.462	0.780	2.094	1.380	6.375	1.980	9.017
0.210	1.480	0.810	2.162	1.410	6.499	2.010	9.313
0.240	1.500	0.840	2.239	1.440	6.635	2.040	9.614
0.270	1.520	0.870	2.333	1.470	6.778	2.070	9.846
0.300	1.542	0.900	2.451	1.500	6.932	2.100	10.013
0.330	1.564	0.930	2.610	1.530	7.090	2.130	10.137
0.360	1.587	0.960	2.851	1.560	7.239	2.160	10.233
0.392	1.612	0.990	3.349	1.590	7.379	2.190	10.311
0.428	1.642	1.020	4.362	1.620	7.508	2.220	10.376
0.450	1.662	1.050	4.875	1.650	7.624		
0.480	1.689	1.080	5.145	1.680	7.732		
0.510	1.718	1.110	5.333	1.710	7.834		
0.540	1.749	1.140	5.486	1.740	7.936		
0.570	1.781	1.170	5.617	1.770	8.037		

$pK_{a1} = 2.192$ $pK_{a2} = 2.635$ $pK_{a3} = 7.012$ $pK_{a4} = 8.958$

Table Mg85. Potentiometric Titration Data for the Stability Constants of Magnesium with EDTA in 5 m NaCl at 25°C. Initial Volume = 16.2 mL, 0.04436 mmol Mg^{2+}, 0.04445 mmol EDTA, Titrant = 0.09071 M NaOH in 5 m NaCl, pcH = 0.984pHr + 1.067.

NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr	NaOH, mL	pHr
0.000	1.362	0.600	1.792	1.200	4.618	1.800	5.535
0.030	1.373	0.630	1.827	1.230	4.675	1.830	5.606
0.060	1.389	0.660	1.865	1.260	4.725	1.860	5.686
0.090	1.406	0.690	1.905	1.290	4.773	1.890	5.782
0.120	1.422	0.720	1.950	1.320	4.818	1.920	5.894
0.150	1.439	0.750	1.997	1.350	4.860	1.950	6.043
0.180	1.457	0.780	2.052	1.380	4.903	1.980	6.257
0.210	1.475	0.810	2.112	1.410	4.945	2.010	6.679
0.240	1.493	0.840	2.181	1.440	4.985	2.040	8.158
0.270	1.513	0.870	2.262	1.470	5.025	2.070	9.326
0.300	1.533	0.900	2.361	1.500	5.067	2.100	9.721
0.330	1.555	0.930	2.486	1.530	5.108	2.130	9.937
0.360	1.576	0.960	2.655	1.560	5.150	2.160	10.079
0.390	1.598	0.990	2.930	1.590	5.193	2.190	10.184
0.420	1.623	1.020	3.479	1.620	5.237	2.220	10.267
0.450	1.647	1.050	4.054	1.650	5.261	2.250	10.336
0.480	1.674	1.080	4.261	1.680	5.308		
0.510	1.700	1.110	4.388	1.710	5.359		
0.540	1.729	1.140	4.481	1.740	5.412		
0.570	1.760	1.170	4.555	1.770	5.471		

$\log \beta_{101} = 6.519$ $\log \beta_{111} = 9.500$ $\log \beta_{1\text{-}10} = -9.564$

$pK_{a1} = 2.320$ $pK_{a2} = 2.616$

Table HA1. Potentiometric Titration Data for the pK_a Values of Lake Bradford Humic Acids in 0.1 M NaCl at 25°C. Initial Volume = 18.0 mL, 0.0517 g LBHA, 3.270×10^{-4} mole NaOH, Titrant 0.038 M HCl in 0.06 M NaCl, pcH = (potential - 398.21)/-58.14.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-265.63	3.4	-50.57	6.8	188.89
0.1	-263.91	3.5	-36.12	6.9	193.41
0.2	-262.89	3.6	-22.59	7.0	197.78
0.3	-260.50	3.7	-10.22	7.1	202.04
0.4	-259.15	3.8	1.75	7.2	206.28
0.5	-257.62	3.9	12.75	7.3	210.35
0.6	-255.53	4.0	22.99	7.4	214.30
0.7	-253.27	4.1	33.31	7.5	218.00
0.8	-251.07	4.2	40.94	7.6	221.43
0.9	-248.73	4.3	49.24	7.7	224.68
1.0	-246.26	4.4	56.55	7.8	227.73
1.1	-243.17	4.5	63.99	7.9	230.52
1.2	-240.16	4.6	71.90	8.0	233.07
1.3	-236.44	4.7	78.67	8.1	235.54
1.4	-231.83	4.8	84.74	8.2	237.78
1.5	-228.12	4.9	90.87	8.3	239.94
1.6	-224.83	5.0	96.37	8.4	241.90
1.7	-218.75	5.1	102.82	8.5	243.80
1.8	-213.55	5.2	107.50	8.6	245.57
1.9	-206.62	5.3	113.10	8.7	247.26
2.0	-202.59	5.4	118.75	8.8	248.82
2.1	-196.18	5.5	124.46	8.9	250.35
2.2	-189.95	5.6	129.16	9.0	251.75
2.3	-181.64	5.7	134.67	9.1	253.11
2.4	-173.58	5.8	139.37	9.2	254.38
2.5	-164.09	5.9	144.35	9.3	255.64
2.6	-153.47	6.0	149.95	9.4	256.79
2.7	-144.00	6.1	155.05	9.5	257.92
2.8	-132.54	6.2	159.89	9.6	258.99
2.9	-119.39	6.3	165.04	9.7	259.98
3.0	-106.58	6.4	169.88	9.8	260.96
3.1	-93.28	6.5	174.84	9.9	261.87
3.2	-78.84	6.6	179.75	10.0	262.73
3.3	-65.59	6.7	184.42		

Capacity = 3.0 ± 0.2 pK_a = 5.0 ± 0.1

Table HA2. Potentiometric Titration Data for the pK_a Values of Lake Bradford Humic Acids in 3 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.0517 g LBHA, 2.991×10^{-4} mole NaOH, Titrant 0.047 M HCl in 2.95 m NaCl, pcH = (potential - 429.74)/-58.71.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-243.75	3.4	83.06	6.8	274.33
0.1	-241.64	3.5	91.83	6.9	276.28
0.2	-239.35	3.6	100.64	7.0	278.11
0.3	-236.51	3.7	108.79	7.1	279.78
0.4	-233.88	3.8	116.99	7.2	281.41
0.5	-231.15	3.9	124.64	7.3	282.96
0.6	-228.22	4.0	132.27	7.4	284.39
0.7	-224.95	4.1	139.64	7.5	285.76
0.8	-221.37	4.2	146.91	7.6	287.09
0.9	-217.11	4.3	154.22	7.7	288.36
1.0	-212.49	4.4	161.35	7.8	289.51
1.1	-207.37	4.5	168.31	7.9	290.65
1.2	-201.58	4.6	175.22	8.0	291.70
1.3	-194.96	4.7	182.05	8.1	292.70
1.4	-187.24	4.8	188.82	8.2	293.70
1.5	-178.36	4.9	195.43	8.3	294.68
1.6	-168.17	5.0	201.94	8.4	295.55
1.7	-156.62	5.1	208.43	8.5	296.46
1.8	-144.14	5.2	214.67	8.6	297.29
1.9	-130.94	5.3	220.54	8.7	298.12
2.0	-117.08	5.4	226.17	8.8	298.88
2.1	-102.41	5.5	231.44	8.9	299.68
2.2	-87.09	5.6	236.36	9.0	300.38
2.3	-71.24	5.7	240.94	9.1	301.11
2.4	-54.86	5.8	245.24	9.2	301.78
2.5	-38.03	5.9	249.14	9.3	302.48
2.6	-21.37	6.0	252.77	9.4	303.12
2.7	-4.80	6.1	256.19	9.5	303.04
2.8	10.92	6.2	259.35	9.6	301.87
2.9	25.74	6.3	262.27	9.7	301.96
3.0	39.08	6.4	265.05	9.8	302.55
3.1	51.36	6.5	267.64	9.9	303.10
3.2	62.92	6.6	270.00	10.0	303.65
3.3	73.38	6.7	272.24		

Capacity =0.81 ± 0.1 pK_a = 8.97 ± 0.1

Table HA3. Potentiometric Titration Data for the pK_a Values of Lake Bradford Humic Acids in 3 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.0499 g LBHA, 2.991×10^{-4} mole NaOH, Titrant 0.047 M HCl in 2.95 m NaCl, pcH = (potential - 428.39)/-58.75.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-243.75	3.4	83.06	6.8	274.33
0.1	-241.64	3.5	91.83	6.9	276.28
0.2	-239.35	3.6	100.64	7.0	278.11
0.3	-236.51	3.7	108.79	7.1	279.78
0.4	-233.88	3.8	116.99	7.2	281.41
0.5	-231.15	3.9	124.64	7.3	282.96
0.6	-228.22	4.0	132.27	7.4	284.39
0.7	-224.95	4.1	139.64	7.5	285.76
0.8	-221.37	4.2	146.91	7.6	287.09
0.9	-217.11	4.3	154.22	7.7	288.36
1.0	-212.49	4.4	161.35	7.8	289.51
1.1	-207.37	4.5	168.31	7.9	290.65
1.2	-201.58	4.6	175.22	8.0	291.70
1.3	-194.96	4.7	182.05	8.1	292.70
1.4	-187.24	4.8	188.82	8.2	293.70
1.5	-178.36	4.9	195.43	8.3	294.68
1.6	-168.17	5.0	201.94	8.4	295.55
1.7	-156.62	5.1	208.43	8.5	296.46
1.8	-144.14	5.2	214.67	8.6	297.29
1.9	-130.94	5.3	220.54	8.7	298.12
2.0	-117.08	5.4	226.17	8.8	298.88
2.1	-102.41	5.5	231.44	8.9	299.68
2.2	-87.09	5.6	236.36	9.0	300.38
2.3	-71.24	5.7	240.94	9.1	301.11
2.4	-54.86	5.8	245.24	9.2	301.78
2.5	-38.03	5.9	249.14	9.3	302.48
2.6	-21.37	6.0	252.77	9.4	303.12
2.7	-4.80	6.1	256.19	9.5	303.04
2.8	10.92	6.2	259.35	9.6	301.87
2.9	25.74	6.3	262.27	9.7	301.96
3.0	39.08	6.4	265.05	9.8	302.55
3.1	51.36	6.5	267.64	9.9	303.10
3.2	62.92	6.6	270.00	10.0	303.65
3.3	73.38	6.7	272.24		

Capacity = 0.85 ± 0.1 pK_a = 8.98 ± 0.1

Table HA4. Potentiometric Titration Data for the pK_a Values of Lake Bradford Humic Acids in 6 m NaCl at 25°C. Initial Volume = 21.0 mL, 0.0480 g LBHA, 3.812×10^{-4} mole NaOH, Titrant 0.040 M HCl in 5.95 m NaCl, pcH = (potential - 465.67)/-58.80.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-259.46	3.4	-198.75	6.8	179.00
0.1	-259.80	3.5	-193.21	6.9	187.49
0.2	-259.34	3.6	-187.00	7.0	195.86
0.3	-258.67	3.7	-179.72	7.1	204.08
0.4	-257.93	3.8	-171.33	7.2	212.22
0.5	-257.03	3.9	-161.64	7.3	220.16
0.6	-256.07	4.0	-150.94	7.4	227.93
0.7	-255.15	4.1	-139.33	7.5	235.44
0.8	-254.07	4.2	-127.38	7.6	242.66
0.9	-252.94	4.3	-115.27	7.7	249.52
1.0	-251.83	4.4	-102.43	7.8	255.97
1.1	-250.64	4.5	-89.45	7.9	262.00
1.2	-249.44	4.6	-75.80	8.0	267.55
1.3	-248.21	4.7	-61.70	8.1	272.62
1.4	-246.84	4.8	-47.01	8.2	277.23
1.5	-245.41	4.9	-31.87	8.3	281.37
1.6	-243.95	5.0	-15.98	8.4	285.23
1.7	-242.45	5.1	-0.19	8.5	288.70
1.8	-240.92	5.2	14.97	8.6	291.89
1.9	-239.32	5.3	30.19	8.7	294.75
2.0	-237.69	5.4	43.72	8.8	297.46
2.1	-236.00	5.5	56.64	8.9	299.94
2.2	-234.24	5.6	68.55	9.0	302.22
2.3	-232.30	5.7	79.63	9.1	304.37
2.4	-230.30	5.8	89.98	9.2	306.34
2.5	-228.21	5.9	100.21	9.3	308.20
2.6	-225.93	6.0	109.82	9.4	309.94
2.7	-223.54	6.1	118.95	9.5	311.57
2.8	-220.91	6.2	127.78	9.6	313.11
2.9	-218.08	6.3	136.29	9.7	314.60
3.0	-215.03	6.4	145.25	9.8	315.99
3.1	-211.60	6.5	153.67	9.9	317.33
3.2	-207.86	6.6	162.12	10.0	318.52
3.3	-203.54	6.7	170.62		

Capacity = 0.80 ± 0.05 $pK_a = 9.18 \pm 0.1$

Table HA5. Potentiometric Titration Data for the pK_a Values of Lake Bradford Humic Acids in 6 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.0507 g LBHA, 3.812×10^{-4} mole NaOH, Titrant 0.040 M HCl in 5.95 m NaCl, pcH = (potential - 471.45)/-58.66.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-256.86	3.4	-178.82	6.8	183.74
0.1	-256.69	3.5	-170.53	6.9	190.92
0.2	-256.00	3.6	-161.00	7.0	198.06
0.3	-255.29	3.7	-150.41	7.1	205.10
0.4	-254.43	3.8	-139.00	7.2	211.93
0.5	-253.53	3.9	-127.13	7.3	218.68
0.6	-252.52	4.0	-114.88	7.4	225.31
0.7	-251.46	4.1	-102.47	7.5	231.79
0.8	-250.41	4.2	-89.71	7.6	238.12
0.9	-249.25	4.3	-76.40	7.7	244.26
1.0	-248.07	4.4	-62.54	7.8	250.14
1.1	-246.66	4.5	-48.26	7.9	255.71
1.2	-245.15	4.6	-33.50	8.0	261.06
1.3	-243.59	4.7	-18.43	8.1	266.02
1.4	-241.94	4.8	-3.34	8.2	270.63
1.5	-240.26	4.9	11.59	8.3	274.90
1.6	-238.55	5.0	25.87	8.4	278.93
1.7	-236.72	5.1	39.05	8.5	282.55
1.8	-234.88	5.2	51.37	8.6	285.92
1.9	-233.03	5.3	62.65	8.7	289.08
2.0	-231.02	5.4	72.97	8.8	291.98
2.1	-229.00	5.5	82.65	8.9	294.69
2.2	-226.90	5.6	91.77	9.0	297.17
2.3	-224.70	5.7	100.47	9.1	299.51
2.4	-222.26	5.8	108.73	9.2	301.69
2.5	-219.64	5.9	116.84	9.3	303.70
2.6	-216.88	6.0	124.65	9.4	305.60
2.7	-213.78	6.1	132.42	9.5	307.43
2.8	-210.39	6.2	139.80	9.6	309.11
2.9	-206.58	6.3	147.18	9.7	310.70
3.0	-202.34	6.4	154.55	9.8	312.22
3.1	-197.65	6.5	161.81	9.9	313.60
3.2	-192.21	6.6	169.09	10.0	314.97
3.3	-186.02	6.7	176.34		

Capacity = 0.80 ± 0.1 pK_a = 9.10 ± 0.2

Table HA6. Potentiometric Titration Data for the pK_a Values of Suwannee River Fulvic Acids in 3 m NaCl at 25°C. Initial Volume = 19.5 mL, 0.0400 g SRFA, 4.424×10^{-4} mole NaOH, Titrant 0.040 M HCl in 2.95 m NaCl, pcH = (potential - 428.09)/-58.89.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-262.82	3.4	-71.17	6.8	212.26
0.1	-261.50	3.5	-49.54	6.9	215.88
0.2	-260.18	3.6	-25.44	7.0	219.48
0.3	-258.85	3.7	-1.29	7.1	222.99
0.4	-257.44	3.8	20.52	7.2	226.37
0.5	-255.97	3.9	38.62	7.3	229.64
0.6	-254.46	4.0	53.71	7.4	232.78
0.7	-252.86	4.1	66.53	7.5	235.91
0.8	-251.18	4.2	77.79	7.6	238.78
0.9	-249.44	4.3	87.85	7.7	241.46
1.0	-247.60	4.4	97.04	7.8	244.10
1.1	-245.67	4.5	105.32	7.9	246.80
1.2	-243.53	4.6	112.84	8.0	249.36
1.3	-241.30	4.7	119.66	8.1	251.86
1.4	-238.88	4.8	125.99	8.2	254.16
1.5	-236.41	4.9	131.88	8.3	256.50
1.6	-233.65	5.0	137.39	8.4	258.69
1.7	-230.76	5.1	142.55	8.5	260.76
1.8	-227.62	5.2	147.51	8.6	262.77
1.9	-224.23	5.3	152.27	8.7	264.67
2.0	-220.45	5.4	156.83	8.8	266.49
2.1	-216.15	5.5	161.22	8.9	268.23
2.2	-212.11	5.6	165.52	9.0	269.90
2.3	-207.12	5.7	169.72	9.1	271.45
2.4	-200.52	5.8	173.83	9.2	273.01
2.5	-192.71	5.9	177.90	9.3	274.48
2.6	-183.42	6.0	181.83	9.4	275.89
2.7	-172.56	6.1	185.80	9.5	277.19
2.8	-160.29	6.2	189.69	9.6	278.52
2.9	-147.42	6.3	193.56	9.7	279.73
3.0	-134.23	6.4	197.35	9.8	280.93
3.1	-120.67	6.5	201.13	9.9	282.03
3.2	-106.06	6.6	204.86	10.0	283.13
3.3	-89.88	6.7	208.62		

Capacity = 0.80 ± 0.1 pK_a = 9.0 ± 0.1

Table HA7. Potentiometric Titration Data for the pK_a Values of Suwannee River Fulvic Acids in 3 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.0393 g SRFA, 4.930×10^{-4} mole NaOH, Titrant 0.047 M HCl in 2.95 m NaCl, pcH = (potential - 429.15)/-58.68.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-246.65	3.4	-177.07	6.8	183.29
0.1	-248.49	3.5	-165.89	6.9	187.23
0.2	-249.39	3.6	-153.67	7.0	191.12
0.3	-250.44	3.7	-141.08	7.1	194.98
0.4	-251.41	3.8	-128.26	7.2	198.79
0.5	-252.89	3.9	-115.01	7.3	202.52
0.6	-258.23	4.0	-100.87	7.4	206.30
0.7	-257.30	4.1	-84.80	7.5	210.02
0.8	-256.20	4.2	-66.25	7.6	213.67
0.9	-255.12	4.3	-44.57	7.7	217.33
1.0	-253.95	4.4	-20.73	7.8	220.89
1.1	-252.82	4.5	3.01	7.9	224.40
1.2	-251.61	4.6	24.12	8.0	227.82
1.3	-250.27	4.7	41.88	8.1	231.18
1.4	-248.97	4.8	56.37	8.2	234.45
1.5	-247.53	4.9	68.82	8.3	237.60
1.6	-246.00	5.0	79.82	8.4	240.61
1.7	-244.49	5.1	89.67	8.5	243.48
1.8	-242.84	5.2	98.57	8.6	246.23
1.9	-241.04	5.3	106.68	8.7	248.85
2.0	-239.17	5.4	114.07	8.8	251.37
2.1	-237.21	5.5	120.86	8.9	253.72
2.2	-235.00	5.6	127.18	9.0	256.03
2.3	-232.69	5.7	133.08	9.1	258.17
2.4	-230.12	5.8	138.57	9.2	260.17
2.5	-227.37	5.9	143.77	9.3	262.17
2.6	-224.33	6.0	148.77	9.4	264.01
2.7	-220.92	6.1	153.51	9.5	265.73
2.8	-217.08	6.2	158.11	9.6	267.36
2.9	-212.80	6.3	162.53	9.7	268.89
3.0	-207.73	6.4	166.87	9.8	270.38
3.1	-201.97	6.5	171.07	9.9	271.75
3.2	-195.04	6.6	175.19	10.0	272.96
3.3	-186.80	6.7	179.27		

Capacity = 0.80 ± 0.1 pK_a = 9.1 ± 0.2

Table HA8. Potentiometric Titration Data for the pK_a Values of Suwannee River Fulvic Acids in 6 m NaCl at 25°C. Initial Volume = 20.0 mL, 0.0425 g SRFA, 3.648×10^{-4} mole NaOH, Titrant 0.054 M HCl in 5.95 m NaCl, pcH = (potential - 472.81)/-62.10.

HCl, mL	mV	HCl, mL	mV	HCl, mL	mV
0.0	-220.02	3.4	187.00	6.8	316.54
0.1	-217.27	3.5	191.66	6.9	317.96
0.2	-212.78	3.6	196.40	7.0	319.34
0.3	-207.51	3.7	200.99	7.1	320.77
0.4	-200.25	3.8	205.52	7.2	322.55
0.5	-192.32	3.9	210.17	7.3	323.87
0.6	-181.24	4.0	214.67	7.4	325.01
0.7	-166.99	4.1	219.39	7.5	326.13
0.8	-151.20	4.2	224.14	7.6	327.25
0.9	-134.95	4.3	228.55	7.7	328.06
1.0	-118.87	4.4	233.43	7.8	329.49
1.1	-103.11	4.5	237.73	7.9	330.47
1.2	-86.08	4.6	242.86	8.0	331.52
1.3	-66.84	4.7	247.80	8.1	332.34
1.4	-44.01	4.8	252.69	8.2	333.35
1.5	-18.41	4.9	257.22	8.3	333.43
1.6	10.04	5.0	262.16	8.4	335.04
1.7	36.25	5.1	265.95	8.5	335.79
1.8	57.76	5.2	270.98	8.6	336.64
1.9	75.83	5.3	275.41	8.7	337.36
2.0	89.90	5.4	279.18	8.8	337.95
2.1	101.96	5.5	283.47	8.9	338.68
2.2	112.29	5.6	287.07	9.0	339.50
2.3	121.36	5.7	290.54	9.1	339.98
2.4	129.60	5.8	293.82	9.2	340.80
2.5	137.10	5.9	296.69	9.3	341.43
2.6	143.87	6.0	299.54	9.4	342.04
2.7	149.02	6.1	302.18	9.5	342.62
2.8	156.05	6.2	304.74	9.6	343.16
2.9	160.82	6.3	307.07	9.7	343.70
3.0	167.04	6.4	309.21	9.8	344.24
3.1	172.28	6.5	311.11	9.9	344.78
3.2	176.91	6.6	313.08	10.0	345.27
3.3	182.03	6.7	314.71		

Capacity = 1.1 ± 0.1 pK_a = 9.0 ± 0.1

Table HA9. Solvent Extraction Data for Binding Constants for Americium with LBHA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	30.500	4.754	77	77	1702	984
2	0.0000	26.134	4.708	83	83	1104	469
3	0.0000	30.470	4.740	106	106	1045	260
4	0.0814	26.134	4.763	83	83	749	240
5	0.0817	26.134	4.722	83	83	182	328
6	0.0962	30.470	4.867	106	106	524	360
7	0.1130	30.470	4.790	106	106	399	441
8	0.1167	30.500	4.723	77	77	355	454
9	0.1143	26.134	4.724	83	83	135	425
10	0.1400	30.470	4.773	106	106	259	412
11	0.1421	30.500	4.750	77	77	199	496
12	0.1800	30.470	4.810	106	106	189	482
13	0.2088	30.470	4.810	106	106	149	520
14	0.2155	30.500	4.755	77	77	120	518
15	0.2682	30.500	4.764	77	77	128	756
16	0.3992	30.500	4.782	77	77	94	1065
17	0.4783	30.500	4.819	77	77	89	1004

$\log\beta_{101} = 5.91 \pm 0.1$ $\log\beta_{102} = 10.7 \pm 0.1$

Table HA10. Solvent Extraction Data for Binding Constants for Americium with LBHA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	31.7822	6.292	77	77	4181	83
2	0.2525	31.7822	6.295	77	77	3324	392
3	0.3269	31.7822	6.294	77	77	2617	597
4	0.3901	31.7822	6.292	77	77	2280	730
5	0.4691	31.7822	6.305	77	77	1935	765
6	0.5686	31.7822	6.312	77	77	1608	1013
7	0.6495	31.7822	6.313	77	77	1331	1125
8	0.8856	31.7822	6.310	77	77	893	1287

$\log\beta_{101} = 6.44 \pm 0.02$ $\log\beta_{102} = 10.71 \pm 0.01$

Table HA11. Solvent Extraction Data for Binding Constants for Americium with LBHA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	31.7822	6.292	77	77	4181	83
2	0.0000	33.6395	5.694	84	84	1903	89
3	0.0000	31.6885	6.056	106	106	2128	117
4	0.1186	31.6885	6.051	106	106	1763	163
5	0.1677	31.6885	6.074	106	106	1989	294
6	0.1894	33.6395	5.973	84	84	1542	199
7	0.1917	31.6885	6.071	106	106	1555	312
8	0.2373	31.6885	6.105	106	106	1273	334
9	0.2767	33.6395	5.890	84	84	1352	356
10	0.2656	31.6885	6.057	106	106	1227	421
11	0.3736	33.6395	5.984	84	84	926	481
12	0.4681	33.6395	5.989	84	84	736	632
13	0.5144	33.6395	5.993	84	84	564	612
14	0.6129	33.6395	6.010	84	84	450	649
15	0.7299	33.6395	6.027	84	84	373	753
16	0.9662	33.6395	6.040	84	84	313	920

$\log\beta_{101} = 6.06 \pm 0.06$ $\log\beta_{102} = 10.63 \pm 0.04$

Table HA12. Solvent Extraction Data for Binding Constants for Americium with LBHA in 6 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	28.2327	4.697	77	77	3049	257
2	0.1415	28.2327	4.767	77	77	585	214
3	0.1693	28.2327	4.745	77	77	374	372
4	0.2404	28.2327	4.762	77	77	186	629
5	0.2620	28.2327	4.767	77	77	151	484
6	0.3656	28.2327	4.762	77	77	137	1175
7	0.4933	28.2327	4.767	77	77	128	1941
8	0.4536	28.2327	4.751	77	77	110	1077
9	0.5429	28.2327	4.773	77	77	97	663

$\log\beta_{101} = 7.38 \pm 0.04$ $\log\beta_{102} = 11.92 \pm 0.04$

Table HA13. Solvent Extraction Data for Binding Constants for Americium with LBHA in 6 m NaCl at 25°C. [$^{241}Am^{3+}$] ≈ 10^{-9} M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	28.2327	4.697	77	77	3049	257
2	0.0000	32.2348	4.769	84	84	1340	140
3	0.0000	29.8641	4.790	84	84	1616	209
4	0.0972	29.8641	4.812	84	84	348	272
5	0.1061	32.2348	4.763	84	84	381	264
6	0.1105	29.8641	4.745	84	84	250	369
7	0.1272	29.8641	4.789	84	84	199	317
8	0.1524	32.2348	4.710	84	84	209	310
9	0.1586	29.8641	4.751	84	84	160	387
10	0.1828	29.8641	4.763	84	84	143	408
11	0.1828	29.8641	4.763	84	84	143	408
12	0.1828	29.8641	4.763	84	84	143	408
13	0.2149	32.2348	4.724	84	84	155	370
14	0.2452	32.2348	4.740	84	84	125	364
15	0.3614	32.2348	4.745	84	84	110	775
16	0.3843	32.2348	4.792	84	84	100	536

$\log\beta_{101} = 6.75 \pm 0.05$ $\log\beta_{102} = 11.45 \pm 0.06$

Table HA14. Solvent Extraction Data for Binding Constants for Americium with GHA in 3 m NaCl at 25°C. [$^{241}Am^{3+}$] ≈ 10^{-9} M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	46.6284	4.715	84	84	323	833
2	0.0000	46.6284	4.727	82	82	946	365
3	0.0721	46.6284	4.745	82	82	390	261
4	0.0943	46.6284	4.755	82	82	246	257
5	0.0971	46.6284	4.759	84	84	171	219
6	0.1080	46.6284	4.837	82	82	138	250
7	0.1128	46.6284	4.795	82	82	182	261
8	0.1449	46.6284	4.850	84	84	184	270
9	0.1543	46.6284	4.893	82	82	134	296
10	0.2098	46.6284	4.845	84	84	112	425
11	0.2125	46.6284	4.863	82	82	119	480
12	0.2217	46.6284	4.890	84	84	119	383
13	0.2867	46.6284	4.880	82	82	122	689
14	0.2916	46.6284	4.890	84	84	111	626

$\log\beta_{101} = 5.9 \pm 0.1$ $\log\beta_{102} = 10.8 \pm 0.1$

Table HA15. Solvent Extraction Data for Binding Constants for Americium with GHA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	51.5211	6.088	82	82	1753	92
2	0.0000	51.5211	6.080	84	84	1883	94
3	0.1118	51.5211	6.131	82	82	1277	113
4	0.1433	51.5211	6.128	82	82	1348	155
5	0.1506	51.5211	6.122	82	82	1561	201
6	0.1721	51.5211	6.110	84	84	1484	194
7	0.2625	51.5211	6.162	82	82	1296	267
8	0.2771	51.5211	6.142	84	84	1355	298
9	0.3190	51.5211	6.160	82	82	1106	344
10	0.3456	51.5211	6.173	84	84	1218	359
11	0.3794	51.5211	6.183	82	82	1052	406
12	0.4180	51.5211	6.178	84	84	908	415

$\log\beta_{101} = 6.10 \pm 0.05$ $\log\beta_{102} = 10.62 \pm 0.08$

Table HA16. Solvent Extraction Data for Binding Constants for Americium with GHA in 6 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	49.4767	4.854	82	82	1000	122
2	0.0000	49.4767	4.732	84	84	1143	159
3	0.0853	49.4767	4.844	82	82	515	182
4	0.0949	49.4767	4.899	82	82	340	183
5	0.1080	49.4767	4.803	82	82	252	198
6	0.1234	49.4767	4.813	82	82	201	203
7	0.1435	49.4767	4.777	84	84	279	168
8	0.1704	49.4767	4.796	82	82	174	352
9	0.1818	49.4767	4.786	84	84	180	269
10	0.2442	49.4767	4.844	82	82	158	578
11	0.2557	49.4767	4.839	84	84	385	1615
12	0.3077	49.4767	4.837	84	84	152	631
13	0.3084	49.4767	4.909	82	82	198	773
14	0.3614	49.4767	4.843	84	84	132	763

$\log\beta_{101} = 6.7 \pm 0.1$ $\log\beta_{102} = 11.4 \pm 0.2$

Table HA17. Solvent Extraction Data for Binding Constants for Americium with SRFA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	[FA], eq/10^5 L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	4.721	93	93	898	261
2	1.966	4.765	93	93	1340	453
3	2.624	4.776	93	93	710	304
4	3.936	4.800	93	93	1135	540
5	5.248	4.753	93	93	570	345
6	6.560	4.734	93	93	1030	664

$\log\beta_{101} = 4.63 \pm 0.03$ $\log\beta_{102} = 8.17 \pm 0.08$

Table HA18. Solvent Extraction Data for Binding Constants for Americium with SRFA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	[FA], eq/10^5 L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0000	4.742	86	86	469	257
2	0.0000	4.720	82	82	750	434
3	0.0000	4.757	87	87	841	410
4	1.3120	4.720	82	82	751	382
5	1.3120	4.768	87	87	512	333
6	1.3120	4.766	86	86	523	361
7	1.9660	4.747	87	87	724	411
8	2.6240	4.716	82	82	628	410
9	2.6240	4.744	86	86	421	296
10	2.6240	4.770	87	87	842	596
11	3.2767	4.743	87	87	919	673
12	3.9360	4.872	86	86	477	404
13	3.9360	4.723	82	82	674	593
14	5.2480	4.745	86	86	304	304
15	6.5600	4.733	86	86	170	177
16	7.8720	4.771	87	87	537	696
17	9.1840	4.767	87	87	394	561

$\log\beta_{101} = 4.51 \pm 0.08$ $\log\beta_{102} = 8.0 \pm 0.2$

Table HA19. Solvent Extraction Data for Binding Constants for Americium with SRFA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	[FA], eq/10^5 L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	5.959	87.3	87.3	2082	86
2	1.312	6.011	87.3	87.3	2073	93
3	1.966	5.994	87.3	87.3	1945	121
4	2.624	6.023	87.3	87.3	2014	131
5	3.277	6.023	87.3	87.3	1920	142
6	3.936	6.02	87.3	87.3	1913	163
7	5.248	6.042	87.3	87.3	2014	141
8	6.560	6.04	87.3	87.3	1875	142
9	7.872	6.042	87.3	87.3	1812	174
10	9.184	6.030	87.3	87.3	1969	171

$\log\beta_{101} = 4.97 \pm 0.04$ $\log\beta_{102} = 8.4 \pm 0.3$

Table HA20. Solvent Extraction Data for Binding Constants for Americium with SRFA in 3 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	[FA], eq/10^5 L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.0000	6.253	93	93	4642	118
2	0.0000	6.054	86	86	1914	97
3	0.0000	6.046	82	82	1851	86
4	0.6553	6.271	93	93	2504	105
5	1.3120	6.279	93	93	2996	97
6	1.3120	6.053	82	82	1916	89
7	1.9660	6.269	93	93	2078	102
8	3.9360	6.069	82	82	1869	103
9	5.2480	6.070	86	86	1869	109
10	5.2480	6.064	82	82	1884	109
11	6.5600	6.055	86	86	1810	130

$\log\beta_{101} = 4.9 \pm 0.1$ $\log\beta_{102} = 9.29 \pm 0.06$

Table HA21. Solvent Extraction Data for Binding Constants for Americium with SRFA in 6 m NaCl at 25°C. $[^{241}Am^{3+}] \approx 10^{-9}$ M, [HDEHP] = 10^{-4} M in Toluene.

Sample #	[FA], eq/10^5 L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	4.831	93	93	356	94
2	0.000	4.746	86	86	647	118
3	0.000	4.802	87	87	714	147
4	0.655	4.694	93	93	868	118
5	1.312	4.735	93	93	786	132
6	1.312	4.704	86	86	1106	200
7	1.312	4.784	87	87	694	179
8	1.966	4.672	93	93	1697	238
9	2.624	4.668	93	93	570	158
10	2.624	4.703	86	86	1141	239
11	2.624	4.761	87	87	728	251
12	3.277	4.777	87	87	762	259
13	3.936	4.681	86	86	324	143
14	3.936	4.780	87	87	717	296
15	5.248	4.757	87	87	546	274
16	6.560	4.783	87	87	528	302
17	7.872	4.705	87	87	547	376
18	9.184	4.751	87	87	495	384

$\log\beta_{101} = 6.01 \pm 0.03$ $\log\beta_{102} = 9.5 \pm 0.3$

Table HA22. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 3 m NaCl at 25 °C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	30.4736	4.741	86.00	74.00	2 905.30	224.00
2	0.0131	30.4736	4.796	81.30	76.00	1 400.80	189.00
3	0.0173	30.4736	4.771	67.90	74.70	1 275.80	197.60
4	0.0479	30.4736	4.772	69.80	72.20	1 468.70	217.20
5	0.0765	30.4736	4.776	76.90	80.30	689.80	307.70
6	0.0908	30.4736	4.778	83.50	72.40	704.40	279.30
7	0.1392	30.4736	4.781	72.10	70.40	587.00	368.10
8	0.1505	30.4736	4.790	70.60	68.10	519.30	337.00
9	0.1945	30.4736	4.797	71.50	72.70	482.40	386.30
10	0.2681	30.4736	4.821	66.70	77.40	471.00	670.80
11	0.3586	30.4736	4.828	71.90	69.00	367.00	707.70

$\log\beta_{101} = 6.64 \pm 0.03$ $\log\beta_{102} = 11.0 \pm 0.1$

Table HA23. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 3 m NaCl at 25 °C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	35.6050	4.844	52.50	60.00	2 272.40	226.00
2	0.0485	26.1950	4.831	56.80	58.50	1 391.80	285.60
3	0.0812	26.1950	4.820	47.50	61.50	945.00	299.20
4	0.1210	26.1950	4.863	63.50	61.00	665.00	394.60
5	0.1361	26.1950	4.833	60.00	51.50	460.00	249.40
6	0.1618	26.1950	4.839	130.50	61.50	422.60	278.80
7	0.1811	26.1950	4.824	61.00	63.00	400.00	334.60
8	0.1831	26.1950	4.821	52.50	50.50	306.40	266.40
9	0.2007	26.1950	4.836	54.50	62.00	410.20	413.60
10	0.2313	26.1950	4.868	50.00	58.50	315.80	327.40

$\log\beta_{101} = 6.56 \pm 0.03$

Table HA24. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

				Background, cpm		Extraction, cpm	
Sample #	A(absorbance)	A/[HS]	pHr	Organic	Aqueous	Organic	Aqueous
1	0.0000	32.2315	6.009	77.60	66.00	1 881.90	88.00
2	0.0274	32.2315	6.017	68.70	67.90	908.00	189.30
3	0.0589	32.2315	6.028	68.20	65.10	1 016.80	225.80
4	0.0998	32.2315	6.037	63.30	59.60	998.60	374.10
5	0.1267	32.2315	6.044	65.30	63.80	794.70	377.80
6	0.1920	32.2315	6.046	68.10	63.90	639.90	350.80
7	0.2971	32.2315	6.046	58.70	62.50	697.50	581.00
8	0.3260	32.2315	6.053	68.30	63.00	653.20	548.70
9	0.3566	32.2315	6.052	65.20	61.80	455.20	435.60

$\log\beta_{101} = 7.15 \pm 0.02$

Table HA25. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	33.8965	6.025	221.00	72.50	2 904.08	126.40
2	0.0877	33.8965	6.055	156.00	104.00	2 234.80	246.20
3	0.1757	33.8965	6.058	282.00	126.00	2 579.81	471.20
4	0.2140	33.8965	6.066	255.00	190.00	1 721.00	550.20
5	0.2681	33.8965	6.072	141.00	92.50	1 030.80	511.40
6	0.3211	33.8965	6.072	84.00	117.50	1 086.20	660.40
7	0.3287	33.8965	6.079	119.00	173.00	1 001.40	710.60
8	0.3527	33.8965	6.078	261.50	93.50	1 472.20	865.40
9	0.3920	33.8965	6.087	60.50	79.50	736.20	576.00
10	0.4591	33.8965	6.101	58.00	57.00	827.60	748.00

$\log\beta_{101} = 7.53 \pm 0.03$ $\log\beta_{102} = 11 \pm 1$

Table HA26. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	27.9800	4.772	54.60	58.00	2 107.20	214.00
2	0.0368	27.9800	4.751	63.00	61.80	605.40	164.00
3	0.0354	27.9800	4.760	51.60	54.60	874.60	131.80
4	0.0703	27.9800	4.758	77.20	60.80	344.40	161.00
5	0.0635	27.9800	4.770	62.00	64.40	510.20	185.80
6	0.0915	27.9800	4.765	59.00	55.60	273.40	194.60
7	0.0395	27.9800	4.754	63.80	59.40	696.00	149.60
8	0.0786	27.9800	4.770	51.40	60.20	396.00	162.80
9	0.0912	27.9800	4.776	51.60	62.60	171.00	144.20
10	0.1288	27.9800	4.772	57.80	62.20	398.80	239.20
11	0.0095	27.9800	4.763	55.20	72.20	875.20	178.00

$\log\beta_{101} = 7.54 \pm 0.06$ $\log\beta_{102} = 12.48 \pm 0.07$

Table HA27. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	29.1599	4.699	64.50	45.00	391.33	1 801.00
2	0.0000	29.1599	4.685	68.33	64.00	1 945.20	284.80
3	0.0000	29.1599	4.691	63.00	48.33	1 966.00	600.20
4	0.0821	29.1599	4.709	55.00	57.00	514.40	218.20
5	0.1067	29.1599	4.709	74.67	56.00	371.80	218.20
6	0.1372	29.1599	4.731	55.67	53.67	370.20	244.20
7	0.1652	29.1599	4.753	58.00	49.67	249.80	241.40

$\log\beta_{101} = 7.15 \pm 0.09$ $\log\beta_{102} = 11.7 \pm 0.1$

Table HA28. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 6 m NaCl at 25°C. $[^{233}UO_2^{2+}] = 10^{-7}$ M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	31.1450	6.553	57.00	53.80	1 900.80	147.40
2	0.0509	31.1450	6.558	80.20	60.00	1 079.60	155.20
3	0.1126	31.1450	6.568	71.40	59.00	874.00	261.60
4	0.1076	31.1450	6.559	56.20	59.40	666.40	224.40
5	0.1269	31.1450	6.567	63.00	56.80	643.00	203.00
6	0.1737	31.1450	6.573	70.80	57.20	569.80	226.00
7	0.1396	31.1450	6.575	57.80	57.20	615.00	212.80
8	0.2131	31.1450	6.587	52.20	65.20	516.80	236.40
9	0.2409	31.1450	6.583	70.20	57.80	803.60	322.00

$\log\beta_{101} = 7.83 \pm 0.06$

Table HA29. Solvent Extraction Data for Binding Constant for Uranium with LBHA in 6 m NaCl at 25°C. $[^{233}UO_2^{2+}] = 10^{-7}$ M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	32.2112	6.494	55.00	77.00	1 942.60	192.00
2	0.0000	39.4865	6.505	62.67	57.33	2 359.80	192.60
3	0.0000	-	6.537	53.67	60.00	2 597.60	111.60
4	0.0791	32.2112	6.509	56.33	69.33	1 631.00	242.80
5	0.1254	32.2112	6.514	55.67	60.33	725.60	201.60
6	0.1545	32.2112	6.512	56.00	55.33	979.20	214.00
7	0.1896	32.2112	6.513	68.33	47.33	588.40	211.20
8	0.2369	32.2112	6.515	53.00	61.00	639.40	261.60
9	0.2487	32.2112	6.537	57.33	51.67	663.80	263.00
10	0.2633	32.2112	6.528	50.67	46.33	674.20	278.00
11	0.3346	32.2112	6.523	57.67	126.33	624.60	406.00

$\log\beta_{101} = 8.48 \pm 0.03$

Table HA30. Solvent Extraction Data for Binding Constant for Uranium with GHA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	30.0550	4.891	214.50	138.00	2 982.02	234.20
2	0.1085	35.6936	4.975	62.50	60.00	1 707.40	261.00
3	0.2000	35.6936	4.994	722.50	73.50	2 209.58	503.20
4	0.2935	35.6936	4.594	63.00	58.00	876.40	493.60
5	0.4191	35.6936	4.674	85.50	201.00	661.60	841.20
6	0.4821	35.6936	4.736	71.00	54.50	610.80	704.40
7	0.5599	35.6936	4.803	59.00	54.00	584.80	704.40
8	0.5988	35.6936	4.869	60.00	289.00	662.00	1 280.80
9	0.6329	35.6936	4.838	82.00	53.50	501.20	939.60

$\log\beta_{101} = 6.69 \pm 0.04$ $\log\beta_{102} = 10.68 \pm 0.06$

Table HA31. Solvent Extraction Data for Binding Constant for Uranium with GHA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	35.6050	4.844	52.50	60.00	2 272.40	226.00
2	0.0834	35.6050	4.833	61.50	54.50	1 514.40	280.80
3	0.1334	35.6050	4.824	68.00	47.00	1 229.40	508.80
4	0.1722	35.6050	4.843	68.00	51.00	699.00	564.40
5	0.2368	35.6050	4.861	58.00	61.50	660.40	614.80
6	0.2510	35.6050	4.840	51.00	63.00	595.20	583.40
7	0.3043	35.6050	4.833	67.00	48.00	600.40	834.80
8	0.3176	35.6050	4.836	56.50	67.50	421.40	730.20
9	0.3283	35.6050	4.829	57.00	52.00	449.20	817.60
10	0.3733	35.6050	4.817	76.00	66.00	521.40	1 126.60
11	0.4028	35.6050	4.832	57.00	59.00	411.80	1 004.60

$\log\beta_{101} = 6.56 \pm 0.07$ $\log\beta_{102} = 11.04 \pm 0.05$

Table HA32. Solvent Extraction Data for Binding Constant for Uranium with GHA in 3 m NaCl at 25 °C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	33.8965	6.025	221.00	72.50	2 904.08	126.40
2	0.1564	40.7496	5.686	59.50	61.50	1 584.00	308.40
3	0.2743	40.7496	5.725	53.00	54.00	1 757.20	475.60
4	0.3867	40.7496	5.754	52.00	66.50	1 823.20	957.80
5	0.5156	40.7496	5.784	80.00	126.00	915.60	846.00
6	0.6237	40.7496	6.013	400.50	72.50	1 722.80	973.20
7	0.6553	40.7496	6.028	59.00	106.50	859.20	876.20
8	0.6931	40.7496	6.054	117.00	81.00	1 052.20	1 179.40
9	0.7181	40.7496	6.061	293.50	212.50	1 131.00	965.00
10	0.7768	40.7496	6.080	266.50	327.00	968.00	1 155.00
11	0.9059	40.7496	6.092	455.00	133.00	1 160.80	1 265.80

$\log\beta_{101} = 7.07 \pm 0.05$

Table HA33. Solvent Extraction Data for Binding Constant for Uranium with GHA in 3 m NaCl at 25 °C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	39.6100	6.282	51.50	56.50	2 862.20	203.20
2	0.1351	39.6100	6.286	53.00	59.00	1 913.20	337.60
3	0.2174	39.6100	6.286	59.00	63.00	1 228.20	524.20
4	0.2785	39.6100	6.286	62.00	51.50	1 236.60	663.80
5	0.3500	39.6100	6.289	54.50	61.50	880.60	694.80
6	0.4007	39.6100	6.295	66.50	65.50	761.60	813.00
7	0.4386	39.6100	6.289	67.50	58.50	1 068.60	1 020.00
8	0.4637	39.6100	6.311	58.00	50.00	768.60	906.20
9	0.4799	39.6100	6.310	52.00	50.50	666.80	810.40
10	0.5665	39.6100	6.305	49.00	68.50	744.60	1 080.80
11	0.5751	39.6100	6.296	51.50	61.00	591.40	961.40

$\log\beta_{101} = 8.08 \pm 0.02$

Table HA34. Solvent Extraction Data for Binding Constant for Uranium with GHA in 3 m NaCl at 25°C. $[^{233}UO_2^{2+}] = 10^{-7}$ M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	27.9800	4.772	54.60	58.00	2 107.20	214.00
2	0.0342	33.1450	4.771	52.40	59.80	906.60	159.40
3	0.0447	33.1450	4.795	55.60	54.60	632.20	172.20
4	0.0486	33.1450	4.781	77.00	58.40	586.20	196.20
5	0.1111	33.1450	4.833	74.60	56.80	345.00	227.00
6	0.1254	33.1450	4.819	70.60	59.00	347.60	307.80
7	0.1272	33.1450	4.820	58.20	58.60	417.60	360.00
8	0.1993	33.1450	4.804	59.20	63.80	270.40	422.40

$\log\beta_{101} = 7.77 \pm 0.03$ $\log\beta_{102} = 12.19 \pm 0.06$

Table HA35. Solvent Extraction Data for Binding Constant for Uranium with GHA in 6 m NaCl at 25°C. $[^{233}UO_2^{2+}] = 10^{-7}$ M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	29.1599	4.699	64.50	45.00	391.33	1 801.00
2	0.0000	33.5741	4.685	68.33	64.00	1 945.20	284.80
3	0.0000	-	4.691	63.00	48.33	1 966.00	600.20
4	0.0837	33.5741	4.677	62.00	58.33	1 421.40	202.00
5	0.0990	33.5741	4.686	60.33	68.67	560.60	315.60
6	0.2118	33.5741	4.714	55.33	59.67	623.80	804.00
7	0.2524	33.5741	4.677	52.33	51.00	312.20	473.20
8	0.4591	33.5741	4.681	59.33	57.67	514.80	1 286.40
9	0.4249	33.5741	4.719	58.67	64.67	376.40	744.60

$\log\beta_{101} = 7.40 \pm 0.05$

Table HA36. Solvent Extraction Data for Binding Constant for Uranium with GHA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	31.1450	6.553	57.00	53.80	1 900.80	147.40
2	0.0689	35.9700	6.565	63.20	61.60	1 549.60	287.80
3	0.1100	35.9700	6.574	50.60	58.40	1 105.00	365.00
4	0.1546	35.9700	6.575	71.40	58.80	994.40	373.20
5	0.1861	35.9700	6.578	61.80	62.20	907.60	408.80
6	0.2711	35.9700	6.594	57.00	63.00	904.40	626.60
7	0.2793	35.9700	6.590	59.60	63.20	603.00	403.60
8	0.3029	35.9700	6.588	58.20	56.60	1 076.60	793.80
9	0.3063	35.9700	6.584	56.40	54.80	700.80	513.40
10	0.4151	35.9700	6.586	60.20	70.60	592.40	737.60

$\log\beta_{101} = 8.49 \pm 0.02$ $\log\beta_{102} = 12.61 \pm 0.06$

Table HA37. Solvent Extraction Data for Binding Constant for Uranium with GHA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	A(absorbance)	A/[HS]	pHr	Background, cpm		Extraction, cpm	
				Organic	Aqueous	Organic	Aqueous
1	0.0000	32.2112	6.494	55.00	77.00	1 942.60	192.00
2	0.0000	39.4865	6.505	62.67	57.33	2 359.80	192.60
3	0.0000	-	6.537	53.67	60.00	2 597.60	111.60
4	0.4260	39.4865	6.531	59.00	63.67	1 476.00	655.40
5	0.1277	39.4865	6.512	51.33	54.33	1 909.80	269.40
6	0.1715	39.4865	6.514	56.00	55.67	1 913.00	283.40
7	0.2428	39.4865	6.517	69.33	58.00	1 830.80	549.80
8	0.3070	39.4865	6.537	53.33	54.67	1 366.00	492.20
9	0.486	39.4865	6.540	51.67	66.33	1 228.40	747.00
10	0.5005	39.4865	6.548	55.00	63.67	960.60	784.00

$\log\beta_{101} = 8.50 \pm 0.06$

Table HA38. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	4.891	214.50	138.00	2 982.02	234.20
2	1.966	4.951	191.50	56.50	2 445.50	132.40
3	3.936	4.918	201.50	89.00	2 710.83	240.20
4	5.898	4.897	141.50	260.50	2 216.02	518.80
5	7.872	4.878	99.50	125.00	3 246.23	394.40
6	9.184	4.900	127.50	99.50	2 459.72	445.20
7	9.830	4.889	107.50	203.00	2 320.35	490.00
8	10.496	4.873	767.00	74.50	3 145.60	428.00
9	11.808	4.830	186.00	104.00	2 156.67	441.20
10	13.120	4.860	126.50	287.00	1 712.00	609.20

$\log\beta_{101} = 5.73 \pm 0.06$

Table HA39. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	4.844	52.50	60.00	2 272.40	226.00
2	1.966	4.804	67.00	62.00	2 541.00	380.80
3	3.936	4.810	64.50	59.50	2 130.20	306.80
4	5.898	4.801	52.50	64.00	1 946.00	377.40
5	7.872	4.804	52.00	62.50	2 322.80	454.40
6	9.184	4.795	56.00	55.00	1 803.40	376.80
7	9.830	4.787	59.00	62.00	2 235.00	564.20
8	10.496	4.791	57.00	57.50	1 684.60	457.20
9	11.141	4.777	46.50	59.00	2 121.40	555.20
10	11.808	4.796	46.50	58.00	1 701.60	460.00
11	13.120	4.794	70.00	56.00	1 974.60	555.20

$\log\beta_{101} = 5.11 \pm 0.05$

Table HA40. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	6.025	221.00	72.50	2 904.08	126.40
2	1.966	6.183	156.50	206.50	3 046.04	338.40
3	3.936	6.183	186.50	111.00	2 215.18	296.80
4	5.898	6.181	64.00	69.50	1 736.20	491.20
5	7.872	6.170	70.50	58.50	1 154.20	466.00
6	9.184	6.183	72.00	66.50	1 660.60	775.80
7	9.830	6.186	57.50	153.00	2 340.81	459.40
8	10.496	6.190	75.50	67.00	2 126.42	517.00
9	11.141	6.205	48.00	61.00	2 314.25	427.60

$\log\beta_{101} = 6.77 \pm 0.04$

Table HA41. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 3 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	6.282	51.50	56.50	2 862.20	203.20
2	1.966	6.303	59.50	55.00	1 973.20	266.00
3	3.936	6.286	57.50	57.00	2 013.60	391.20
4	5.898	6.278	54.50	55.50	1 748.80	551.80
5	7.872	6.272	64.00	58.00	2 228.00	686.80
6	9.184	6.270	51.00	64.50	1 728.20	630.60
7	9.830	6.284	63.50	73.00	2 190.20	775.40
8	10.496	6.291	50.00	66.00	1 731.20	670.20
9	11.141	6.292	52.00	54.00	1 621.20	725.00
10	11.808	6.283	56.50	71.50	1 967.80	830.80
11	13.120	6.286	55.00	62.00	1 829.00	827.00

$\log\beta_{101} = 6.32 \pm 0.04$

Table HA42. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	4.772	54.60	58.00	2 107.20	214.00
2	1.968	4.782	72.80	57.20	1 769.20	201.20
3	5.904	4.787	52.00	60.80	1 352.40	220.80
4	7.872	4.840	53.20	58.00	1 603.80	245.00
5	6.560	4.874	66.20	56.80	1 698.00	266.20
6	11.152	4.801	59.80	54.80	1 167.20	245.20
7	11.808	4.776	55.00	84.40	1 152.20	280.60
8	13.120	4.779	62.20	55.60	1 553.40	310.80

$\log\beta_{101} = 5.82 \pm 0.05$

Table HA43. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	4.699	64.50	45.00	391.33	1 801.00
2	0.000	4.685	68.33	64.00	1 945.20	284.80
3	0.000	4.691	63.00	48.33	1 966.00	600.20
4	1.968	4.675	59.33	60.00	2 196.00	278.80
5	7.872	4.656	50.00	56.67	1 772.40	335.00
6	10.496	4.681	54.33	47.33	1 623.80	341.00
7	11.808	4.675	63.33	48.00	1 857.80	380.60
8	9.184	4.653	57.33	54.33	1 522.00	472.80
9	13.120	4.695	57.33	63.33	1 747.20	1 026.40

$\log\beta_{101} = 5.63 \pm 0.05$

Table HA44. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	6.553	57.00	53.80	1 900.80	147.40
2	1.966	6.576	61.80	51.20	1 977.80	185.00
3	3.936	6.576	65.60	73.40	1 757.40	240.20
4	5.898	6.568	61.20	55.80	1 757.40	354.00
5	7.872	6.556	62.80	61.40	1 911.60	438.80
6	6.586	6.572	62.40	60.80	1 781.40	411.60
7	11.119	6.571	63.00	62.20	1 827.60	536.80
8	11.784	6.555	57.40	63.40	1 612.60	428.20
9	13.068	6.552	58.00	53.20	1 545.60	518.20

$\log\beta_{101} = 7.78 \pm 0.05$

Table HA45. Solvent Extraction Data for Binding Constant for Uranium with SRFA in 6 m NaCl at 25°C. [$^{233}UO_2^{2+}$] = 10^{-7} M, [HDEHP] = 10^{-5} M in Toluene.

Sample #	[FA] eq/10^5L	pHr	Background, cpm		Extraction, cpm	
			Organic	Aqueous	Organic	Aqueous
1	0.000	6.494	55.00	77.00	1 942.60	192.00
2	0.000	6.505	62.67	57.33	2 359.80	192.60
3	0.000	6.537	53.67	60.00	2 597.60	111.60
4	1.968	6.528	55.67	199.67	2 420.00	481.20
5	3.936	6.526	50.00	49.67	2 285.20	338.60
6	5.904	6.524	56.33	53.00	2 124.40	459.80
7	7.872	6.524	61.67	63.67	2 303.20	533.20
8	9.184	6.529	57.67	64.67	2 129.80	548.20
9	10.496	6.549	70.00	154.67	1 978.80	768.80
10	11.808	6.548	58.67	198.33	1 918.60	967.20
11	13.120	6.548	60.00	50.00	2 438.20	596.40

$\log\beta_{101} = 7.89 \pm 0.04$

WASTE ISOLATION PILOT PLANT (WIPP)
SAND99-0943 Distribution List
(Revised 2/13/01)

Federal Agencies

US Department of Energy (1)
Office of Civilian Radioactive Waste Mgmt.
Attn: Deputy Director, RW-2
Forrestal Building
Washington, DC 20585

US Department of Energy (5)
Carlsbad Area Office
Attn: I. Triay
G. Basabilvazo
R. A. Nelson
D. Mercer
Mailroom
P.O. Box 3090
Carlsbad, NM 88221-3090

US Department of Energy
Office of the Deputy Assistant Secretary for Integration and Disposition
Attn: D. Huizenga, EM-20
Forrestal Building
Washington, DC 20585-0002

US Department of Energy
Office of the Deputy Assistant Secretary for Integration and Disposition
Waste Isolation Pilot Plant Office
Attn: Lynne Wade, EM-23, Trevion II
Washington, DC 20585-0002

US Department of Energy (1)
Office of Environment, Safety & Health
Attn: C. Borgstrom, EH-25
Washington, DC 20585

US Environmental Protection Agency (1)
Radiation Protection Programs
Attn: M. Kruger
ANR-460
Washington, DC 20460

US Army Environmental Center
Environmental Restoration Division
Attn: Wayne Mandell
SFIM-AEC-ERA
5179 Hoadley Road
APG-EA, MD 21010

Boards

Defense Nuclear Facilities Safety Board
Attn: D. Winters
625 Indiana Ave. NW, Suite 700
Washington, DC 20004

State Agencies

Attorney General of New Mexico
P.O. Drawer 1508
Santa Fe, NM 87504-1508

Environmental Evaluation Group (3)
Attn: Library
7007 Wyoming NE
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4021 National Parks Highway
Carlsbad, NM 88220

Authors

Andrew Bond
Eichrom Industries, Inc.
8205 S. Cass Ave., Suite 107
Darien, IL 60561

Marian Borkowski
CHM-chemistry Division – CHM 220 M -151
Argonne National Laboratory,
9700 S. Cass Avenue,
Argonne, IL 60439,

Michael G. Bronikowski,
Savannah River Technology Center
Westinghouse Savannah River Co
Aiken, SC 29808

Jian Feng Chen,
5900 Ranchester
Apt. 711
Houston, TX 77036

Prof. Gregory R. Choppin
Chemistry Department
Tallahassee, FL 32306-4390

Prof. Dr Hab. Stefan Lis
Faculty of Chemistry
Adam Mickiewicz University
Grunwaldzka 6
60-780 Poznan
POLAND

Jiri Mizera
Czech Technical University in Prague
Faculty of Nucl. Sciences and Phys. Engineering
Brehova 7
115 19 Praha 1
CZECH REPUBLIC

Oleg Pokrovsky,
Laboratoire de Geochimie
UPS-CNRS-UMR 5563
38, Rue des Trente-Six Ponts
31400 Toulouse
FRANCE

Yuan-Xian Xia
Battelle,
Pacific Northwest National Lab
P.O. Box 999 / MS P7-50
Richland, WA 99352

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