



of abiotic stresses in plants. Edited by two experts on the topic, the book explores the role of novel chemicals and shows how using such unique chemical agents can tackle the oxidative damages caused by environmental stresses. Exogenous application of different chemical agents or chemical priming of seeds presents opportunities for crop stress management. The use of chemical compounds as protective agents has been found to improve plant tolerance significantly in various crop and non-crop species against a range of different individually applied abiotic stresses by regulating the endogenous levels of the protective agents within plants. This important book: Explores the efficacy of various chemical agents to eliminate abiotic stress Offers a groundbreaking look at the topic and reviews the most recent advances in the field Includes information from noted authorities on the subject Promises to benefit agriculture under stress conditions at the ground level Written for researchers, academicians, and scientists, Protective Chemical Agents in the Amelioration of Plant Abiotic Stress details the wide range of protective chemical agents, their applications, and their intricate biochemical and molecular mechanism of action within the plant systems during adverse situations. ?????

The phenomenal success of nanostructures in various applications has led to the exploration of a plethora of novel nanomaterials. Nanoboron is no exception. Boron as material has the ability to form covalently bonded stable networks and finds use in a large variety of applications. This book provides a complete overview of the latest developments in

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.

Solar PV is now the third most important renewable energy source, after hydro and wind power, in terms of global installed capacity. Bringing together the expertise of international PV specialists Photovoltaic Solar Energy: From Fundamentals to Applications provides a comprehensive and up-to-date account of existing PV technologies in conjunction with an assessment of technological developments. Key features: Written by leading specialists active in concurrent developments in material sciences, solar cell research and application-driven R&D. Provides a basic knowledge base in light, photons and solar irradiance and basic functional principles of PV. Covers characterization techniques, economics and applications of PV such as silicon, thin-film and hybrid solar cells. Presents a compendium of PV technologies including: crystalline silicon technologies; chalcogenide thin film solar cells; thin-film silicon based PV technologies; organic PV and III-Vs; PV concentrator technologies; space technologies and economics, life-cycle and user aspects of PV technologies. Each chapter presents basic principles and formulas as well as major technological developments in a contemporary context with a look at future developments in this rapidly changing field of science and engineering. Ideal for industrial engineers and scientists beginning careers in PV as well as graduate students undertaking PV research and high-level undergraduate students.

Achieving environmental sustainability with rapid industrialization is a major challenge of current scenario worldwide. As globally evident, industries are the key economic drivers, but are also the major polluters as untreated/partially treated effluents discharged from the industries is usually thrown into the aquatic resources and also dumped unattended. Industrial effluents are considered as the major sources of environmental pollution as these contains highly toxic and hazardous pollutants, which reaches far off areas due to the medium of dispersion and thus, create ecological nuisance and health hazards in living beings. Hence, there is an urgent to find ecofriendly solution to deal with industrial waste, and develop sustainable methods for treating/detoxifying wastewater before its release into the environment. Being a low cost and eco-friendly clean technology, bioremediation can be a sustainable alternative to conventional remediation technologies for treatment and management of industrial wastes to protect public health and environment. Therefore, this book (Volume I) covers the bioremediation of different industrial wastes viz. tannery wastewater, pulp and paper mill wastewater, distillery wastewater, acid mine tailing wastes, and many more; which are lacking in a comprehensive manner in previous literature at one place. A separate chapter dedicated to major industries and type of waste produced by them is also included. This book will appeal to students, researchers, scientists, industry persons and professionals in field of microbiology, biotechnology, environmental sciences, eco-toxicology, environmental remediation and waste management and other relevant areas, who aspire to work on the biodegradation and bioremediation of industrial wastes for environmental safety.

Nanocatalysis is a topical area of research that has huge potential. It attempts to merge the advantages of heterogeneous and homogeneous catalysis. The collection of articles in this book treats the topics of specificity, activity, reusability, and stability of the catalyst and presents a compilation of articles that focuses on different aspects of these issues.

“Frontiers in Medicinal Chemistry” is an Ebook series devoted to the review of areas of important topical interest to medicinal chemists and others in allied disciplines. “Frontiers in Medicinal Chemistry” covers all the areas of medicinal chemistry, including developments in rational drug design, bioorganic chemistry, high-throughput screening, combinatorial chemistry, compound diversity measurements, drug absorption, drug distribution, metabolism, new and emerging drug targets, natural products, pharmacogenomics, chemoinformatics, and structure-activity relationships. Medicinal chemistry as a discipline is rapidly maturing. The study of how structure and function are related is absolutely essential to understanding the molecular basis of life. “Frontiers in Medicinal Chemistry” aims to contribute in a major way to the growth of scientific knowledge and insight, and facilitate the discovery and development of new therapeutic agents to treat debilitating human disorders. This Ebook series is essential for any medicinal chemist who wishes to be kept informed and up-to-date with the latest and the most important advances.

Carbon nanotubes (CNTs), discovered in 1991, have been a subject of intensive research for a wide range of applications. These one-dimensional (1D) graphene sheets rolled into a tubular form have been the target of many researchers around the world. This book concentrates on the semiconductor physics of carbon nanotubes, it brings unique insight into the phenomena encountered in the electronic structure when operating with carbon nanotubes. This book also presents to reader useful information on the fabrication and applications of these outstanding materials. The main objective of this book is to give in-depth understanding of the physics and electronic structure of carbon nanotubes. Readers of this book should have a strong background on physical electronics and semiconductor device physics. This book first discusses fabrication techniques followed by an analysis on the physical properties of carbon nanotubes, including density of states and electronic structures. Ultimately, the book pursues a significant amount of work in the industry applications of carbon nanotubes.

Chemical reaction engineering is at the core of chemical engineering education. Unfortunately, the subject can be intimidating to students, because it requires a heavy dose of mathematics. These mathematics, unless suitably explained in the context of the physical phenomenon, can confuse rather than enlighten students. Bearing this in mind, Reaction Engineering Principles is written primarily from a student’s perspective. It is the culmination of the author’s more than twenty years of experience teaching chemical reaction engineering. The textbook begins by covering the basic building blocks of the subject—stoichiometry, kinetics, and thermodynamics—ensuring students gain a good grasp of the essential concepts before venturing into the world of reactors. The design and performance evaluation of reactors are conveniently grouped into chapters based on an increasing degree of difficulty. Accordingly, isothermal reactors—batch and ideal flow types—are addressed



This book summarizes the reported health benefits of bioactive factors in cereal foods and their potential underlying mechanisms. Focusing on potential mechanisms that contribute to the various effects of bioactive factors on obesity, diabetes and other metabolic diseases, it helps to clarify several dilemmas and encourages further investigations in this field. Intended to promote the consumption of cereal foods or whole cereal foods to reduce the risk of chronic diseases, and to improve daily dietary nutrition in the near future, the book was mainly written for researchers and graduate students in the fields of nutrition, food science and molecular biology.

Ferroelectric materials have been and still are widely used in many applications, that have moved from sonar towards breakthrough technologies such as memories or optical devices. This book is a part of a four volume collection (covering material aspects, physical effects, characterization and modeling, and applications) and focuses on the underlying mechanisms of ferroelectric materials, including general ferroelectric effect, piezoelectricity, optical properties, and multiferroic and magnetoelectric devices. The aim of this book is to provide an up-to-date review of recent scientific findings and recent advances in the field of ferroelectric systems, allowing a deep understanding of the physical aspect of ferroelectricity.

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