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with contributions by numerous experts
In an era of globalization and urbanization, various social, economic, and environmental challenges surround advances in modern biological sciences. Considering how biological knowledge and practice are intrinsically related to building a sustainable relationship between nature and human society, the roles of biology education need to be rethought to respond to issues and changes to life in this biocentury. This book is a compilation of selected papers from the Twenty Third Biennial Conference of the Asian Association for Biology Education 2010. The title, Biology Education for Social and Sustainable Development, demonstrates how rethinking and reconstruction of biology education in the Asia-Pacific region are increasingly grounded in deep understandings of what counts as valuable local knowledge, practices, culture, and ideologies for national and global issues, and education for sustainable development. The 42 papers by eminent science educators from Australia, China, Philippines, Singapore, Taiwan, and the U.S., represent a diversity of views, understandings, and practices in biology education for sustainable development from school to university in diverse education systems and social-cultural settings in the Asia-Pacific region and beyond. The book is an invaluable resource and essential reference for researchers and educators on Asian perspectives and practices on biology education for social and sustainable development.
The phenomenon of catalysis is found in many homogeneous and heterogeneous systems undergoing chemical change, where it effects the rates of approach to the equilibrium state in processes as diverse as those found in the stars, the earth's mantle, living organisms, and the various chemistries utilized by industry. The economies and the living standards of both developed and developing countries depend to varying degrees upon the efficacy of their chemical industries. Con sequently, this century has seen a wide exploration and expansion of catalytic chemistry together with an intensive investigation of specific, essential processes like those contributing to life-supporting agricultures. Prime among the latter must surely be the "fixation" of atmospheric nitrogen by catalytic hydrogenation to anhydrous ammonia, still the preferred synthetic precursor of the nitrogenous components of fertil-

izers. In each decade contemporary concepts and techniques have been used to further the understanding, as yet incomplete, of the catalyst, the adsorbates, the surface reactions, and the technology of large-scale operation. The contributors to the present volume review the state of the art, the science, and the technology; they reveal existing lacunae, and suggest ways forward. Around the turn of the century, Sabatier's school was extending the descriptive catalytic chemistry of hydrogenation by metals to include almost all types of multiple bond. The triple bond of dinitrogen, which continued to be more resistant than the somewhat similar bonds in carbon monoxide and ethyne, defied their efforts.

Arbitration in Switzerland

This book is a compilation of many suggestions, much advice, and even more hard work. Its main objective is to provide solutions to the problems which were originally proposed in the first 12 chapters of Problems from the Book. The volume is far more than a collection of solutions. The solutions are used as motivation for the introduction of some very clear mathematical expositions. This is absolutely state-of-the-art material. Everyone who loves mathematics and mathematical thinking should acquire this book.

This book presents critical reviews of the current position and future trends in modern chemical research. It offers short and concise reports on chemistry, each written by world renowned experts.

The chemical properties of superoxide ion, its biological role, and the role of other oxygen radicals which arise as a result of its transformations are contained in this text. In Volume I the principal reactions of superoxide ion, including protonation reactions with proton donors, nucleophilic reactions with esters, alkyl halides and other compounds, electron transfer reactions with quinones and metal complexes, are described. Basic quantitative data including rate constants and yields for the reactions of superoxide ion of all types are given in tables. This volumecontains the mechanisms of the generation of oxygen radicals in cells and the interaction of superoxide ion with cell components. The role of superoxide ion in lipid peroxidation and destruction of proteins and nucleic acids is explained, as well as oxygen radicals in the mechanisms of toxic and therapeutic action of drugs, especially anticancer antibiotics. In addition, the action of superoxide ion and other oxygen radicals on plants, micro-, and macroorganisms is discussed, along with the role of oxygen radicals in normal metabolic and pathological processes.

Examines recent advances in the use of polymeric reagents and catalysts with a special emphasis on new compounds, synthetic methods, and industrial processes. Brings these advances to the attention of those who are involved in organic synthesis and desire a more thorough understanding of polymers and polymeric reagents. Contains comprehensive chapters devoted to polymeric oxidizing agents, Wittig reagents, and synthesis of cross-linked polymeric templates for chiral recognition. Presents opportunities for invention and use of many new polymeric reagents and catalysts.

Alexandria, Renee and Danielle are three very different women with one thing in common: their late husband!

The global biodiversity and climate emergencies demand transformative changes to human activities. For example, food production relies on synthetic, industrial and non-sustainable products for managing pests, weeds and diseases of crops. Sustainable farming requires approaches to managing these agricultural constraints that are more environmentally benign and work with rather than against nature. Increasing pressure on synthetic products has reinvigorated efforts to identify alternative pest management options, including plant-based solutions that are environmentally benign and can be tailored to different farmers' needs, from commercial to small holder and subsistence farming. Botanical insecticides and pesticidal plants can offer a novel, effective and more sustainable alternative to synthetic products for controlling pests, diseases and weeds. This Special Issue reviews and reports the latest developments in plant-based pesticides from identification of bioactive plant chemicals, mechanisms of activity and validation of their use in horticulture and disease vector control. Other work reports applications in rice weeds, combination biopesticides and how chemistry varies spatially and influences the effectiveness of botanicals in different locations. Three reviews assess wider questions around the potential of plant-based pest management to address the global challenges of new, invasive and established crop pests and as-yet underexploited pesticidal plants.

This book covers the fundamental aspects of the electrochemistry and redox enzymes that underlie enzymatic bioelectrocatalysis, in which a redox enzyme reaction is coupled with an electrode reaction. Described here are the basic concept and theoretical aspects of bioelectrocatalysis and the various experimental techniques and materials used to study and characterize related problems. Also included are the various applications of bioelectrocatalysis to bioelectrochemical devices including biosensors, biofuel cells, and bioreactors. This book is a unique source of information in the area of enzymatic bioelectrocatalysis, approaching the subject from a cross-disciplinary point of view.

The first source on this expanding analytical science, this reference explores advances in the instrumentation, design, and application of techniques with electrogenerated chemiluminescence (ECL), examining the use and impact of ECL-based assays in clinical diagnostics, life science research, environmental testing, food and water evaluation, and th

This review volume highlights advances in both theoretical and experimental techniques and points out both the progress made and the challenges to overcome in the near future. The topics cover a broad spectrum going from surface characterization, investigation of thermodynamics and kinetics mechanistic pathways, electrochemical experiments and theory, multi-scale modeling applied to synthesis and growth processes such as electrodeposition, and corrosion reactions arising from the nanosize of electrocatalysts that affect their lifetime and activity.

In this book, leading experts provide timely and comprehensive information on methods for conditional mutagenesis in the mouse and their application to model human physiology and pathophysiology. The book illustrates how sophisticated genetic manipulations of the mouse genome are employed to model human diseases and to identify underlying molecular mechanisms. In addition, it considers the development of new drugs to treat human diseas-

es.

This book provides a much-needed analysis of the current research in the global epidemic of electronic bullying. Scholars and professionals from the Americas, Europe, and Asia offer data, insights, and solutions, acknowledging both the social psychology and technological contexts underlying cyberbullying phenomena. Contributors address questions that are just beginning to emerge as well as longstanding issues concerning family and gender dynamics, and provide evidence-based prevention and intervention strategies for school and home. The global nature of the book reflects not only the scope and severity of cyberbullying, but also the tenacity of efforts to control and eradicate the problem. Included in the coverage: • Gender issues and cyberbullying in children and adolescents: from gender differences to gender identity measures. • Family relationships and cyberbullying. • Examining the incremental impact of cyberbullying on outcomes over and above traditional bullying in North America. • A review of cyberbullying and education issues in Latin America. • Cyberbullying prevention from child and youth literature. • Cyberbullying and restorative justice. Cyberbullying across the Globe is an essential resource for researchers, graduate students, and other professionals in child and school psychology, public health, social work and counseling, educational policy, and family advocacy.

The tetracyclines have an illustrious history as therapeutic agents which dates back over half a century. Initially discovered as an antibiotic in 1947, the four ringed molecule has captured the fancy of chemists and biologists over the ensuing decades. Of further interest, as described in the chapter by George Armelagos, tetracyclines were already part of earlier cultures, 1500-1700 years ago, as revealed in traces of drug found in Sudanese Nubian mummies. The diversity of chapters which this book presents to the reader should illus trate the many disciplines which have examined and seen benefits from these fascinating natural molecules. From antibacterial to anti-inflammatory to anti autoimmunity to gene regulation, tetracyclines have been modified and redesigned for various novel properties. Some have called this molecule a biol ogist's dream because of its versatility, but others have seen it as a chemist's nightmare because of the synthetic chemistry challenges and "chameleon-like" properties (see the chapter by S. Schneider).

This book is a comprehensive exploration of the provisions of the Court of Arbitration for Sport (CAS). Providing detailed analysis of the CAS Rules. Each provision is viewed within the larger context of international arbitration, in Switzerland, and procedural solutions are suggested which are transposable to international arbitration generally.--Provided by publisher.

The 2010 Asian Conference on Intelligent Information and Database Systems (ACIIDS) was the second event of the series of international scientific conferences for research and applications in the field of intelligent information and database systems. The aim of ACIIDS 2010 was to provide an international forum for scientific research in the technologies and applications of intelligent information, database systems and their applications. ACIIDS 2010 was co-organized by Hue University (Vietnam) and Wroclaw University of Technology (Poland) and took place in Hue city (Vietnam) during March 24–26, 2010. We received almost 330 papers from 35 countries. Each paper was peer reviewed by at least two

members of the International Program Committee and International Reviewer Board. Only 96 best papers were selected for oral presentation and publi- tion in the two volumes of the ACIIDS 2010 proceedings. The papers included in the proceedings cover the following topics: artificial social systems, case studies and reports on deployments, collaborative learning, collaborative systems and applications, data warehousing and data mining, database management technologies, database models and query languages, database security and integrity,- business, e-commerce, e-finance, e-learning systems, information modeling and - quirements engineering, information retrieval systems, intelligent agents and mul- agent systems, intelligent information systems, intelligent internet systems, intelligent optimization techniques, object-relational DBMS, ontologies and information sharing, semistructured and XML database systems, unified modeling language and unified processes, Web services and Semantic Web, computer networks and communication systems.

Atomic and Nano Scale Materials for Advanced Energy Conversion Discover the latest advancements in energy conversion technologies used to develop modern sustainable energy techniques In Atomic and Nano Scale Materials for Advanced Energy Conversion, expert interdisciplinary researcher Dr. Zongyou Yin delivers a comprehensive overview of nano-to-atomic scale materials science, the development of advanced electrochemical, photochemical, photoelectrochemical, and photovoltaic energy conversion strategies, and the applications for sustainable water splitting and other technologies. The book offers readers cutting-edge information of two-dimensional nano, mixed-dimensional nano, nano rare earth, clusters, and single atoms. It constructively evaluates emerging nano-to-atomic scale energy conversion technologies for academic research and development (R&D) researchers and industrial technique consultants and engineers. The author sets out a systematic analysis of recent energy-conversion science, covering topics like adaptable manufacturing of Van der Waals heterojunctions, mixed-dimensional junctions, tandem structures, and superlattices. He also discusses function-oriented engineering in polymorphic phases, photon absorption, excitons-charges conversion, non-noble plasmonics, and solid-liquid-gas interactions. Readers will also benefit from: A thorough introduction to emerging nanomaterials for energy conversion, including electrochemical, photochemical, photoelectrochemical, and photovoltaic energy conversion An exploration of clusters for energy conversion, including electrochemical, photochemical, and photoelectrochemical clusters Practical discussions of single atoms for energy conversion in electrochemical, photochemical, and photoelectrochemical energy conversion technologies A thorough analysis of future perspectives and directions in advanced energy conversion technology Perfect for materials scientists, photochemists, electrochemists, and inorganic chemists, Atomic and Nano Scale Materials for Advanced Energy Conversion is also a must-read resource for catalytic chemists interested in the intersection of advanced chemistry and physics in energy conversion technologies.

The book is a multi-author survey (in 15 chapters) of the current state of knowledge and recent developments in our understanding of oxide surfaces. The author list includes most of the acknowledged world experts in this field. The material covered includes fundamental theory and experimental studies of the geometrical,

vibrational and electronic structure of such surfaces, but with a special emphasis on the chemical properties and associated reactivity. The main focus is on metal oxides but coverage extends from 'simple' rocksalt materials such as MgO through to complex transition metal oxides with different valencies.

In this authoritative guide, expert investigators provide cutting-edge chapters dealing with modern plant systems biology approaches. This work provides the kind of detailed description and implementation advice that is crucial for getting optimal results.
This volume covers some of the most widely used protocols on nanocanonical amino acids, providing details and advice for users to get each method up and running for their chosen application. Chapters have been divided into three parts describing methods for protein production in the test tube, in prokaryotes, and in eukaryotes. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Noncanonical Amino Acids: Methods and Protocols aims to provide readers with techniques that enable them to design new experiments and create new areas of research.
This book is a printed edition of the Special Issue "Offshore Renewable Energy: Ocean Waves, Tides and Offshore Wind" that was published in Energies
This book covers the recent advances in electrode materials and their novel applications at the cross-section of advanced materials. The book is divided into two sections: State-of-the-art electrode materials; and engineering of applied electrode materials. The chapters deal with electrocatalysis for energy conversion in view of bionanotechnology; surfactant-free materials and polyoxometalates through the concepts of biosensors to renewable energy applications; mesoporous carbon, diamond, conducting polymers and tungsten oxide/conducting polymer-based electrodes and hybrid systems. Numerous approaches are reviewed for lithium batteries, fuel cells, the design and construction of anode for microbial fuel cells including phosphate polyanion electrodes, electrocatalytic materials, fuel cell reactions, conducting polymer based hybrid nanocomposites and advanced nanomaterials.

This clinical casebook provides a concise yet comprehensive state-of-the-art review of liver disease. Presented in a case-based format, each case features a scenario centered on a different variant of liver disease, with sections on case history, diagnosis/assessment, treatment, outcomes, alternative approaches, and clinical pearls. Diseases covered include drug-induced liver injury, acute hepatitis, chronic hepatitis, NAFLD, and cholangitis. Scenarios such as liver disease in pregnancy, elevated liver function tests, and liver transplants are also presented in the casebook. Written by experts in the field, Liver Disease: A Clinical Casebook is a valuable resource for clinicians and practitioners who treat patients with liver disease.
The critically acclaimed laboratory standard for more than forty years, Methods in Enzymology is one of the most highly respected publications in the field of biochemistry. Since 1955, each volume has been eagerly awaited, frequently consulted, and praised by researchers and reviewers alike. More than 285 volumes have

been published (all of them still in print) and much of the material is relevant even today--truly an essential publication for researchers in all fields of life sciences.

Nanomaterials for Electrocatalysis provides an overview of the different types of nanomaterials, design principles and synthesis protocols used for electrocatalytic reactions. The book is divided into four parts that thoroughly describe basic principles and fundamental of electrocatalysis, different types of nanomaterials used, and their electrocatalytic applications, limitations and future perspectives. As electrochemical systems containing nanomaterials, with relevance to experimental situation, yield better results, this book highlights new information and findings. Provides an overview of nanomaterials applications for electrocatalytic processes, such as oxygen reduction reaction (ORR), oxygen evolution reaction (OER), hydrogen evolution reaction (HER) and CO2 reduction reaction (CO2RR) Provides information on the design and development of various nanomaterials appropriate for electrocatalytic applications Assesses the challenges of manufacturing nanomaterials at an industrial scale for electronic applications

This volume - the first of this series dealing with angiosperms - comprises the treatments of 73 families, representing three major blocks of the dicotyledons: magnoliids, centrosperms, and hamamelids. These blocks are generally recognized as subclasses in modern textbooks and works of reference. We consider them a convenient means for structuring the hundreds of di cotyledon families, but are far from taking them at face value for biological, let alone mono phyletic entities. Angiosperm taxa above the rank of family are little consolidated, as is easily seen when comparing various modern classifications. Genera and families, in contrast, are comparatively stable units -and they are important in practical terms. The genus is the taxon most frequently recognized as a distinct entity even by the layman, and generic names provide the key to all in formation available about plants. The family is, as a rule, homogeneous enough to conve niently summarize biological information, yet comprehensive enough to avoid excessive re dundance. The emphasis in this series is, therefore, primarily on families and genera.

This book focuses on theoretical and computational studies by the editor’s group on the direct hydroxylation of methane, which is one of the most challenging subjects in catalyst chemistry. These studies of more than 20 years include gas-phase reactions by transition-metal oxide ions, enzymatic reactions by two types of methane monooxygenase (soluble and particulate MMO), catalytic reactions by metal-exchanged zeolites, and methane C–H activation by metal oxide surfaces. Catalyst chemistry has been mostly empirical and based on enormous experimental efforts. The subject of the title has been tackled using the orbital interaction and computations based on extended Hückel, DFT, and band structure calculations. The strength of the theoretical studies is in the synergy between theory and experiment. Therefore, the group has close contacts with experimentalists in physical chemistry, catalyst chemistry, bioinorganic chemistry, inorganic chemistry, and surface chemistry. This resulting book will be useful for the theoretical analysis and design of catalysts.

- Microporous Organic Polymers: Design, Synthesis, and Function By J.-X. Jiang and A. I. Cooper - Hydrogen, Methane and Carbon

Dioxide Adsorption in Metal-Organic Framework Materials By X. Lin, N. R. Champness, and M. Schröder -Doping of Metal-Organic Frameworks with Functional Guest Molecules and Nanoparticles By F. Schröder and R. A. Fischer -Chiral Metal-Organic Porous Materials: Synthetic Strategies and Applications in Chiral Separation and Catalysis By K. Kim, M. Banerjee, M. Yoon, and S. Das -Controlled Polymerization by Incarceration of Monomers in Nanochannels By T. Uemura and S. Kitagawa -Designing Metal-Organic Frameworks for Catalytic Applications L. Ma and W. Lin -Magnetic and Porous Molecule-Based Materials By N. Roques, V. Mugnaini, and J. Veciana

Provides a framework for considering the full range of approaches to vulnerability, impacts and adaptation assessment due to climate change. It aims to help professionals such as researchers, policymakers, sectoral planners and consultants to select the appropriate methods and tools for their particular context and adaptation situation.