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Heterogeneous Catalysis
 Emerging Technologies and Solutions for the Sustainable Climate Change Challenges
 Handbook of Sol-Gel Science and Technology
 Metal-Organic Framework Composites
 Refining Biomass Residues for Sustainable Energy and Bioproducts
 International Conference on Material Science and Material Engineering [MSME2014]
 Mechanical, Electronic and Engineering Technologies (ICMEET 2014)
 Nanotechnology for Bioenergy and Biofuel Production
 Sensing and Biosensing with Optically Active Nanomaterials
 Functionalized Nanomaterials Based Devices for Environmental Applications
 Materials for Supercapacitor Applications
 Nano- and Biocatalysts for Biodiesel Production
 Novel Nanomaterials for Biomedical, Environmental and Energy Applications
 Handbook of Biofuels Production
 Engineering Tolerance in Crop Plants Against Abiotic Stress
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 Arsenic Toxicity: Challenges and Solutions
 The Routledge Handbook of Second Language Acquisition and Individual Differences
 Design of Macrocyclic Compounds for Biomedical Applications
 Carbon Dioxide Capture and Conversion
 Soil and Crop Sensing for Precision Crop Production
 Environmental Policy and Renewable Energy Equipment Exports
 Polymeric Hydrogels as Smart Biomaterials
 SME Mineral Processing and Extractive Metallurgy Handbook
 Advanced Nanomaterials for Catalysis and Energy
 Big Data Analytics for Cyber-Physical Systems
 Immigration and Refugee Law in Russia
 Polymer-based Nanocomposites for Energy and Environmental Applications
 Grandparents and the Law
 Proton Exchange Membrane Fuel Cells
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 Handbook of Nanomaterials for Industrial Applications
 Smart Wheelchairs and Brain-computer Interfaces
 Web Services: Concepts, Methodologies, Tools, and Applications
 Handbook of Nanomaterials for Sensing Applications
 Electrospinning of Nanofibers for Battery Applications
 Guidebook for direct access entities engaging in the Green Climate Fund accreditation process
 Interfacial Engineering in Functional Materials for Dye-Sensitized Solar Cells
 Biodegradable Materials and Their Applications

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LEBLANC DWAYNE

Heterogeneous Catalysis DEStech Publications, Inc

This book highlights research and survey articles dedicated to big data techniques for cyber-physical system (CPS), which addresses the close interactions and feedback controls between cyber components and physical components. The book first discusses some fundamental big data problems and solutions in large scale distributed CPSs. The book then addresses the design and control challenges in multiple CPS domains such as vehicular system, smart city, smart building, and digital microfluidic biochips. This book also presents the recent advances and trends in the maritime simulation system and the flood defence system.

[Emerging Technologies and Solutions for the Sustainable Climate Change Challenges](#) John Wiley & Sons

Materials for Supercapacitor Applications provides a snapshot of the present status of this rapidly growing field. It covers motivations, innovations, ongoing breakthroughs in research and development, innovative materials, impacts, and perspectives, as well as the challenges and technical barriers to identifying an ideal material for practical applications. This comprehensive reference by electro-chemists explains concepts in materials selection and their unique applications based on their electro-chemical properties. Chemists, chemical and electrical engineers, material scientists, and research scholars and students interested in energy will benefit from this overview of many important reference points in understanding the materials used in supercapacitors. Provides an overview of the formulation for new materials and how to characterize them for supercapacitor applications Describes all the information on the available materials for supercapacitor applications Outlines potential material characterization methods Discusses perspectives and future directions of the field

[Handbook of Sol-Gel Science and Technology](#) Frontiers Media SA

Collection of selected, peer reviewed papers from the 2014 International Conference on Mechanical, Electronic and Engineering Technology (ICMEET 2014), May 9-11, 2014, Taipei, Taiwan. Volume is indexed by Thomson Reuters CPCI-S (WoS). The 112 papers are grouped as follows: Chapter 1: Materials Science and Processing, Chapter 2: Research and Technologies for Engineering, Chapter 3: Electrical Engineering and Apparatus, Chapter 4: Electronics and Integrated Circuits, Embedded Technology, Chapter 5: Construction and Geology Research, Chapter 6: Analysis, Testing and Monitoring, Chapter 7: Robotics and Control Systems, Chapter 8: Informational and Communication Technology, Signal Processing and Algorithms

[Metal-Organic Framework Composites](#) Elsevier

Arsenic (As) is a widely distributed element in the environment having no known useful physiological function in plants or animals. Historically, this metalloid has been known to be used widely as a poison. Effects of arsenic have come to light in the past few decades due to its increasing contamination in several parts of world, with the worst situation being in Bangladesh and West Bengal in India. This edited volume brings together diverse group of environmental science, sustainability and health researchers to address the challenges posed by global mass poisoning caused by arsenic water contamination. The book covers sources of arsenic contamination, and its impact on human health and on prospective remediation both by bioremediation and phytoremediation. Applications of advance techniques such as genetic engineering and nanotechnology are also discussed to resolve the issue of arsenic contamination in ground water and river basins. The book sheds light on this global environmental issue, and proposes solutions to remove contamination through a multi-disciplinary lens and case studies from Bangladesh and India. The book may serve as a reference to environment and sustainability researchers, students and

policy makers. It delivers an outline to graduate, undergraduate students and researchers, as well as academicians who are working on arsenic toxicity with respect to remediation and health issues.

[Refining Biomass Residues for Sustainable Energy and Bioproducts](#) Springer Nature

The MSME2014 is hosted by Advanced Information Science Research Center (AISRC) and is sponsored by DEStech Publications, Inc., University of East Asia, University of Mysore and Reitaku University. MSME2014 aims to provide an excellent international academic forum for sharing knowledge and results in theory, methodology and applications in the aspects of material science and material engineering. This MSME2014 proceedings tends to collect the up-to-date, comprehensive and worldwide state-of-art knowledge on material science and material engineering, including material composites, ceramic, metal alloy material, polymer material, building materials, environmental friendly material, material performance, etc. All of accepted papers were subjected to strict peer- reviewing by 2-4 expert referees. The papers have been selected for this volume because of quality and the relevance to the conference. We hope this book will not only provide the readers a broad overview of the latest research results, but also provide the readers a valuable summary and reference in these fields.

[International Conference on Material Science and Material Engineering \[MSME2014\]](#)

Woodhead Publishing

How do immigration and refugee laws work 'in action' in Russia? This book offers a complex, empirical and nuanced understanding.

[Mechanical, Electronic and Engineering Technologies \(ICMEET 2014\)](#) CRC Press

This completely updated and expanded second edition stands as a comprehensive knowledgebase on both the fundamentals and applications of this important materials processing method. The diverse, international team of contributing authors of this reference clarify in extensive detail properties and applications of sol-gel science and technology as it pertains to the production of substances, active and non-active, including optical, electronic, chemical, sensor, bio- and structural materials. Essential to a wide range of manufacturing industries, the compilation divides into the three complementary sections: Sol-Gel Processing, devoted to general aspects of processing and recently developed materials such as organic-inorganic hybrids, photonic crystals, ferroelectric coatings, and photocatalysts; Characterization of Sol-Gel Materials and Products, presenting contributions that highlight the notion that useful materials are only produced when characterization is tied to processing, such as determination of structure by NMR, in-situ characterization of the sol-gel reaction process, determination of microstructure of oxide gels, characterization of porous structure of gels by the surface measurements, and characterization of organic-inorganic hybrid; and Applications of Sol-Gel Technology, covering applications such as the sol-gel method used in processing of bulk silica glasses, bulk porous gels prepared by sol-gel method, application of sol-gel method to fabrication of glass and ceramic fibers, reflective and antireflective coating films, application of sol-gel method to formation of photocatalytic coating films, and application of sol-gel method to bioactive coating films. The comprehensive scope and integrated treatment of topics make this reference volume ideal for R&D scientists and engineers across a wide range of disciplines and professional interests.

[Nanotechnology for Bioenergy and Biofuel Production](#) CRC Press

Polymer-Based Nanocomposites for Energy and Environmental Applications provides a comprehensive and updated review of major innovations in the field of polymer-based nanocomposites for energy and environmental applications. It covers properties and applications, including the synthesis of polymer based nanocomposites from different sources and tactics on the efficacy and major challenges associated with successful scale-up fabrication. The chapters provide cutting-edge, up-to-date research findings on the use of polymer based nanocomposites in energy and environmental applications, while also detailing how to achieve material's characteristics and

significant enhancements in physical, chemical, mechanical and thermal properties. It is an essential reference for future research in polymer based nanocomposites as topics such as sustainable, recyclable and eco-friendly methods for highly innovative and applied materials are current topics of importance. Covers a wide range of research on polymer based nanocomposites Provides updates on the most relevant polymer based nanocomposites and their prodigious potential in the fields of energy and the environment Demonstrates systematic approaches and investigations from the design, synthesis, characterization and applications of polymer based nanocomposites Presents a useful reference and technical guide for university academics and postgraduate students (Masters and Ph.D.)

Sensing and Biosensing with Optically Active Nanomaterials Elsevier

Photocatalysis, reactions carried out in the presence of a semiconductor and light, is rapidly becoming one of the most active areas of chemical research, with applications in areas such as electrochemistry, medicine, and environmental chemistry, Photocatalysis: Principles and Applications stresses the development of various types of photocatalytic semiconductors, including binary, ternary, quaternary, and composite, and their modifications by metallization, sensitization, and doping to enhance their photocatalytic activities. In addition to describing the principles and mechanisms of photocatalysis, it also discusses other possible applications of photocatalysis such as use as antifouling agents, controlling air pollution by degrading contaminants present in the environment, self-cleaning of glasses and tiles in the presence of light/artificial light, green composites, wastewater treatment, hydrogen generation, and inactivation of microorganisms. The book also describes medical applications and summarizes efforts in the field of photosplitting of water as a newer energy source and photoreduction of carbon dioxide for providing synthetic fuels and also a step towards mimicking photosynthesis. Introduces the basic principle of photocatalysis. Provides an overview of the types of semiconductors, their immobilization, and modifications to make them more active. Gives possible applications of photocatalysis in wastewater treatment and strategy to combat against different kinds of pollutions like water, air, and soil. Summarizes efforts in the field of photosplitting of water as a newer energy source and photoreduction of carbon dioxide for providing synthetic fuels and as a step towards mimicking photosynthesis. Discusses inactivation of different kinds of microorganisms. Covers medical applications. Features Introduces the basic principle of photocatalysis. Provides an overview of the types of semiconductors, their immobilization, and modifications to make them more active. Gives possible applications of photocatalysis in wastewater treatment and strategy to combat against different kinds of pollutions like water, air, and soil. Summarizes efforts in the field of photosplitting of water as a newer energy source and photoreduction of carbon dioxide for providing synthetic fuels and as a step towards mimicking photosynthesis. Discusses inactivation of different kinds of microorganisms. Covers medical applications.

Functionalized Nanomaterials Based Devices for Environmental Applications Elsevier

PROTON EXCHANGE MEMBRANE FUEL CELLS Edited by one of the most well-respected and prolific engineers in the world and his team, this book provides a comprehensive overview of hydrogen production, conversion, and storage, offering the scientific literature a comprehensive coverage of this important fuel. Proton exchange membrane fuel cells (PEMFCs) are among the most anticipated stationary clean energy devices in renewable and alternative energy. Despite the appreciable improvement in their cost and durability, which are the two major commercialization barriers, their availability has not matched demand. This is mainly due to the use of expensive metal-catalyst, less durable membranes, and poor insight into the ongoing phenomena inside proton exchange membrane fuel cells. Efforts are being made to optimize the use of precious metals as catalyst layers or find alternatives that can be durable for more than 5000 hours. Computational models are also being developed and studied to get an insight into the shortcomings and provide solutions. The announcement by various companies that they will be producing proton exchange membrane fuel cells-based cars by 2025 has accelerated the current research on proton exchange membrane fuel cells. The breakthrough is urgently needed. The membranes, catalysts, polymer electrolytes, and especially the understanding of diffusion layers, need thorough revision and improvement to achieve the target. This exciting breakthrough volume explores these challenges and offers solutions for the industry. Whether for the student, veteran engineer, new hire, or other industry professionals, this is a must-have for any library.

Materials for Supercapacitor Applications Elsevier

Handbook of Nanomaterials for Intelligent Sensing Applications provides insights into the production of nanosensors and their applications. The book takes an interdisciplinary approach, showing how nano-enhanced sensing technology is being used in a variety of industry sectors and addressing related challenges surrounding the production, fabrication and application of nanomaterials-based sensors at both experimental and theoretical levels. This book is an important reference source for materials scientists and engineers who want to learn more about how nanomaterials are being used to enhance sensing products and devices for a variety of industry sectors. The pof miniaturized device components and engineering systems of micro- and nanoscale is beyond the capability of conventional machine tools. The production of intelligent sensors at nanometer scale presents great challenges to engineers in design and manufacture. The manufacturing of nano-scaled devices and components involves isolation, transportation and re-assembly of atoms and molecules. This nanomachining technology involves not only physical-chemical processes as in the case of microfabrication, but it also involves application and integration of the principles of molecular biology. Explains how the functionalization of nanomaterials is being used to create more effective sensors Explores the major challenges of using nanoscale sensors for industrial applications on a broad scale Assesses which classes of nanomaterial should best be used for sensing applications

Nano- and Biocatalysts for Biodiesel Production Springer Nature

Novel Nanomaterials for Biomedical, Environmental, and Energy Applications is a comprehensive study on the cutting-edge progress in the synthesis and characterization of novel nanomaterials and their subsequent advances and uses in biomedical, environmental and energy applications. Covering novel concepts and key points of interest, this book explores the frontier applications of nanomaterials. Chapters discuss the overall progress of novel nanomaterial applications in the biomedical, environmental and energy fields, introduce the synthesis, characterization, properties and applications of novel nanomaterials, discuss biomedical applications, and cover the electrocatalytic and photothermal effects of novel nanomaterials for efficient energy applications. The book will be invaluable to academic researchers and biomedical clinicians working with nanomaterials. Offers comprehensive details on novel and emerging nanomaterials Presents a comprehensive view of new and emerging tactics for the synthesis of efficient nanomaterials Describes and monitors the functions of applications of new and emerging nanomaterials in the biomedical, environmental and energy fields

Novel Nanomaterials for Biomedical, Environmental and Energy Applications John Wiley & Sons

Handbook of Nanomaterials for Industrial Applications explores the use of novel nanomaterials in the industrial arena. The book covers nanomaterials and the techniques that can play vital roles in many industrial procedures, such as increasing sensitivity, magnifying precision and improving production limits. In addition, the book stresses that these approaches tend to provide green, sustainable solutions for industrial developments. Finally, the legal, economical and toxicity aspects of

nanomaterials are covered in detail, making this is a comprehensive, important resource for anyone wanting to learn more about how nanomaterials are changing the way we create products in modern industry. Demonstrates how cutting-edge developments in nanomaterials translate into real-world innovations in a range of industry sectors Explores how using nanomaterials can help engineers to create innovative consumer products Discusses the legal, economical and toxicity issues arising from the industrial applications of nanomaterials

Handbook of Biofuels Production CRC Press

This document was prepared by the FAO Regional Office for Europe and Central Asia (REU), in close collaboration with FAO's Climate and Environment Division (CBC), in the frames of the second project of the Republic of North Macedonia under the Green Climate Fund Readiness and Preparatory Support Programme, implemented by FAO under guidance and leadership of the Cabinet of the Deputy President of the Government of North Macedonia, as National Designated Authority (NDA) to the GCF. The document aims to provide the main guidelines that potential entities should consider before engaging in the Green Climate Fund (GCF) accreditation process. It includes a brief description of the main steps of the GCF accreditation process, information on the most relevant policies, as well as an explanation of each section of the accreditation form.

Engineering Tolerance in Crop Plants Against Abiotic Stress Elsevier

The utilization of various types of biomass residue to produce products such as biofuels and biochemicals means biorefinery technology using biomass residues may become a one-stop solution to the increasing need for sustainable, non-fossil sources of energy and chemicals. Refining Biomass Residues for Sustainable Energy and Bioproducts: Technology, Advances, Life Cycle Assessment and Economics focuses on the various biorefineries currently available and discusses their uses, challenges, and future developments. This book introduces the concept of integrated biorefinery systems, as well as their operation and feedstock sourcing. It explores the specificities, current developments, and potential end products of various types of residue, from industrial and municipal to agricultural and marine, as well as residue from food industries. Sustainability issues are discussed at length, including life cycle assessment, economics, and cost analysis of different biorefinery models. In addition, a number of global case studies examine successful experiences in different regions. This book is an ideal resource for researchers and practitioners in the field of bioenergy and waste management who are looking to learn about technologies involved in residue biorefinery systems, how to reduce their environmental impacts, and how to ensure their commercial viability. Explores a range of different biorefinery categories, such as industrial, agricultural, and marine biomass residues Includes a Life Cycle Assessment of biorefinery models, in addition to costs and market analysis. Features case studies from around the world and is written by an international team of authors

Handbook of Intelligent Scaffolds for Tissue Engineering and Regenerative Medicine

Springer

Because of their nanoporous structures and ultra-high surface areas Metal-Organic Framework Composites (MOFs) are very interesting materials. The book focusses on the following applications: gas capture and storage, especially molecular hydrogen storage; performance enhancement of Li-ion batteries; gas separation, nano-filtration, ionic sieving, water treatment, and catalysis; sustainable renewable energy resources, electrochemical capacitors, including supercapacitors, asymmetric supercapacitors and hybrid supercapacitors; biomedical disciplines including drug delivery, theranostics; biological detection and imaging; nanoparticle photosensitizers for photodynamic therapy (PDT) and photothermal therapy (PTT).

Arsenic Toxicity: Challenges and Solutions Academic Press

Handbook of Biofuels Production, Second Edition, discusses advanced chemical, biochemical, and thermochemical biofuels production routes that are fast being developed to address the global increase in energy usage. Research and development in this field is aimed at improving the quality and environmental impact of biofuels production, as well as the overall efficiency and output of biofuels production plants. The book provides a comprehensive and systematic reference on the range of biomass conversion processes and technology. Key changes for this second edition include increased coverage of emerging feedstocks, including microalgae, more emphasis on by-product valorization for biofuels' production, additional chapters on emerging biofuel production methods, and discussion of the emissions associated with biofuel use in engines. The editorial team is strengthened by the addition of two extra members, and a number of new contributors have been invited to work with authors from the first edition to revise existing chapters, thus offering fresh perspectives. Provides systematic and detailed coverage of the processes and technologies being used for biofuel production Discusses advanced chemical, biochemical, and thermochemical biofuels production routes that are fast being developed to address the global increase in energy usage Reviews the production of both first and second generation biofuels Addresses integrated biofuel production in biorefineries and the use of waste materials as feedstocks

The Routledge Handbook of Second Language Acquisition and Individual Differences Springer

Advanced Nanomaterials for Catalysis and Energy: Synthesis, Characterization and Applications outlines new approaches to the synthesis of nanomaterials (synthesis in flow conditions, laser electrodispersion of single metals or alloys on carbon or oxide supports, mechanochemistry, sol-gel routes, etc.) to provide systems with a narrow particle size distribution, controlled metal-support interaction and nanocomposites with uniform spatial distribution of domains of different phases, even in dense sintered materials. Methods for characterization of real structure and surface properties of nanomaterials are discussed, including synchrotron radiation diffraction and X-ray photoelectron spectroscopy studies, neutronography, transmission/scanning electron microscopy with elemental analysis, and more. The book covers the effect of nanosystems' composition, bulk and surface properties, metal-support interaction, particle size and morphology, deposition density, etc. on their functional properties (transport features, catalytic activity and reaction mechanism). Finally, it includes examples of various developed nanostructured solid electrolytes and mixed ionic-electronic conductors as materials in solid oxide fuel cells and asymmetric supported membranes for oxygen and hydrogen separation. Outlines synthetic and characterization methods for nanocatalysts Relates nanocatalysts' properties to their specific applications Proposes optimization methods aiming at specific applications

Design of Macrocyclic Compounds for Biomedical Applications Springer Nature

Reviews recent advances in catalytic biodiesel synthesis, highlighting various nanocatalysts and nano(bio)catalysts developed for effective biodiesel production Nano- and Biocatalysts for Biodiesel Production delivers an essential reference for academic and industrial researchers in biomass valorization and biofuel industries. The book covers both nanocatalysts and biocatalysts, bridging the gap between homogenous and heterogenous catalysis. Readers will learn about the technological and environmental aspects of biodiesel production using different feedstocks and catalysts. They will also discover how nano(bio)catalysts can be used as effective alternatives to conventional catalysts in biodiesel production due to their unique properties, including reusability, high activation energy and rate of reaction, easy recovery, and recyclability. Readers will benefit from the inclusion of: Introductions to CaO nanocatalysts, zeolite nanocatalysts, titanium dioxide-based nanocatalysts and zinc-based in biodiesel production An exploration of carbon-based heterogeneous nanocatalysts for the production of biodiesel Practical discussions of bio-based nano

catalysts for biodiesel production and the application of nanoporous materials as heterogeneous catalysts for biodiesel production. An analysis of the techno-economical considerations of biodiesel production using different feedstocks. Nano- and Biocatalysts for Biodiesel Production focuses on recent advances in the field and offers a complete and informative guide for academic researchers and industrial scientists working in the fields of biofuels and bioenergy, catalysis, biotechnology, bioengineering, nanotechnology, and materials science.

Carbon Dioxide Capture and Conversion Cambridge University Press

Despite significant progress in increasing agricultural production, meeting the changing dietary preferences and increasing food demands of future populations remains a significant challenge. Salinity, drought, water logging, high temperature and toxicity are abiotic stresses that affect the crop yield and production. Tolerance for stress is an important characteristic that plants need to have

in order to survive. Identification of proper techniques at a proper time can make it easy for scientists to increase crop productivity and yield. In *Engineering Tolerance in Crop Plants against Abiotic Stress* we have discussed the possible stresses and their impact on crops and portrayed distinctive abiotic stress tolerance in response to different techniques that can improve the performance of crops. Features of the Book: Provide a state-of-the-art description of the physiological, biochemical, and molecular status of the understanding of abiotic stress in plants. Address factors that threaten future food production and provide potential solutions to these factors. Designed to cater to the needs of the students engaged in the field of environmental sciences, soil sciences, agricultural microbiology, plant pathology, and agronomy. New strategies for better crop productivity and yield. Understanding new techniques pointed out in this book will open the possibility of genetic engineering in crop plants with the concomitant improved stress tolerance.