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Comprehensive Inorganic Chemistry II Academic Press

Oxidative catalysis by metalloporphyrin systems occupies a prominent role in the current research in the fields of chemical and biological catalysis. Our particular interest and approach has been to collect in the same volume papers dealing with both the chemical and biological aspects of the reactivity of heme systems because of the realization that a better understanding of the complementary discipline can be extremely useful for the researchers from either field. The current progress of the research on synthetic metalloporphyrin catalysts has led to the development of several systems that are able to reproduce the heme-enzyme mediated oxygenation and oxidation reactions, at least in terms of reaction types, mechanisms and often rates. These achievements have stimulated the of creating metalloporphyrin catalysts which are both ambitious project efficient and stable enough to become competitive for large-scale industrial processes. Although this project is still far from being realized, the efforts in this direction parallel those aimed at the application of heme enzymes to chemical technologies, e. g. for the mild, selective oxidation of organics or the detoxification of pollutants. Both the two approaches will be advantageous because while the enzyme systems can achieve selectivities which are probably unattainable by synthetic catalysts, the latter can be active under experimental conditions that would readily inactivate the enzymes.

Reviews in Inorganic Chemistry Macmillan

To the biochemist, water is, of course, the only solvent worthy of consideration, because natural macromolecules exhibit their remarkable conformational properties only in aqueous media. Probably because of these remarkable properties, biochemists do not tend to regard proteins, nucleotides and polysaccharides as polymers in the way that real polymer scientists regard methyl methacrylate and polyethylene. The laws of polymer statistics hardly apply to native biopolymers. Between these two powerful camps, lies the No-man's land of water soluble synthetic polymers: here, we must also include natural polymers which have been chemically modified. The scientific literature of these compounds is characterized by a large number of patents, which is usually a sign of little basic understanding, of 'know-how' rather than of 'know-why'. Many of the physical properties of such aqueous solutions are intriguing: the polymer may be completely miscible with water, and yet water is a 'poor' solvent, in terms of polymer parlance. ~kiny of the polymers form thermorever sible gels on heating or cooling. The phenomena of exothermic mixing and salting-in are common features of such systems: neither can be fully explained by the available theories. Finally, the eccentric behaviour of polyelectrolytes is well documented. Despite the lack of a sound physico-chemical foundation there is a general awareness of the importance of water soluble vinyl, acrylic, polyether, starch and cellulose derivatives, as witnessed again by ~he vast patent literature.

Electrical Properties of Polymers CRC Press

How an ordinary mammal manipulated nature to become technologically sophisticated city-dwellers -- and why our history points to an optimistic future in the face of environmental crisis Our species long lived on the edge of starvation. Now we produce enough food for all 7 billion of us to eat nearly 3,000 calories every day. This is such an astonishing thing in the history of life as to verge on the miraculous. The Big Ratchet is the story of how it happened, of the ratchets -- the technologies and innovations, big and small -- that propelled our species from hunters and gatherers on the savannahs of Africa to shoppers in the aisles of the supermarket. The Big Ratchet itself came in the twentieth century, when a range of technologies -- from fossil fuels to scientific plant breeding to nitrogen fertilizers -- combined to nearly quadruple our population in a century, and to grow our food supply even faster. To some, these technologies are a sign of our greatness; to others, of our hubris. MacArthur fellow and Columbia University professor Ruth DeFries argues that the debate is the wrong one to have. Limits do exist, but every limit that has confronted us, we have surpassed. That cycle of crisis and growth is the story of our history; indeed, it is the essence of The Big Ratchet. Understanding it will reveal not just how we reached this point in our history, but how we might survive it.

Advances in Catalytic Activation of Dioxygen by Metal Complexes Royal Society of Chemistry

This book highlights recent progress and challenges in size-controlled synthesis, size-dependent properties, characterization and applications of metal nanoclusters.

Phagocytes: Advances in Research and Application: 2011 Edition Springer Science & Business Media

This book provides in-depth knowledge about the fabrications, structures, properties and applications of three outstanding electrochemically engineered nanoporous materials including porous silicon, nanoporous alumina and nanotubular titania. The book integrates three major themes describing these materials. The first theme is on porous silicon reviewing the methods for preparation by electrochemical etching, properties and methods for surface functionalization relevant for biosensing applications. Biomedical applications of porous silicon are major focus, described in several chapters reviewing recent developments on bioanalysis, emerging capture probes and drug delivery. The second theme on nanoporous alumina starts with describing the concept of self-organized electrochemical process used for synthesis nanopore and nanotube structures of valve metal oxides and reviewing recent development and progress on this field. The following chapters are focused mainly on optical properties and biosensing application of nanoporous

alumina providing the reader with the depth of understanding of the structure controlled optical and photonic properties and design of optical biosensing devices using different detection principles such as photoluminescence, surface plasmon resonance, reflective spectrometry, wave guiding, Raman scattering etc. The third theme is focused on nanotubular titania reviewing three key applications including photocatalysis, solar cells and drug delivery. The book represents an important resource for academics, researchers, industry professionals, post-graduate and high-level undergraduate students providing them with both an overview of the current state-of-the-art on these materials and their future developments.

Binding, Transport and Storage of Metal Ions in Biological Cells Springer

Introducing the advances of functional membranes along with their design and environmental applications. This book is a useful reference for environmental chemists and membrane engineers.

Physical Methods of Chemistry: pt. 1A. Components of scientific instruments ScholarlyEditions

Peroxynitrite detection and quantification provides critical information in understanding its biological implications. It will be welcomed by the community particularly medicinal and analytical chemists, developers of sensors and probes and analytical equipment manufacturers.

Student Solutions Manual for Physical Chemistry CRC Press

Although many books exist on the subject of chiral chemistry, they only briefly cover chiral synthesis and analysis as a minor part of a larger work, to date there are none that pull together the background information and latest advances in one comprehensive reference work. Comprehensive Chirality provides a complete overview of the field, and includes chiral research relevant to synthesis, analytic chemistry, catalysis, and pharmaceuticals. The individual chapters in each of the 9 volumes provide an in depth review and collection of references on definition, technology, applications and a guide/links to the related literature. Whether in an Academic or Corporate setting, these chapters will form an invaluable resource for advanced students/researchers new to an area and those who need further background or answers to a particular problem, particularly in the development of drugs. Chirality research today is a central theme in chemistry and biology and is growing in importance across a number of disciplinary boundaries. These studies do not always share a unique identifying factor or subject themselves to clear and concise definitions. This work unites the different areas of research and allows anyone working or researching in chiral chemistry to navigate through the most essential concepts with ease, saving them time and vastly improving their understanding. The field of chirality counts several journals that are directly and indirectly concerned with the field. There is no reference work that encompasses the entire field and unites the different areas of research through deep foundational reviews. Comprehensive Chirality fills this vacuum, and can be considered the definitive work. It will help users apply context to the diverse journal literature offering and aid them in identifying areas for further research and/or for solving problems. Chief Editors, Hisashi Yamamoto (University of Chicago) and Erick Carreira (ETH Zürich) have assembled an impressive, world-class team of Volume Editors and Contributing Authors. Each chapter has been painstakingly reviewed and checked for consistent high quality. The result is an authoritative overview which ties the literature together and provides the user with a reliable background information and citation resource.

Current Medicinal Chemistry Academic Press

Phenylacetates—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Phenylacetates. The editors have built Phenylacetates—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Phenylacetates in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Phenylacetates—Advances in Research and Application: 2012 Edition has been produced by the world ' s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Advances in Functional Separation Membranes Royal Society of Chemistry

Each no. represents the results of the FDA research programs for half of the fiscal year.

Metalloporphyrins Catalyzed Oxidations Newnes

With roughly 5500 references, this book may be considered more of a treatise than a mere introduction to green chemistry. Using an unconventional approach, the author provides a broad but thorough review of the subject, covering traditional green chemistry topics such as catalysis, benign solvents, and alternative feedstocks before moving on to less frequently covered topics such as chemistry of longer wear and population and the environmental chemistry. Topics such as these highlight the importance of chemistry to everyday life and demonstrate the real benefits that wider exploitation of green chemistry can have for society.

Chemistry and Technology of Water-Soluble Polymers ScholarlyEditions

Mechanical methods of the activation of chemical processes are currently widely used for the synthesis of various compounds. The present monograph deals with the development of a novel approach to mechanochemical synthesis based on reactions of solid acids, bases, hydrated compounds, crystal hydrates, basic and acidic salts. This method has been called soft mechanochemical synthesis. The monograph includes the papers published by the present authors. They describe the results of their investigations n the last two decades. New theoretical and experimental data on kinetics and mechanism of soft mechanochemical reactions in the mixtures of compounds mentioned above to give complex oxide compounds are presented. The description of new high energetic and high efficient mills providing effective occurrence of these

reactions is delivered. The possibilities of applying soft mechanochemical synthesis for materials used in catalysts, material science, electronics, etc., are discussed. The advantages of the method proposed in comparison with other methods are demonstrated. The monograph is designed for researchers, engineers and technicians engaged in chemical and ceramic industry, for scientists and students specialized in the area of development, and application of new materials.

Issues in Industrial, Applied, and Environmental Chemistry: 2011 Edition CRC Press

Written by leading experts in the field the book summarises the basic principles of fullerene chemistry but also highlights remarkable advances that have occurred in recent years.

Advances in Flow Analysis Springer Science & Business Media

Completely revised and updated, this 2nd Edition of Reactivity and Mechanism in Organic Chemistry is an ideal introduction to the quantitative description of organic reactivity for students in undergraduate and masters chemistry programmes. The book proceeds logically from qualitative molecular orbital theory as a tool for the description of bonding phenomena to combining this with thermochemical data to rationalise concepts such as molecular strain and hyperconjugation. Next, transition state theory, for examining organic reactivity phenomena, is introduced and its relation to energy surfaces and simple rate equations is discussed. On this basis more specific reactivity concepts commonly used in organic chemistry are explored such as the Bell – Evans – Polanyi principle, Marcus theory, HSAB principle, Hammett correlations, the Mayr – Patz equation, and FMO theory. How these reactivity models are applied is demonstrated for pericyclic reactions and selected rearrangement reactions involving transient intermediates such as radicals, diradicals, or carbocations, and for reactions involving classical electrophile/nucleophile combinations.

THE RAINBOW FISH Elsevier

Chemistry on Modified Oxide and Phosphate Surfaces: Fundamentals and Applications is in the authoritative Interface Science and Technology Series and presents the key features and applications of modified oxide and phosphate surfaces. Examines both basic and applied aspects Incorporates examples from recent publications

Solvent Processes in Refining Technology World Scientific

This first book to cover different injection techniques not only provides a comprehensive overview of methodologies and instrumentation, it also covers recent advances in flow method analysis, with an appendix listing additional databases, instrumentation and methods on the Internet. A definite must-have for every chemist working in this field.

Advances in Heterocyclic Chemistry Basic Books

This new volume explores the integration of bionanomaterials and sustainable resources for the development of new and emerging sustainable processes. It highlights the concept of essential bionanomaterials derived from sustainable resources with examples of interdisciplinary methodologies and research that highlight the reuse of biomass waste as well as the proper usage of green technologies. The volume considers the most recent trends, challenges, and applications in bionanomaterials derived from sustainable sources in energy production and environmental mitigation. The book looks at state-of-the-art trends in the use of bionanomaterials for renewable energy such as in production of solar energy, for energy harvesting, and for energy conversion and storage. Chapters consider the application of bionanomaterials for the development of improved optical and electrical biosensors. The volume goes on to address the promising use of bionanomaterials for environmental remediation, such as for recovering heavy metals, radioactive metals, and other pollutants from wastewater, from river water, from soils, etc. Other topics include the use of sustainable nanomaterials in the food industry, in the biomedical field, in ecological research, and more.

Peroxynitrite Detection in Biological Media Elsevier

The subject of dioxygen activation and homogeneous catalytic oxidation by metal complexes has been in the focus of attention over the last 20 years. The widespread interest is illustrated by its recurring presence among the sessions and subject areas of important international conferences on various aspects of bioinorganic and coordination chemistry as well as catalysis. The most prominent examples are ICCC, ICBIC, EUROBIC, ISHC, and of course the ADHOC series of meetings focusing on the subject itself. Similarly, the number of original and review papers devoted to various aspects of dioxygen activation are on the rise. This trend is due obviously to the relevance of catalytic oxidation to biological processes such as dioxygen transport, and the action of oxygenase and oxidase enzymes related to metabolism. The structural and functional modeling of metalloenzymes, particularly of those containing iron and copper, by means of low-molecular complexes of iron, copper, ruthenium, cobalt, manganese, etc., have provided a wealth of indirect information helping to understand how the active centers of metalloenzymes may operate. The knowledge gained from the study of metalloenzyme models is also applicable in the design of transition metal complexes as catalytsts for specific reactions. This approach has come to be known as biomimetic or bioinspired catalysis and continues to be a fruitful and expanding area of research.

Sustainable Nanomaterials for Biosystems Engineering Springer Science & Business Media

Issues in Industrial, Applied, and Environmental Chemistry: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Industrial, Applied, and Environmental Chemistry. The editors have built Issues in Industrial, Applied, and Environmental Chemistry: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Industrial, Applied, and Environmental Chemistry in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Industrial, Applied, and Environmental Chemistry: 2011 Edition has been produced by the world ' s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Soft Mechanochemical Synthesis World Scientific

Handbook of Pharmacogenomics and Stratified Medicine is a comprehensive resource to understand this rapidly advancing field aiming to deliver the right drug at the right dose to the right patient at the right time. It is designed to provide a detailed, but accessible review of the entire field from basic principles to applications in various diseases. The chapters are written by international experts to allow

readers from a wide variety of backgrounds, clinical and non-clinical (basic geneticists, pharmacologists, clinicians, trialists, industry personnel, ethicists) to understand the principles underpinning the progress in this area, the successes, failures and the challenges ahead. To be accessible to the widest range of readers, the clinical application section introduces the disease process, existing therapies, followed by pharmacogenomics and stratified medicine details. Medicine is the cornerstone of modern therapeutics prescribed on the basis that its benefit should outweigh its risk. It is well known that people respond differently to medications and in many cases the risk-benefit ratio for a particular drug may be a gray area. The last decade has seen a revolution in genomics both in terms of technological innovation and discovering genetic markers associated with disease. In parallel there has been steady progress in trying to make medicines safer and tailored to the individual. This has occurred across the whole spectrum of medicine, some more than others. In addition there is burgeoning interest from the pharmaceutical industry to leverage pharmacogenomics for more effective and efficient clinical drug development. Provides clinical and non-clinical researchers with practical information normally beyond their usual areas of research or expertise Includes an basic principles section explaining concepts of basic genetics, genetic epidemiology, bioinformatics, pharmacokinetics and pharmacodynamics Covers newer technologies – next generation sequencing, proteomics, metabolomics Provides information on animal models, lymphoblastoid cell lines, stem cells Provides detailed chapters on a wide range of disease conditions, implementation and regulatory issues Includes chapters on the global implications of pharmacogenomics