

Physical Chemistry By Shailendra Kumar

Biofuels are considered to be the main potential replacement for fossil fuels in the near future. In this book international experts present recent advances in biofuel research and related technologies. Topics include biomethane and biobutanol production, microbial fuel cells, feedstock production, biomass pre-treatment, enzyme hydrolysis, genetic manipulation of microbial cells and their application in the biofuels industry, bioreactor systems, and economical processing technologies for biofuel residues. The chapters provide concise information to help understand the technology-related implications of biofuels development. Moreover, recent updates on biofuel feedstocks, biofuel types, associated co- and byproducts and their applications are highlighted. The book addresses the needs of postgraduate researchers and scientists across diverse disciplines and industrial sectors in which biofuel technologies and related research and experimentation are pursued.

Faculties, publications and doctoral theses in departments or divisions of chemistry, chemical engineering, biochemistry and pharmaceutical and/or medicinal chemistry at universities in the United States and Canada.

Biotechnological Production of Bioactive Compounds provides insights on the most recent innovations, trends, concerns, solutions and practical challenges encountered in the fields of enzyme technology and nanobiotechnology for the production of bioactive materials with extra health benefits. As nanobiotechnology has improved the bioactive extraction process significantly, many bioactives, including bioflavonoids, omega-3 fatty acids, biopigments and low calorie sugar substitutes are a pivotal part of the food industry. The book highlights the production of extra health benefits "bioactives" from plants and microbes and explains how the extraction efficiency of bioactives molecules improves significantly with the recent advances in nanobiotechnology. Researchers in the fields of biochemical engineering, biotechnology, bioremediation, environmental sustainability and those in pharma industries will find the information in this book very helpful and illuminating. Outlines technological advances in bioactives extraction Covers bioflavonoids, biopigments, omega-3-fatty acids and low sugar substitutes Explains the mechanisms of Green cargo (biogenic nanoparticles) for the delivery of bioactive molecules Includes entries for maps and atlases.

PHYSICAL CHEMISTRY: A Laboratory Manual has been designed to meet the need of graduate and postgraduate students. The language is simple and the students can perform the experiments themselves without much help from the teacher. In each chapter, complete theory has been introduced before the start of experiment. Each experiment has been designed in a format that is adopted by the students in writing their notebooks. The tables for experimental observations have also been provided. Important precautions, suggestions and further experimental works for advance workers or researchers have been included under heading 'Things to Remember'. The Appendix comprises of sufficient number of tables of physical constants that can help in completing experiments. The book will be very helpful for establishment of laboratory as the Appendix includes list of chemicals and apparatuses. At the end an Index has been provided to help students in searching the things they need.

Papers presented at the International Conference on Characterisation and Quality Control of Nuclear Fuels, held at Hyderabad in 2002.

Contamination of Water: Health Risk Assessment and Treatment Strategies takes an interconnected look at various pollutants, sources of contamination, the effects of contamination on aquatic ecosystems and human health, and

potential mitigation strategies. The book begins by examining the sources of potential contamination, including the current scenario of dyes, heavy metals, pesticides and oils contamination as well as regions impacted due to industrialization, mining or urbanization. It then analyzes various methods of water contamination, assesses health risk and adverse effects on those impacted, and concludes with an exploration of efficient, low-cost treatment technologies that remove toxic pollutants from the water. This book incorporates both theoretical and practical information that will be useful for researchers, professors, graduate students and professionals working on water contamination, environmental and health impacts, and the management and treatment of water resources. Provides practical case studies of various types of contamination and sources in different regions Offers an overview of inorganic and organic contaminants and their impact on human health Evaluates several low-cost, efficient and effective water treatment technologies to remove toxins from water and minimize risk

This book presents advanced synthesis techniques adopted to fabricate two-dimensional (2D) transition metal dichalcogenides (TMDs) materials with its enhanced properties towards their utilization in various applications such as, energy storage devices, photovoltaics, electrocatalysis, electronic devices, photocatalysts, sensing and biomedical applications. It provides detailed coverage on everything from the synthesis and properties to the applications and future prospects of research in 2D TMD nanomaterials.

This book provides a comprehensive overview of recent novel coronavirus (SARS-CoV-2) infection, their biology and associated challenges for their treatment and prevention of novel Coronavirus Disease 2019 (COVID-19). Discussing various aspects of COVID-19 infection, including global epidemiology, genome organization, immunopathogenesis, transmission cycle, diagnosis, treatment, prevention, and control strategies, it highlights host-pathogen interactions, host immune response, and pathogen immune invasion strategies toward developing an immune intervention or preventive vaccine for COVID-19. An understanding of the topics covered in the book is imperative in the context of designing strategies to protect the human race from further losses and harm due to SARS-CoV-2 infection causing COVID-19.

This comprehensive book describes the design, synthesis, mechanisms, characterization, fundamental properties, functions and development of self-healing smart materials and their composites with their allied applications. It covers cementitious concrete composites, bleeding composites, elastomers, tires, membranes, and composites in energy storage, coatings, shape-memory, aerospace and robotic applications. The 21 chapters are written by researchers from a variety of disciplines and backgrounds. Devoted to the cause of the advancement of glass, ceramics and allied sciences and industries.

Nanocatalysis has emerged as a field at the interface between homogeneous and heterogeneous catalysis and offers unique solutions to the demanding requirements for catalyst improvement. Heterogeneous catalysis represents one of the oldest

commercial applications of nanoscience and nanoparticles of metals, semiconductors, oxides, and other compounds have been widely used for important chemical reactions. The main focus of this field is the development of well-defined catalysts, which may include both metal nanoparticles and a nanomaterial as the support. These nanocatalysts should display the benefits of both homogenous and heterogeneous catalysts, such as high efficiency and selectivity, stability and easy recovery/recycling. The concept of nanocatalysis is outlined in this book and, in particular, it provides a comprehensive overview of the science of colloidal nanoparticles. A broad range of topics, from the fundamentals to applications in catalysis, are covered, without excluding micelles, nanoparticles in ionic liquids, dendrimers, nanotubes, and nanooxides, as well as modeling, and the characterization of nanocatalysts, making it an indispensable reference for both researchers at universities and professionals in industry.

This comprehensive, fully updated text introduces the essential concepts of Molecular biology to students of life science and those pursuing courses related disciplines. The authors first review the relevant fundamentals of biochemistry and microbiology, introducing key principles that enable molecular biologist to achieve consistent control over biological activity. The text then reflects the advances that are transforming the field, ranging from nucleic acid to gene regulation. It introduces the comparative mechanism studies between prokaryotes and eukaryotes. It also covers multiple choice questions for the practice.

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