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Chemical Modification, Properties, and Usage of Lignin Thomas Q. Hu 2012-12-06 One of the most significant challenges facing mankind in the twenty-first century is the development of a sustainable global economy. Within the scientific community, this calls for the development of processes and technologies that will allow the sustainable production of materials from renewable natural resources. Plant material, in particular lignin, is one such resource. During the annual production of about 100 million metric tons of chemical wood pulps worldwide, approximately 45 and 2 million metric tons/year of kraft lignin and lignosulfonates, respectively, are also generated. Although lignosulfonates have found many

applications outside the pulp and paper industry, the majority of kraft lignin is being used internally as a low-grade fuel for the kraft pulping operation. A surplus of kraft lignin will become available as kraft mills increase their pulp production without expanding the capacity of their recovery boilers that utilize lignin as a fuel. There is a tremendous opportunity and an enormous economic incentive to find better uses of kraft lignin, lignosulfonates and other industrial lignins. The pulp and paper industry not only produces an enormous amount of lignins as by products of chemical wood pulps, but it also utilizes about 10 million metric tons of lignin per year as a component of mechanical wood pulps and papers. Mechanical wood pulps, produced in a yield of 90-98% with the retention of lignin, are mainly used to make low-quality, non-permanent papers such as newsprint and telephone directories because of the light-induced photooxidation of lignin and the yellowing of the papers.

Encyclopedia of Earth and Physical Sciences: Index volume 1998 This 'encyclopedia contains about 400 articles covering the major topics in earth and physical sciences. Aimed at the high school student, the text is clearly written and touches on topics in the news....The over 1400 high-quality illustrations make this set a pleasure to browse....A useful addition for high school and public libraries.'

Educational Times 1890

Books in Print 1991

The Chemistry of the Actinide and Transactinide Elements (3rd ed., Volumes 1-5) L.R. Morss 2007-12-31
The Chemistry of the Actinide and Transactinide Elements is a contemporary and definitive compilation of chemical properties of all of the actinide elements, especially of the technologically important elements uranium and plutonium, as well as the transactinide elements. In addition to the comprehensive treatment of the chemical properties of each element, ion, and compound from atomic number 89 (actinium) through to 109 (meitnerium), this multi-volume work has specialized and definitive chapters on electronic theory, optical and laser fluorescence spectroscopy, X-ray absorption spectroscopy, organoactinide chemistry, thermodynamics, magnetic properties, the metals, coordination chemistry, separations, and

trace analysis. Several chapters deal with environmental science, safe handling, and biological interactions of the actinide elements. The Editors invited teams of authors, who are active practitioners and recognized experts in their specialty, to write each chapter and have endeavoured to provide a balanced and insightful treatment of these fascinating elements at the frontier of the periodic table. Because the field has expanded with new spectroscopic techniques and environmental focus, the work encompasses five volumes, each of which groups chapters on related topics. All chapters represent the current state of research in the chemistry of these elements and related fields.

Books in Print Supplement 2002

Saturday Review 1866

Medical and Health Care Books and Serials in Print 1988

Cumulative Book Index 1998 A world list of books in the English language.

Scheikunde voor Dummies John T. Moore 2005 Dit boek behandelt de theorie en pikt en passant ook nog kernenergie mee en een hoop natuurkunde.

Practical Process Research and Development – A guide for Organic Chemists Neal G. Anderson 2012-05-23 Designed to provide a comprehensive, step-by-step approach to organic process research and development in the pharmaceutical, fine chemical, and agricultural chemical industries, this book describes the steps taken, following synthesis and evaluation, to bring key compounds to market in a cost-effective manner. It describes hands-on, step-by-step, approaches to solving process development problems, including route, reagent, and solvent selection; optimising catalytic reactions; chiral syntheses; and "green chemistry." Second Edition highlights: • Reflects the current thinking in chemical process R&D for small molecules • Retains similar structure and orientation to the first edition. • Contains approx. 85% new material • Primarily new examples (work-up and prospective considerations for pilot plant and manufacturing scale-up) • Some new/expanded topics (e.g. green chemistry, genotoxins, enzymatic processes) • Replaces the first edition, although the first edition contains useful older examples that

readers may refer to Provides insights into generating rugged, practical, cost-effective processes for the chemical preparation of "small molecules" Breaks down process optimization into route, reagent and solvent selection, development of reaction conditions, workup, crystallizations and more Presents guidelines for implementing and troubleshooting processes

Reactions And Synthesis In Surfactant Systems John Texter 2001-06-26 A comprehensive review of surfactant systems in organic, inorganic, colloidal, surface, and materials chemistry. This text covers applications to reaction chemistry, organic and inorganic particle formation, synthesis and processing, molecular recognition and surfactant templating.

Ionic Surfactants and Aqueous Solutions Juan H. Vera 2018-07-09 Ionic Surfactants and Aqueous Solutions: Biomolecules, Metals and Nanoparticles covers a wide range of subjects related to aqueous systems, from reverse micelles as ion exchangers to the study of micellar phase transfer catalysis for nucleophilic substitution reactions. The diverse background, expertise and professional interests of the contributors to this book give to it a unique richness of approach in topics of relevance for biotechnology and environmental studies. Over sixty publications presenting research results are combined and expanded in this book by some of the original researchers. At a mature age, and at the summit of successful professional careers, they have taken a second look to the state of the art in the fields that they had pioneered. Eva Rodil and Ana Soto, who had their research formation in the group of Professor Alberto Arce at Universidade de Santiago de Compostela, Spain, are presently professors at that university, Maen Husein is a professor at University of Calgary, Canada. Remy Dumortier, Mohammad Khoshkbarchi, Hamid Rabie and Younok Dumortier Shin, are presently active leaders in the industrial world in Canada and the USA. The editors are retired academics from McGill University, Montreal, Canada, and coauthors of the book Classical Thermodynamics of Fluid Systems.

Chemistry and Physics of Aqueous Gas Solutions 1975

Catalog of Copyright Entries. Third Series

Library of Congress. Copyright Office 1973

Geological Sequestration of Carbon Dioxide Luigi Marini 2006-10-12 The contents of this monograph are two-scope. First, it intends to provide a synthetic but complete account of the thermodynamic and kinetic foundations on which the reaction path modeling of geological CO₂ sequestration is based. In particular, a great effort is devoted to review the thermodynamic properties of CO₂ and of the CO₂-H₂O system and the interactions in the aqueous solution, the thermodynamic stability of solid product phases (by means of several stability plots and activity plots), the volumes of carbonation reactions, and especially the kinetics of dissolution/precipitation reactions of silicates, oxides, hydroxides, and carbonates. Second, it intends to show the reader how reaction path modeling of geological CO₂ sequestration is carried out. To this purpose the well-known high-quality EQ3/6 software package is used. Setting up of computer simulations and obtained results are described in detail and used EQ3/6 input files are given to guide the reader step-by-step from the beginning to the end of these exercises. Finally, some examples of reaction-path- and reaction-transport-modeling taken from the available literature are presented. The results of these simulations are of fundamental importance to evaluate the amounts of potentially sequestered CO₂, and their evolution with time, as well as the time changes of all the other relevant geochemical parameters (e.g., amounts of solid reactants and products, composition of the aqueous phase, pH, redox potential, effects on aquifer porosity). In other words, in this way we are able to predict what occurs when CO₂ is injected into a deep aquifer. * Provides applications for investigating and predicting geological carbon dioxide sequestration * Reviews the geochemical literature in the field * Discusses the importance of geochemists in the multidisciplinary study of geological carbon dioxide sequestration

Scientific and Technical Books and Serials in Print 1989

The Role of Colloidal Systems in Environmental Protection Monzer Fanun 2014-02-08 The Role of Colloidal Systems in Environmental Protection describes the importance of colloids in many applications that contribute to environmental protection, including drinking water and wastewater treatment, heavy

metal remediation, treatment of radioactive materials, corrosion, and energy conversion. Knowledge of the physical and chemical composition of colloids is important to understand and accurately model the relevant processes. The book familiarizes the reader with the technological features of the application of colloids in environmental protection, and provides chemical engineers, researchers, and scientists in academic and corporate communities with the latest developments in this field. Each chapter covers the whole spectrum of the relevant science, from the fundamentals to applications. Provides the applied technological features of colloids in environmental protection Gives insight into the use of bio-solid colloids as contaminant carriers Covers the natural occurrence of biosurfactants in the environment and their applications Provides information on the use of nanoparticles for environmental applications Chapters written by recognized and respected experts in the field from all over the world

Advanced Organic Chemistry Francis A. Carey 2007-06-27 The two-part, fifth edition of Advanced Organic Chemistry has been substantially revised and reorganized for greater clarity. The material has been updated to reflect advances in the field since the previous edition, especially in computational chemistry. Part A covers fundamental structural topics and basic mechanistic types. It can stand-alone; together, with Part B: Reaction and Synthesis, the two volumes provide a comprehensive foundation for the study in organic chemistry. Companion websites provide digital models for study of structure, reaction and selectivity for students and exercise solutions for instructors.

Advanced Organic Chemistry: Structure and mechanisms Francis A. Carey 2000 The material in this book is organized on the basis of fundamental structural topics such as structure, stereochemistry conformation and aromaticity and basic mechanistic types, including nucleophilic substitution, addition reactions, carbonyl chemistry, aromatic substitution and free radical reactions.

Forthcoming Books Rose Arny 2002-04

Solvent Extraction Principles and Practice, Revised and Expanded Jan Rydberg 2004-03-01 A complete and up-to-date presentation of the fundamental theoretical principles and many applications of solvent

extraction, this enhanced Solvent Extraction Principles and Practice, Second Edition includes new coverage of the recent developments in solvent extraction processes, the use of solvent extraction in analytical applications and waste recovery, and computational chemistry methods for modeling the solvent extraction of metal ions. Offering sound scientific and technical descriptions in a format accessible to students and expedient for researchers and engineers, this edition also features a new chapter on ionic strength corrections and contains more than 850 up-to-date literature citations.

Essentials of Organic Chemistry James R. McKee 1997 Encourage an appreciation of organic chemistry, its practice, and its application to the "real world" with Essentials of Organic Chemistry. Designed to supplement a one-semester organic chemistry lecture course, this laboratory text provides various experiments covering a wide range of difficulty, instrumentation, and chemical techniques. Basic information concerning lab safety, waste disposal, and instrumental methods are also included along with experiments that illustrate basic organic chemical reactions relating to everyday materials.

The British National Bibliography Arthur James Wells 2001

Organic Chemistry Laboratory Charles E. Bell 1997

Molecular Modeling on the PC Matthew F. Schlecht 1998 Introduction to molecular modeling. PC molecular modeling hardware and software. Input and output. Input files formats. The molecular mechanics force field. Applications. Appendices.

Encyclopedia of Physical Science and Technology Robert Allen Meyers 1992

Practical Pharmaceutical Chemistry Frederick Norman Appleyard 1939

Organic Chemistry with Biological Applications John E. McMurry 2014-01-31 Renowned for its student-friendly writing style and fresh perspective, this fully updated Third Edition of John McMurry's ORGANIC CHEMISTRY WITH BIOLOGICAL APPLICATIONS provides full coverage of the foundations of organic chemistry--enhanced by biological examples throughout. In addition, McMurry discusses the organic chemistry behind biological pathways. New problems, illustrations, and essays have been added.

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The Cumulative Book Index 1989

Solution, Gas-phase, and Computational Reaction Profiles for Heterolytic Dissociation of Charged Substrates as Models for NAD⁺ Hydrolysis Neil Buckley 1995

Advanced Organic Chemistry Francis Carey 2012-12-06 Of Part A.- 1. Chemical Bonding and Molecular Structure.- 1.1. Valence-Bond Approach to Chemical Bonding.- 1.2. Bond Energies, Lengths, and Dipoles.- 1.3. Molecular Orbital Theory.- 1.4. Hückel Molecular Orbital Theory.- General References.- Problems.- 2. Stereochemical Principles.- 2.1. Enantiomeric Relationships.- 2.2. Diastereomeric Relationships.- 2.3. Dynamic Stereochemistry.- 2.4. Prochiral Relationships.- General References.- Problems.- 3. Conformational and Other Steric Effects.- 3.1. Steric Strain and Molecular Mechanics.- 3.2. Conformations of Acyclic Molecules.- 3.3. Conformations o.

Solvent Effects in Chemistry Erwin Bunce 2015-06-19 This book introduces the concepts, theory and experimental knowledge concerning solvent effects on the rate and equilibrium of chemical reactions of all kinds. It begins with basic thermodynamics and kinetics, building on this foundation to demonstrate how a more detailed understanding of these effects may be used to aid in determination of reaction mechanisms, and to aid in planning syntheses. Consideration is given to theoretical calculations (quantum chemistry, molecular dynamics, etc.), to statistical methods (chemometrics), and to modern day concerns such as "green" chemistry, where utilization and disposal of chemical waste or by-products in an environmentally safe way is as important as achieving the desired end products by all chemists nowadays. The treatment progresses from elementary to advanced material in straightforward fashion. The more advanced topics are not developed in an overly rigorous way so that upper-level undergraduates, graduates, and newcomers to the field can grasp the concepts easily.

Organic Electrochemistry, Fourth Edition, Ole Hammerich 2000-12-14 A presentation of developments in

the electrochemistry of C60 and related compounds, electroenzymatic synthesis, conducting polymers, and electrochemical partial fluorination. It contains accounts of carbonyl compounds, anodic oxidation of oxygen-containing compounds, electrosynthesis of bioactive materials, electrolyte reductive coupling, and more.

Solvent Extraction Vladimir S Kislik | 2011-08-31 The main challenge in modern solvent extraction separation is that most techniques are mainly empirical, specific and particular for narrow fields of practice and require a large degree of experimentation. This concise and modern book provides a complete overview of both solvent extraction separation techniques and the novel and unified competitive complexation/solvation theory. This novel and unified technique presented in the book provides a key for a preliminary quantitative prediction of suitable extraction systems without experimentation, thus saving researchers time and resources. Analyzes and compares both classical and new competitive models and techniques Offers a novel and unified competitive complexation / solvation theory that permits researchers to standardize some parameters, which decreases the need for experimentation at R&D Presents examples of applications in multiple disciplines such as chemical, biochemical, radiochemical, pharmaceutical and analytical separation Written by an outstanding scientist who is prolific in the field of separation science

Computational Chemistry Errol G. Lewars 2010-11-09 This corrected second edition contains new material which includes solvent effects, the treatment of singlet diradicals, and the fundamentals of computational chemistry. "Computational Chemistry: Introduction to the Theory and Applications of Molecular and Quantum Mechanics" is an invaluable tool for teaching and researchers alike. The book provides an overview of the field, explains the basic underlying theory at a meaningful level that is not beyond beginners, and it gives numerous comparisons of different methods with one another and with experiment. The following concepts are illustrated and their possibilities and limitations are given: - potential energy surfaces; - simple and extended Hückel methods; - ab initio, AM1 and related

semiempirical methods; - density functional theory (DFT). Topics are placed in a historical context, adding interest to them and removing much of their apparently arbitrary aspect. The large number of references, to all significant topics mentioned, should make this book useful not only to undergraduates but also to graduate students and academic and industrial researchers.

Developing Solid Oral Dosage Forms Yihong Qiu 2016-11-08 Developing Solid Oral Dosage Forms: Pharmaceutical Theory and Practice, Second Edition illustrates how to develop high-quality, safe, and effective pharmaceutical products by discussing the latest techniques, tools, and scientific advances in preformulation investigation, formulation, process design, characterization, scale-up, and production operations. This book covers the essential principles of physical pharmacy, biopharmaceutics, and industrial pharmacy, and their application to the research and development process of oral dosage forms. Chapters have been added, combined, deleted, and completely revised as necessary to produce a comprehensive, well-organized, valuable reference for industry professionals and academics engaged in all aspects of the development process. New and important topics include spray drying, amorphous solid dispersion using hot-melt extrusion, modeling and simulation, bioequivalence of complex modified-released dosage forms, biowaivers, and much more. Written and edited by an international team of leading experts with experience and knowledge across industry, academia, and regulatory settings Includes new chapters covering the pharmaceutical applications of surface phenomenon, predictive biopharmaceutics and pharmacokinetics, the development of formulations for drug discovery support, and much more Presents new case studies throughout, and a section completely devoted to regulatory aspects, including global product regulation and international perspectives

An Electrochemical and Spectroscopic Investigation of the Corrosion Inhibitor Nonylphenylethoxy Phosphate Ester and of the Films Formed on 316L Stainless Steel in Acidic Solutions Peter Hsu-Jen Chou 2003

Filtration and Purification in the Biopharmaceutical Industry, Third Edition Maik W. Jornitz 2019-06-26

Since sterile filtration and purification steps are becoming more prevalent and critical within medicinal drug manufacturing, the third edition of *Filtration and Purification in the Biopharmaceutical Industry* greatly expands its focus with extensive new material on the critical role of purification and advances in filtration science and technology. It provides state-of-the-science information on all aspects of bioprocessing including the current methods, processes, technologies and equipment. It also covers industry standards and regulatory requirements for the pharmaceutical and biopharmaceutical industries. The book is an essential, comprehensive source for all involved in filtration and purification practices, training and compliance. It describes such technologies as viral retentive filters, membrane chromatography, downstream processing, cell harvesting, and sterile filtration. Features: Addresses recent biotechnology-related processes and advanced technologies such as viral retentive filters, membrane chromatography, downstream processing, cell harvesting, and sterile filtration of medium, buffer and end product Presents detailed updates on the latest FDA and EMA regulatory requirements involving filtration and purification practices, as well as discussions on best practises in filter integrity testing Describes current industry quality standards and validation requirements and provides guidance for compliance, not just from an end-user perspective, but also supplier requirement It discusses the advantages of single-use process technologies and the qualification needs Sterilizing grade filtration qualification and process validation is presented in detail to gain the understanding of the regulatory needs The book has been compiled by highly experienced contributors in the field of pharmaceutical and biopharmaceutical processing. Each specific topic has been thoroughly examined by a subject matter expert.

Physico-chemical Aspects of Textile Coloration Stephen M. Burkinshaw 2016-02-08 The production of textile materials comprises a very large and complex global industry that utilises a diverse range of fibre types and creates a variety of textile products. As the great majority of such products are coloured, predominantly using aqueous dyeing processes, the coloration of textiles is a large-scale global business

in which complex procedures are used to apply different types of dye to the various types of textile material. The development of such dyeing processes is the result of substantial research activity, undertaken over many decades, into the physico-chemical aspects of dye adsorption and the establishment of 'dyeing theory', which seeks to describe the mechanism by which dyes interact with textile fibres. Physico-Chemical Aspects of Textile Coloration provides a comprehensive treatment of the physical chemistry involved in the dyeing of the major types of natural, man-made and synthetic fibres with the principal types of dye. The book covers: fundamental aspects of the physical and chemical structure of both fibres and dyes, together with the structure and properties of water, in relation to dyeing; dyeing as an area of study as well as the terminology employed in dyeing technology and science; contemporary views of intermolecular forces and the nature of the interactions that can occur between dyes and fibres at a molecular level; fundamental principles involved in dyeing theory, as represented by the thermodynamics and kinetics of dye sorption; detailed accounts of the mechanism of dyeing that applies to cotton (and other cellulosic fibres), polyester, polyamide, wool, polyacrylonitrile and silk fibres; non-aqueous dyeing, as represented by the use of air, organic solvents and supercritical CO₂ fluid as alternatives to water as application medium. The up-to-date text is supported by a large number of tables, figures and illustrations as well as footnotes and widespread use of references to published work. The book is essential reading for students, teachers, researchers and professionals involved in textile coloration.