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the international association for the properties of water and steam iapws has produced this book in order to provide an accessible up to date overview of important aspects of the physical chemistry of aqueous systems at high temperatures and pressures these systems are central to many areas of scientific study and industrial application including electric power generation industrial steam systems hydrothermal processing of materials geochemistry and environmental applications the authors goal is to present the material at a level that serves both the graduate student seeking to learn the state of the art and also the industrial engineer or chemist seeking to develop additional expertise or to find the data needed to solve a specific problem the wide range of people for whom this topic is important provides a challenge advanced work in this area is distributed among physical chemists chemical engineers geochemists and other specialists who may not be aware of parallel work by those outside their own specialty the particular aspects of high temperature aqueous physical chemistry of interest to one industry may be irrelevant to another yet another industry might need the same basic information but in a very different form to serve all these constituencies the book includes several chapters that cover the foundational thermophysical properties such as gas solubility phase behavior thermodynamic properties of solutes and transport properties that are of interest across numerous applications the presentation of these topics is intended to be accessible to readers from a variety of backgrounds other chapters address fundamental areas of more specialized interest such as critical phenomena and molecular level solution structure several chapters are more application oriented addressing areas such as power cycle chemistry and hydrothermal synthesis as befits the variety of interests addressed some chapters provide more theoretical guidance while others such as those on acid base equilibria and the solubilities of metal oxides and hydroxides emphasize experimental techniques and data analysis covers both the theory and applications of all hydrothermal solutions provides an accessible up to date overview of important aspects of the physical chemistry of aqueous systems at high temperatures and pressures the presentation of the book is understandable to readers from a variety of backgrounds conformation and hydration of sugars and related compounds in dilute aqueous solution studies of hydrophobic bonding in aqueous alcohols enthalpy measurements and model calculations structure in aqueous solutions of nonpolar solutes from the standpoint of scaled particle theory raman spectra from partially deuterated water and ice vi to 10 1 kbar at 28 c solvation equilibria in very concentrated electrolyte solutions ionic association in hydrogen bonding solvents the role of solvent structure in ligand substitution and solvent exchange at some divalent transition metal cations n developed from a symposium held in los angeles ca september 1988 covers aqueous chemical theory equilibrium and mass transfer models and their subsystems and critical components of key chemical models such as uncertainty analyses and thermodynamic data in addition the book addresses several new areas of concern including organics isotopes adsorption and coupled process modeling it contains descriptions of the major aqueous chemical modeling codes and brings together classical aspects of modeling as they apply to current problems with author affiliation and subject indexes for researchers consultants and students in environmental chemistry hydrology geology chemical engineering and related fields annotation copyrighted by book news inc portland or 101 selected references to books and journal articles also includes some foreign language titles alphabetical arrangement by primary authors each entry gives bibliographical information and annotation author subject indexes a mixture of two polymers or one polymer and a salt in an aqueous medium separates into two phases this phenomenon is useful in biotechn ogy for product separations separation of biological molecules and particles in these aqueous two phase systems atps was initiated over 40 years ago by p Å albertsson and later proved to be of immense utility in biochemical and cell biological research a boost in the application of atps was seen when problems of separations in biotechnology processes were encountered its simplicity biocompatibility and amenability to easy scaleup operations make the use of atps very attractive for large scale bioseparations despite the advantages atps enjoys over other separation techniques the application of two phase systems has for a long time been confined to selected labora ries recent years have however shown a trend in which increasing numbers of researchers employ two phase

partitioning techniques in both basic and applied research an enormous amount of heretofore unavailable data has been collected and presented in this large volume the data covers thermal caloric and transport properties for aqueous systems light and heavy water their mixtures hydrocarbons alcohols aqueous salts aqueous hydrocarbons and aqueous alcohol solutions all at high and critical parameters experimental data instrumentation data analysis and methods of measurement are given and analyzed this book is designed for specialists in molecular physics chemical technology and chemical and power engineering as well as researchers lecturers postgraduates and students in technical colleges and universities understanding in detail the ion partitioning in mineralwater interactions is of fundamental importance to geochemical studies and ultimately to society the solid solution properties of minerals are a significant part of the complexity and also the importance of these ion partitioning reactions introduction traces in homogeneous and microheterogeneous aqueous systems traces in macroheterogeneous systems aqueous solution solid phase sediments in aqueous systems are of increasing interest to academics researchers practitioners and stakeholders around the world this book not only covers the characteristics of the sediments themselves but also their physico chemical impact on aquatic habitats and subsequent management implications there is a strong focus on methods and instrumentation for collecting data and monitoring of environmental sediment quality and as a result a wide range of environments are considered from urban areas to freshwater estuaries and marine ecosystems the chapters have been written by international specialists in the field ensuring a good breadth of examples experiences and case studies throughout this book will appeal to a broad spectrum of interests from geographers to engineers and environmental scientists and at undergraduate to post graduate and academic researcher levels over the past 20 years aqueous organometallic catalysis has found applications in small scale organic synthesis in the laboratory as well as in the industrial production of chemicals with a combined output close to one million tons per year aqueous organic two phase reactions allow easy product catalyst separation and full catalyst recovery which mean clear benefits not only in economic but also in environmental and green chemistry contexts instead of putting together a series of expert reviews of specialized fields this book attempts to give a comprehensive yet comprehensible description of the various catalytic transformations in aqueous systems as seen by an author who has been working on aqueous organometallic catalysis since its origin emphasis is put on the discussion of differences between related non aqueous and aqueous processes due to the presence of water the book will be of interest to experts and students working in catalysis inorganic chemistry or organic synthesis and may serve as a basis for advanced courses excerpt from an annotated bibliography of compiled thermodynamic data sources for biochemical and aqueous systems 1930 to 1975 equilibrium enthalpy heat capacity and entropy data grateful acknowledgment is made to ms gail r janes who aided in the preparation of an earlier and more limited version of this material national bureau of standards report 74 535 and to several colleagues and in particular dr w h evans nbs who made helpful comments on this and on the earlier bibliography this work was supported in part by the office of standard reference data of the national bureau of standards about the publisher forgotten books publishes hundreds of thousands of rare and classic books find more at forgottenbooks com this book is a reproduction of an important historical work forgotten books uses state of the art technology to digitally reconstruct the work preserving the original format whilst repairing imperfections present in the aged copy in rare cases an imperfection in the original such as a blemish or missing page may be replicated in our edition we do however repair the vast majority of imperfections successfully any imperfections that remain are intentionally left to preserve the state of such historical works this book offers comprehensive information on the fundamentals and applications of ionic liquid based aqueous biphasic systems which have predominantly and successfully been employed as alternative platforms for the extraction separation and purification of diverse high value products the book consists of an initial introduction providing a brief overview from fundamentals to applications followed by nine chapters addressing the respective phase diagrams interpretation and characterization and remarkable examples of their applications it also includes two final chapters focusing on recent developments in the search for more environmentally benign and biocompatible ionic liquid based aqueous biphasic systems and on the progress made to date concerning the recovery recycling and reuse of the phase forming components the goal being the development of cost effective and sustainable processes the book offers an interesting and useful guide for a broad readership in the fields of green chemistry biotechnology chemical engineering and biochemistry

among others mara g freire is a coordinator researcher at ciceco aveiro institute of materials chemistry department university of aveiro portugal this textbook introduces the elementary basics of hydrochemistry with special focus on reaction equilibria in aquatic systems and their mathematical description topics discussed in this textbook include structure and properties of water concentration measures and activities colligative properties basics of chemical equilibria gas water partitioning acid base reactions precipitation dissolution calco carbonic equilibrium redox reactions complex formation and sorption examples within the text as well as problems to be solved by the reader support the acquisition of knowledge complete and detailed solutions to the problems are given in a separate chapter 101 selected references to books and journal articles also includes some foreign language titles alphabetical arrangement by primary authors each entry gives bibliographical information and annotation author subject indexes

Aqueous Systems at Elevated Temperatures and Pressures 2004-07-06 the international association for the properties of water and steam iapws has produced this book in order to provide an accessible up to date overview of important aspects of the physical chemistry of aqueous systems at high temperatures and pressures these systems are central to many areas of scientific study and industrial application including electric power generation industrial steam systems hydrothermal processing of materials geochemistry and environmental applications the authors goal is to present the material at a level that serves both the graduate student seeking to learn the state of the art and also the industrial engineer or chemist seeking to develop additional expertise or to find the data needed to solve a specific problem the wide range of people for whom this topic is important provides a challenge advanced work in this area is distributed among physical chemists chemical engineers geochemists and other specialists who may not be aware of parallel work by those outside their own specialty the particular aspects of high temperature aqueous physical chemistry of interest to one industry may be irrelevant to another yet another industry might need the same basic information but in a very different form to serve all these constituencies the book includes several chapters that cover the foundational thermophysical properties such as gas solubility phase behavior thermodynamic properties of solutes and transport properties that are of interest across numerous applications the presentation of these topics is intended to be accessible to readers from a variety of backgrounds other chapters address fundamental areas of more specialized interest such as critical phenomena and molecular level solution structure several chapters are more application oriented addressing areas such as power cycle chemistry and hydrothermal synthesis as befits the variety of interests addressed some chapters provide more theoretical guidance while others such as those on acid base equilibria and the solubilities of metal oxides and hydroxides emphasize experimental techniques and data analysis covers both the theory and applications of all hydrothermal solutions provides an accessible up to date overview of important aspects of the physical chemistry of aqueous systems at high temperatures and pressures the presentation of the book is understandable to readers from a variety of backgrounds
The Physical Chemistry of Aqueous Systems 2012-12-06 conformation and hydration of sugars and related compounds in dilute aqueous solution studies of hydrophobic bonding in aqueous alcohols enthalpy measurements and model calculations structure in aqueous solutions of nonpolar solutes from the standpoint of scaled particle theory raman spectra from partially deuterated water and ice vi to 10 1 kbar at 28 c solvation equilibria in very concentrated electrolyte solutions ionic association in hydrogen bonding solvents the role of solvent structure in ligand substitution and solvent exchange at some divalent transition metal cations n
Aqueous Systems at Elevated Temperatures and Pressures 2004 developed from a symposium held in los angeles ca september 1988 covers aqueous chemical theory equilibrium and mass transfer models and their subsystems and critical components of key chemical models such as uncertainty analyses and thermodynamic data in addition the book addresses several new areas of concern including organics isotopes adsorption and coupled process modeling it contains descriptions of the major aqueous chemical modeling codes and brings together classical aspects of modeling as they apply to current problems with author affiliation and subject indexes for researchers consultants and students in environmental chemistry hydrology geology chemical engineering and related fields annotation copyrighted by book news inc portland or
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Thermodynamics of Aqueous Systems, with Industrial Applications 2000 a mixture of two polymers or one polymer and a salt in an aqueous medium separates into two phases this phenomenon is useful in biotechn ogy for product separations separation of biological molecules and particles in these aqueous two phase systems atps was initiated over 40 years ago by p Å albertsson and later proved to be of immense utility in biochemical and cell biological research a boost in the application of atps was seen when problems of separations in biotechnology processes were encountered its simplicity biocompatibility and amenability to easy scaleup operations make the use of atps very attractive for large scale bioseparations despite the advantages atps enjoys over other separation techniques the application of two phase systems has for a long time been confined to selected labora ries recent years have however shown a trend in which increasing numbers of researchers employ two phase partitioning techniques in both basic and applied research

Thermodynamics of Aqueous Systems, with Industrial Applications 1980 an enormous amount of heretofore unavailable data has been collected and presented in this large volume the data covers thermal caloric and transport properties for aqueous systems light and heavy water their mixtures hydrocarbons alcohols aqueous salts aqueous hydrocarbons and aqueous alcohol solutions all at high and critical parameters experimental data instrumentation data analysis and methods of measurement are given and analyzed this book is designed for specialists in molecular physics chemical technology and chemical and power engineering as well as researchers lecturers postgraduates and students in technical colleges and universities

Chemical Modeling of Aqueous Systems II 1990 understanding in detail the ion partitioning in mineralwater interactions is of fundamental importance to geochemical studies and ultimately to society the solid solution properties of minerals are a significant part of the complexity and also the importance of these ion partitioning reactions

Ions in Aqueous Systems : an Introduction to Chemical Equilibrium Andsolution Chemistry 1972 introduction traces in homogeneous and microheterogeneous aqueous systems traces in macroheterogeneous systems aqueous solution solid phase

Ions in Aqueous Systems 1971 sediments in aqueous systems are of increasing interest to academics researchers practitioners and stakeholders around the world this book not only covers the characteristics of the sediments themselves but also their physico chemical impact on aquatic habitats and subsequent management implications there is a strong focus on methods and instrumentation for collecting data and monitoring of environmental sediment quality and as a result a wide range of environments are considered from urban areas to freshwater estuaries and marine ecosystems the chapters have been written by international specialists in the field ensuring a good breadth of examples experiences and case studies throughout this book will appeal to a broad spectrum of interests from geographers to engineers and environmental scientists and at undergraduate to post graduate and academic researcher levels

An Annotated Bibliography of Compiled Thermodynamic Data Sources for Biochemical and Aqueous Systems (1930 to 1975) 1976 over the past 20 years aqueous organometallic catalysis has found applications in small scale organic synthesis in the laboratory as well as in the industrial production of chemicals with a combined output close to one million tons per year aqueous organic two phase reactions allow easy product catalyst separation and full catalyst recovery which mean clear benefits not only in economic but also in environmental and green chemistry contexts instead of putting together a series of expert reviews of specialized fields this book attempts to give a comprehensive yet comprehensible description of the various catalytic transformations in aqueous systems as seen by an author who has been working on aqueous organometallic catalysis since its origin emphasis is put on the discussion of differences between related non aqueous and aqueous processes due to the presence of water the book will be of interest to experts and students working in catalysis inorganic chemistry or organic synthesis and may serve as a basis for advanced courses

Vapor-liquid Equilibrium Data Collection 2003 excerpt from an annotated bibliography of compiled thermodynamic data sources for biochemical and aqueous systems 1930 to 1975 equilibrium enthalpy heat capacity and entropy data grateful acknowledgment is made to ms gail r janes who aided in the preparation of an earlier and more limited version of this material national bureau of standards report 74 535 and to several colleagues and in particular dr w h evans nbs who made helpful comments on this and on the earlier bibliography this work was supported in part by the office of standard reference data of the national bureau of standards about the publisher forgotten books publishes hundreds of thousands of rare and classic books find more at forgottenbooks com this book is a reproduction of an important historical work forgotten books uses state of the art technology to digitally reconstruct the work preserving the original format whilst repairing imperfections present in the aged copy in rare cases an imperfection in the original such as a blemish or missing page may be replicated in our edition we do however repair the vast majority of imperfections successfully any imperfections that remain are intentionally left to preserve the state of such historical works

Nonaqueous Systems and Ternary Aqueous Systems / Nichtwässerige Systeme und ternäre wässerige Systeme 1974-12-04 this book offers comprehensive information on the fundamentals and applications of ionic liquid based aqueous biphasic systems which have predominantly and successfully been employed as alternative platforms for the extraction separation and purification

of diverse high value products the book consists of an initial introduction providing a brief overview from fundamentals to applications followed by nine chapters addressing the respective phase diagrams interpretation and characterization and remarkable examples of their applications it also includes two final chapters focusing on recent developments in the search for more environmentally benign and biocompatible ionic liquid based aqueous biphasic systems and on the progress made to date concerning the recovery recycling and reuse of the phase forming components the goal being the development of cost effective and sustainable processes the book offers an interesting and useful guide for a broad readership in the fields of green chemistry biotechnology chemical engineering and biochemistry among others mara g freire is a coordinator researcher at ciceco aveiro institute of materials chemistry department university of aveiro portugal

Chemical Modeling in Aqueous Systems 1979 this textbook introduces the elementary basics of hydrochemistry with special focus on reaction equilibria in aquatic systems and their mathematical description topics discussed in this textbook include structure and properties of water concentration measures and activities colligative properties basics of chemical equilibria gas water partitioning acid base reactions precipitation dissolution calco carbonic equilibrium redox reactions complex formation and sorption examples within the text as well as problems to be solved by the reader support the acquisition of knowledge complete and detailed solutions to the problems are given in a separate chapter

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Polycyclic Aromatic Hydrocarbons 1995

Thermodynamic Equilibria of Vanadium in Aqueous Systems as Applied to the Interpretation of the Colorado Plateau Ore Deposits 1957

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