Metal Ions In Aqueous Solution

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Metal Ions in Aqueous SolutionMetal Ions in Aqueous Solution, by John P. HuntMetal Ions in Aqueous SolutionThermodynamic and Kinetic Properties of Metal Ions in Aqueous SolutionThe Hydrolysis Of Metal Ions In Aqueous SolutionMetal Complexes in Aqueous Solutions Filling the need for a comprehensive treatment that covers the theory, methods and the different types of metal ion complexes with water (hydrolysis), this

handbook and ready reference is authored by a nuclear chemist from academia and an industrial geochemist. The book includes both cation and anion complexes, and approaches the topic of metal ion hydrolysis by first covering the background, before proceeding with an overview of the dissociation of water and then all different metal-water hydrolysis complexes and compounds. A must-have for scientists in academia and industry working on this interdisciplinary topic.

Extraction of Metal Ions from Aqueous Solution Using Activated Carbon

Springer Science & Business Media

A method of removing heavy metals from aqueous solution, a composition of matter used in effecting said removal, and apparatus used in effecting said removal. One or more of the polypeptides, poly (.gamma.-glutamylcy steinyl)glycines, is immobilized on an inert material in particulate form. Upon contact with an aqueous solution containing heavy metals, the polypeptides sequester the metals, removing them from the solution. There is selectivity of poly (.gamma.-glutamylcy steinyl)glycines having a particular number of monomer

repeat units for particular metals. The polypeptides are easily regenerated by contact with a small amount of an organic acid, so that they can be used again to remove heavy metals from solution. This also results in the removal of the metals from the column in a concentrated form.

Some metal ion reactions in aqueous solution Springer Science & Business Media

A process and apparatus for quantitatively and selectively separating metal ions from mixtures thereof in aqueous solution. The apparatus includes, in combination, a horizontal electrochemical flow cell containing flow bulk electrolyte solution and an aqueous, metal ion-containing solution, the cell containing a metal mesh working electrode, a counter electrode positioned downstream from the working electrode, an independent variable power supply/potentiostat positioned outside of the flow cell and connected to the electrodes, and optionally a detector such as a chromatographic detector, positioned outside the flow cell. This apparatus and its operation has significant application where trace amounts of metal ions are to be separated.

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Ionic Liquids in Separation of Metal Ions from Aqueous Solutions

This monograph is intended to provide a systematic presentation of theories concerning the adsorption of metal ions from aqueous solutions onto surfaces of natural and synthetic substances and to outline methods and procedures to estimate the extent and progress ofadsorption. As heavy metals and the problems associated with their transport and distribution are of serious concern to human health and the environment, the materials presented in this volume have both theoretical and practical significance. In writing this monograph, one ofour goals was to prepare a book useful to environmental workers and practicing engineers. For this reason, our presentation relies heavily on concepts commonly used in the environmental engineering literature. In fact, the volume was prepared for readers with a basic understanding of environmental engineering principles and some knowledge of adsorption processes. No prior familiarity with the ionic solute adsorption at solid-solution interfaces is assumed. Instead, introduction of the necessary background information was included. Generally speaking, metal ion adsorption may be studied in terms of three distinct but interrelated phenomena: surface ionization, complex formation, and the

formation and presence of an electrostatic double layer adjacent to adsorbent surfaces. Analyses of these phenomena with various degrees of sophistication are xviii ADSORPTION OF METAL IONS FROM AQUEOUS SOLUTIONS presented, and their various combinations yield different models that describe metal ion adsorption.

Removal of Toxic Metal Ions from Aqueous Solution by Solanum Elaeagnifolium and Larrea Tridentata Under Flow Conditions

Ionic Liquids in Separation of Metal Ions from Aqueous Solutions.

The Interaction of Uronic Acids and Metal Ions in Aqueous Solution

A process of selectively separating a target metal contained in an aqueous solution by contacting the aqueous solution containing a target metal with an aqueous solution including a water-soluble polymer capable of binding with the target metal for sufficient time whereby a water-soluble polymer-target metal complex is formed, and, separating the solution including the water-soluble polymer-target metal complex from the solution is disclosed.

Removal of Heavy Metal Ions from Aqueous Solution Using Lignocellulosic Wastes Derived from Selected Tree Barks

An innovative approach for the removal of heavy metal ions such as Pb2+ and Cd2+ from aqueous solution was evaluated. It was established that alkaline filtration, which is in essence the combination of alkaline precipitation and membrane filtration, could drastically increase both

the efficiency and completeness of Pb2+ or Cd2+ ions removal, producing water whose metal concentration satisfying drinking water standard from a simulation wastewater containing 5 ppm or more Pb2+ or Cd2+ ions. Filtration with three different membranes, including microfiltration (MF), ultrafiltration (UF), and nanofiltration (NF) membranes, were studied at three different pH levels, i.e., 7.0, 8.5, and 10, in terms of metal ion rejection, flux, and permeate pH and at varied dissolved inorganic carbon (DIC) concentration. Increasing the pH of the feed in the tested range would lead to the decrease of metal ion concentration in permeate while flux was in general unaffected. When the feed pH was 10, the Pb2+ concentration in permeate was below 10 ppb regardless of the DIC concentration and membrane for filtration. The effects of DIC concentration were significant but complex. It was found that MF, UF, NF could all effectively reject Pb2+ ions at pH 8.5 and pH 10 although only NF was charged. A hypothesis was proposed to explain the mechanism of alkaline filtration based on experimental data.

Halide Complexes of Some Post Transition Metal Ions in Aqueous Solution

This monograph is intended to provide a systematic presentation of theories concerning the adsorption

of metal ions from aqueous solutions onto surfaces of natural and synthetic substances and to outline methods and procedures to estimate the extent and progress ofadsorption. As heavy metals and the problems associated with their transport and distribution are of serious concern to human health and the environment, the materials presented in this volume have both theoretical and practical significance. In writing this monograph, one ofour goals was to prepare a book useful to environmental workers and practicing engineers. For this reason, our presentation relies heavily on concepts commonly used in the environmental engineering literature. In fact, the volume was prepared for readers with a basic understanding of environmental engineering principles and some knowledge of adsorption processes. No prior familiarity with the ionic solute adsorption at solid-solution interfaces is assumed. Instead, introduction of the necessary background information was included. Generally speaking, metal ion adsorption may be studied in terms of three distinct but interrelated phenomena: surface ionization, complex formation, and the formation and presence of an electrostatic double layer adjacent to adsorbent surfaces. Analyses of these phenomena with various degrees of sophistication are xviii ADSORPTION OF METAL IONS FROM AQUEOUS SOLUTIONS presented, and their various combinations yield different models that describe metal ion adsorption.

Metal Ions in Aqueous Solution

Stability constants are fundamental to understanding the behavior of metal ions in aqueous solution. Such understanding is important in a wide variety of areas, such as metal ions in biology, biomedical applications, metal ions in the environment, extraction metallurgy, food chemistry, and metal ions in many industrial processes. In spite of this importance, it appears that many inorganic chemists have lost an appreciation for the importance of stability constants, and the thermodynamic aspects of complex formation, with attention focused over the last thirty years on newer areas, such as organometallic chemistry. This book is an attempt to show the richness of chemistry that can be revealed by stability constants, when measured as part of an overall strategy aimed at understanding the complexing properties of a particular ligand or metal ion. Thus, for example, there are numerous crystal structures of the Li+ ion with crown ethers. What do these indicate to us about the chemistry of Li+ with crown ethers? In fact, most of these crystal structures are in a sense misleading, in that the Li+ ion forms no complexes, or at best very weak complexes, with familiar crown ethers such as l2-crown-4, in any known solvent. Thus, without the stability constants, our understanding of the chemistry of a metal ion with any particular ligand must be regarded as incomplete. In this book we attempt to show how stability constants can reveal factors in ligand design which could not readily be deduced from any other physical technique.

Metal Complexes in Aqueous Solutions

Biosorption of Metal Ions from Aqueous Solution Using Novel Biomass

Kinetics of Metal Ion

Adsorption from Aqueous Solutions

The Alkali Metal Ions in Aqueous Solutions

Complexation of Metal Ions in Aqueous Solution by Fluorescent Ligands Containing Pyridyl Groups

Water-soluble Polymers for Recovery of Metal Ions from Aqueous Streams

Removal of Heavy Metal Ions from Aqueous Solution by Ion Exchange on Sulfuric Acid Treated Peat

Removal of Heavy Metal Ions from Aqueous Solution by Alkaline Filtration

Hydrolysis of Metal Ions

Separation of Metal Ions from Aqueous Solutions