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Energy Aspects of Acoustic Cavitation and Sonochemistry - Oualid Hamdaoui 2022-08-06 Energy Aspects of Acoustic Cavitation and Sonochemistry: Fundamentals and Engineering covers topics ranging from fundamental modeling to up-scaled experiments. The book relates acoustic cavitation and its intrinsic energy balance to macroscopic physical and chemical events that are analyzed from an energetic perspective. Outcomes are directly projected into practical applications and technological assessments covering energy consumption, thermal dissipation, and energy efficiency of a diverse set of

applications in mixed phase synthesis, environmental remediation and materials chemistry. Special interest is dedicated to the sonochemical production of hydrogen and its energetic dimensions. Due to the sensitive energy balance that governs this process, this is seen as a "green process" for the production of future energy carriers. Provides a concise and detailed description of energy conversion and exchange within the single acoustic cavitation bubble and bubble population, accompanying physical and chemical effects Features a comprehensive approach that is supported by experiments and the modeling of energy concentration within the sonochemical reactor, jointly with energy dissipation and damping phenomenon Gives a clear definition of energy efficiency metrics of industrial sono-processes and their application to the main emergent industrial fields harnessing acoustic cavitation and sonochemistry, notably for the production of hydrogen

Engineering Chemistry - O. G. PALANNA 2009

Instrumental Methods of Analysis - Sivasankar, 2012-05-17

Instrumental Methods of Analysis is a textbook designed to introduce various analytical and chemical methods, their underlying principles and applications to the undergraduate engineering students of biotechnology and chemical engineering. This book would also be of interest to students who pursue their B. Sc / M. Sc degree programs in biotechnology and chemistry.

Innovations in Green Chemistry and Green Engineering - Paul T. Anastas 2012-12-13

Processes that meet the objectives of green chemistry and chemical

engineering minimize waste and energy use, and eliminate toxic by-products. Given the ubiquitous nature of products from chemical processes in our lives, green chemistry and chemical engineering are vital components of any sustainable future. Gathering together ten peer-reviewed articles from the Encyclopedia of Sustainability Science and Technology, Innovations in Green Chemistry and Green Engineering provides a comprehensive introduction to the state-of-the-art in this key area of sustainability research. Worldwide experts present the latest developments on topics ranging from organic batteries and green catalytic transformations to green nanoscience and nanotoxicology. An essential, one-stop reference for professionals in research and industry, this book also fills the need for an authoritative course text in environmental and green chemistry and chemical engineering at the upper-division undergraduate and graduate levels.

Separation Process Principles - J. D. Seader 2016-01-20

Separation Process Principles with Applications Using Process Simulator, 4th Edition is the most comprehensive and up-to-date treatment of the major separation operations in the chemical industry. The 4th edition focuses on using process simulators to design separation processes and prepares readers for professional practice. Completely rewritten to enhance clarity, this fourth edition provides engineers with a strong understanding of the field. With the help of an additional co-author, the text presents new information on bioseparations throughout the chapters. A new chapter on mechanical separations covers settling, filtration and centrifugation including

mechanical separations in biotechnology and cell lysis. Boxes help highlight fundamental equations. Numerous new examples and exercises are integrated throughout as well.
Vogel's Qualitative Inorganic Analysis, 7/e - G. Svehla 2008

Biosorption for Wastewater Contaminants - Pardeep Singh 2021-10-13
Pollution due to various anthropogenic activities continues to increase. In terms of water pollutants, organic and inorganic pollutants are the most problematic. Although several measures have been proposed and implemented to prevent or reduce contamination, their increased concentration in water bodies has created serious concerns. Over the years, the problem has been aggravated by industrialization, urbanization and the exploitation of natural resources. The direct discharge of wastewater contaminants and their geographical mobilization have caused an increase in concentration in ground, surface, fluvial and residual waters. Extensive information about detection and disposal methods is needed in order to develop technological solutions for a variety of environments, both urban and rural. This book provides up-to-date information on wastewater contaminants, aimed at researchers, engineers and technologists working in this field. Conventional physicochemical techniques used to remove contaminants from wastewater include ion exchange, precipitation, degradation, coagulation, coating, membrane processes and adsorption. However, these applications have technological and economic limitations, and involve the release of large amounts of chemical reagents and by-products

that are themselves difficult to remove. Biosorption - the use of organically generated material as an adsorbent – is attracting new research and scholarship. Thermally-treated calcined biomaterials may be treated to remove heavy metals from wastewater. To ensure the elimination of these contaminants, existing solutions must be integrated with intelligent biosorption functions. Biosorption for Wastewater Contaminants will find an appreciative audience among academics and postgraduates working in the fields of environmental biotechnology, environmental engineering, wastewater treatment technology and environmental chemistry.

Gaseous Carbon Waste Streams Utilization - National Academies of Sciences, Engineering, and Medicine 2019-02-22

In the quest to mitigate the buildup of greenhouse gases in Earth's atmosphere, researchers and policymakers have increasingly turned their attention to techniques for capturing greenhouse gases such as carbon dioxide and methane, either from the locations where they are emitted or directly from the atmosphere. Once captured, these gases can be stored or put to use. While both carbon storage and carbon utilization have costs, utilization offers the opportunity to recover some of the cost and even generate economic value. While current carbon utilization projects operate at a relatively small scale, some estimates suggest the market for waste carbon-derived products could grow to hundreds of billions of dollars within a few decades, utilizing several thousand teragrams of waste carbon gases per year. Gaseous Carbon Waste Streams Utilization: Status and Research Needs assesses research and development needs relevant

to understanding and improving the commercial viability of waste carbon utilization technologies and defines a research agenda to address key challenges. The report is intended to help inform decision making surrounding the development and deployment of waste carbon utilization technologies under a variety of circumstances, whether motivated by a goal to improve processes for making carbon-based products, to generate revenue, or to achieve environmental goals.

Metal Allergy - Jennifer K Chen 2018-04-13

This volume opens by providing a comprehensive overview of the use and regulation of metals in our society, metal properties, and available testing methodologies. Common and uncommon metal allergens and sources of exposure are then reviewed in depth, detailing allergic responses and paying special consideration to select patient populations. In the general population, the prevalence of metal allergy is high. Environmental sources of metal exposure include jewelry, clothing, electronic devices, coins, leather, diet, and occupational exposure. Metal allergy may result in allergic contact dermatitis and systemic contact dermatitis, as well as several less common manifestations. Further, metal allergy has been associated with device failure and/or dermatitis following implantation of medical devices and dental implants. As metals are ubiquitous, this book will be indispensable for a wide range of clinicians and investigators. This handy reference will meet the needs of all health professionals and investigators who are interested in metal allergy and its diagnosis and management.

Bioprocess Engineering for

a Green Environment - V. Sivasubramanian 2018-05-04
Bioprocess Engineering for a Green Environment examines numerous bioprocesses that are crucial to our day-to-day life, specifically the major issues surrounding the production of energy relating to biofuels and waste management. The nuance of this discussion is reflected by the text's chapter breakdown, providing the reader with a fulsome investigation of the energy sector; the importance of third-generation fuels; and the application of micro- and macroalgae for the production of biofuels. The book also provides a detailed exploration of biocatalysts and their application to the food industry; bioplastics production; conversion of agrowaste into polysaccharides; as well as the importance of biotechnology in bio-processing. Numerous industries discharge massive amounts of effluents into our rivers, seas, and air systems. As such, two chapters are dedicated to the treatment of various pollutants through biological operation with hopes of achieving a cleaner, greener, environment. This book represents the most comprehensive study of bioprocessing—and its various applications to the environment—available on the market today. It was furthermore written with various researchers in mind, ranging from undergraduate and graduate students looking to enhance their knowledge of the topics presented to scholars and engineers interested in the bioprocessing field, as well as members of industry and policy-makers. Provides a comprehensive overview of bioprocesses that apply to day-to-day living. Is learner-centered, providing detailed

diagrams for easy understanding. Explores the importance of biocatalysts and their applications to the food industry, as well as bioplastics production. Examines the unique capabilities of bioprocess engineering and its ability to treat various pollutants. .

A TEXTBOOK OF ENGINEERING CHEMISTRY - SYAMALA SUNDAR DARA 2008

Any good text book,particularly that in the fast changing fields such as engineering & technology,is not only expected to cater to the current curricular requirments of various institutions but also should provied a glimplse towards the latest developments in the concerned subject and the relevant disciplines.It should guide the periodic review and updating of the curriculum.

Mechanics of Structures and Materials XXIV - Hong Hao 2019-08-08

Mechanics of Structures and Materials: Advancements and Challenges is a collection of peer-reviewed papers presented at the 24th Australasian Conference on the Mechanics of Structures and Materials (ACMSM24, Curtin University, Perth, Western Australia, 6-9 December 2016). The contributions from academics, researchers and practising engineers from Australasian, Asia-pacific region and around the world, cover a wide range of topics, including: • Structural mechanics • Computational mechanics • Reinforced and prestressed concrete structures • Steel structures • Composite structures • Civil engineering materials • Fire engineering • Coastal and offshore structures • Dynamic analysis of structures • Structural health monitoring and damage identification • Structural reliability analysis and design • Structural optimization • Fracture and damage

mechanics • Soil mechanics and foundation engineering • Pavement materials and technology • Shock and impact loading • Earthquake loading • Traffic and other man-made loadings • Wave and wind loading • Thermal effects • Design codes Mechanics of Structures and Materials: Advancements and Challenges will be of interest to academics and professionals involved in Structural Engineering and Materials Science.

Synthesis and Applications of Copolymers - Anbanandam Parthiban 2014-06-23
Understanding the reactivity of monomers is crucial in creating copolymers and determining the outcome of copolymerization. Covering the fundamental aspects of polymerization, Synthesis and Applications of Copolymers explores the reactivity of monomers and reaction conditions that ensure that the newly formed polymeric materials exhibit desired properties. Referencing a wide-range of disciplines, the book provides researchers, students, and scientists with the preparation of a diverse variety of copolymers and their recent developments, with a particular focus on copolymerization, crystallization, and techniques like nanoimprinting and micropatterning.

Handbook of Ultrasonics and Sonochemistry - Muthupandian Ashokkumar

Engineering Chemistry - Sivakumar 2009

Handbook of Porous Carbon Materials - Andrews Nirmala Grace 2023-03-06
This handbook summarizes the current advancements and growth in sustainable carbonaceous porous materials for fabrication and revival of energy devices, fuel cells, sensors technology, solar cell

technology, stealth technology in addition to biomedical applications. It also covers the potential applications of carbon materials in various fields such as chemical, engineering, biomedical and environmental sciences. It also confers the prospective utilization of 2D and 3D hierarchical porous carbon in different interdisciplinary engineering applications. The book discusses major challenges faced in the development of cost-effective future energy storage strategies and provides effective solutions for improvement in the performance of carbon-based materials. Given the content, this handbook will be useful for students, researchers and professionals working in the area of material chemistry and allied fields.

Engineering Chemistry - R. V. Gadag 2010-09-30

Some chapters in the book deal with the basic principles of chemistry while others are focused on its applied aspects, providing the correct interphase between the principles of chemistry and engineering. KEY FEATURES * Chapters cover both basic principles of chemistry as also its applied aspects. * Written in easy self-explanatory language and in depth at the same time. * Review questions provided at the end of each chapter. * A separate section 'Laboratory Manual' in Engineering Chemistry comprising 12 experiments is appended at the end of the book.

Handbook on Applications of Ultrasound - Dong Chen 2011-07-26

Ultrasonic irradiation and the associated sonochemical and sonophysical effects are complementary techniques for driving more efficient chemical reactions and yields. Sonochemistry—the chemical effects and applications of ultrasonic waves—and sustainable

(green) chemistry both aim to use less hazardous chemicals and solvents, reduce energy consumption, and increase product selectivity. A comprehensive collection of knowledge, Handbook on Applications of Ultrasound covers the most relevant aspects linked to and linking green chemistry practices to environmental sustainability through the uses and applications of ultrasound-mediated and ultrasound-assisted biological, biochemical, chemical, and physical processes. Chapters are presented in the areas of: Medical applications Drug and gene delivery Nanotechnology Food technology Synthetic applications and organic chemistry Anaerobic digestion Environmental contaminants degradation Polymer chemistry Industrial syntheses and processes Reactor design Electrochemical systems Combined ultrasound−microwave technologies While the concepts of sonochemistry have been known for more than 80 years, in-depth understanding of this phenomenon continues to evolve. Through a review of the current status of chemical and physical science and engineering in developing more environmentally friendly and less toxic synthetic processes, this book highlights many existing applications and the enormous potential of ultrasound technology to upgrade present industrial, agricultural, and environmental processes.

Antioxidants in Fruits: Properties and Health Benefits - Gulzar Ahmad Nayik 2020-12-15

This book provides a comprehensive review of the antioxidant value of widely consumed fruits. Each chapter covers the botanical description, nutritional & health properties of these popular fruits. Fruits are one of the

most important indicators of dietary quality and offer protective effects against several chronic diseases such as cardiovascular diseases, obesity, and various types of cancer. In order to effectively promote fruit consumption, it is necessary to know and understand the components of fruits. In addition to underscoring the importance of fruit consumption's effects on human diet, the book addresses the characterization of the chemical compounds that are responsible for the antioxidant proprieties of various fruits. Given its scope, the book will be of interest to graduate and post-graduate students, research scholars, academics, pomologists and agricultural scientists alike. Those working in various fruit processing industries and other horticultural departments will also find the comprehensive information relevant to their work.

Biogenic Sustainable Nanotechnology - Raghvendra Pratap Singh 2022-06-07

Biogenic Sustainable Nanotechnology: Trends and Progress focuses on the green synthesis of nanomaterials with various biological systems, emphasizing the mechanisms of nanomaterial synthesis, spectroscopic characterizations, and applications in a variety of industrial sectors. Interest in developing eco-friendly, green, cost-effective, and facile methods for nanomaterials synthesis is rapidly growing. Green synthesis methods focus on a greener environment, minimizing generated waste, and implementing sustainable processes. As discussed in this book, green nanostructured materials often include phytochemical agent extracts, such as carbohydrates, flavonoids,

saponins, proteins, amino acids, chromone, steroids, phytol, and terpenoids. These phytochemicals from plant extracts play a crucial role in improving the reduction rate, size, and stabilization, by acting as good reducers, surfactants, structure directors, and capping agents. This book is an essential reference source for materials scientists, bioengineers, and environmental scientists. Outlines the major synthesis methods used to create environmentally-friendly bionanomaterials for biomedical applications Explores how environmentally-friendly bionanomaterials are used for a variety of industry sectors Assesses the major challenges of producing environmentally-friendly biogenic nanomaterials on an industrial scale

BIOSPERATIONS - B. SIVASANKAR 2005-01-01

This systematically organized and well-balanced book compresses within the covers of a single volume the theoretical principles and techniques involved in bio-separations, also called downstream processing. These techniques are derived from a range of subjects, for example, physical chemistry, analytical chemistry, bio-chemistry, biological science and chemical engineering. Organized in its 15 chapters, the text covers in the first few chapters topics related to chemical engineering unit operations such as filtration, centrifugation, adsorption, extraction and membrane separation as applied to bioseparations. The use of chromatography as practiced at laboratory as well as industrial scale operation and related techniques such as gel filtration, affinity and pseudoaffinity chromatography, ion-exchange chromatography, electrophoresis and related methods have been

discussed. The important applications of these techniques have also been highlighted.

Bioseparations Downstream Processing for Biotechnology - Paul A. Belter 1994-10-25

Offers a concise introduction to the separation and purification of biochemicals. Bridges two scientific cultures, providing an introduction to bioseparations for scientists with no background in engineering and for engineers with little grounding in biology. The authors supplement the ideas by simple worked examples, making the techniques of bioseparations easy to learn. Discusses removal of insolubles, product isolation, purification and polishing.

Handbook on Applications of Ultrasound - Dong Chen 2011-07-26

Ultrasonic irradiation and the associated sonochemical and sonophysical effects are complementary techniques for driving more efficient chemical reactions and yields. Sonochemistry—the chemical effects and applications of ultrasonic waves—and sustainable (green) chemistry both aim to use less hazardous chemicals and solvents, reduce energy consumption, and increase product selectivity. A comprehensive collection of knowledge, Handbook on Applications of Ultrasound covers the most relevant aspects linked to and linking green chemistry practices to environmental sustainability through the uses and applications of ultrasound-mediated and ultrasound-assisted biological, biochemical, chemical, and physical processes. Chapters are presented in the areas of: Medical applications Drug and gene delivery Nanotechnology Food technology Synthetic applications and organic chemistry Anaerobic

digestion Environmental contaminants degradation Polymer chemistry Industrial syntheses and processes Reactor design Electrochemical systems Combined ultrasound−microwave technologies While the concepts of sonochemistry have been known for more than 80 years, in-depth understanding of this phenomenon continues to evolve. Through a review of the current status of chemical and physical science and engineering in developing more environmentally friendly and less toxic synthetic processes, this book highlights many existing applications and the enormous potential of ultrasound technology to upgrade present industrial, agricultural, and environmental processes.

Physics of Petroleum Reservoirs - Xuetao Hu 2017-08-08

This book introduces in detail the physical and chemical phenomena and processes during petroleum production. It covers the properties of reservoir rocks and fluids, the related methods of determining these properties, the phase behavior of hydrocarbon mixtures, the microscopic mechanism of fluids flowing through reservoir rocks, and the primary theories and methods of enhancing oil recovery. It also involves the up-to-date progress in these areas. It can be used as a reference by researchers and engineers in petroleum engineering and a textbook for students majoring in the area related with petroleum exploitation.

Applications of Nuclear and Radioisotope Technology - Khalid Al Nabhani 2021-09-17

Applications of Nuclear and Radioisotope Technology: For Peace and Sustainable Development presents the latest technology and research on nuclear energy with a practical focus on a variety of applications.

Author Dr. Khalid Al-Nabhani provides a thorough and well-rounded view of the status of nuclear power generation in order to promote its benefits towards a sustainable, clean and secure future. This book offers innovative theoretical, analytical, methodological and technological approaches, encourages a positive societal and political uptake. This book enhances awareness of peaceful nuclear applications across a broad spectrum of industries, including power generation, agriculture, and medicine. It presents successful examples and lessons learned across many countries that are working towards their sustainability goals in cooperation with the IAEA and AAEA, to benefit researchers, professionals and decision-makers implementing and developing their own nuclear strategies for the future. Presents theoretical and scientific knowledge which is supported with real examples and successful experiences Provides prevailing perceptions of nuclear safety and security concerns by presenting the most advanced safety and security systems Applies technologies to a variety of applications to guide the reader to make informed decisions to help meet sustainability goals

Advanced Textile Engineering Materials - Shahid Ul-Islam 2018-08-15

Advanced Textile Engineering Materials is written to educate readers about the use of advanced materials in various textile applications. In the first part, the book addresses recent advances in chemical finishing, and also highlights environmental issues in textile sectors. In the second part, the book provides a compilation of innovative fabrication strategies frequently adopted for the mechanical finishing of textiles. The key topics are • Smart textiles •

Functional modifications • Protective textiles • Conductive textiles • Coated/laminated textiles • Antimicrobial textiles • Environmental aspects in textiles • Textile materials in composites • 3-D woven preforms for composite reinforcement • Evolution of soft body armor

Microbiological Research In Agroecosystem Management - Rajesh Kannan Velu 2013-03-15

Agroecosystem is an ideal dynamic functional system with a set of chemical and biological interaction taking place in plant surface either below or above the ground levels. These levels of interaction activities fundamentally with microorganism-plant-soil systems are extended upto the level of entire agricultural economy. Greatly simplified, the agroecosystems control the various range of energy flux, resources exchange, organic and inorganic nutrient budgets and population dynamics. The main aim of this edited volume is to provide a broad spectrum of agroecosystems structure, function and maintenance involved in microbial research. This book consists of 20 full length research articles focusing on the emerging problems in the field and the positive findings are identified on key areas of research such as biodiversity, ecosystem service, environmental cleaning in agroecology, etc. These articles are arranged progressively linking themselves thematically with photographs, figures and tables. Focused field articles are included which prove a valuable contribution to the field of agroecosystem management by microbial facilitations. The editor hopes that these articles would prompt the budding scholars to further their research which in turn would certainly help the agriculturists.

Nanostructures for Antimicrobial and Antibiofilm Applications - Ram Prasad 2020-05-12
In the pursuit of technological advancement in the field of biotechnology and pharmaceutical industries to counteract health issues, bacterial infections remain a major cause of morbidity and mortality. The ability of bacterial pathogens to form biofilms further agglomerates the situation by showing resistance to conventional antibiotics. To overcome this serious issue, bioactive metabolites and other natural products were exploited to combat bacterial infections and biofilm-related health consequences. Natural products exhibited promising results in vitro, however; their efficacy in in vivo conditions remain obscured due to their low-solubility, bioavailability, and biocompatibility issues. In this scenario, nanotechnological interventions provide a multifaceted platform for targeted delivery of bioactive compounds by slow and sustained release of drug-like compounds. The unique physico-chemical properties, biocompatibility and eco-friendly nature of bioinspired nanostructures has revolutionized the field of biology to eradicate microbial infections and biofilm-related complications. The green-nanotechnology based metal and metal oxide nanoparticles and polymeric nanoparticles have been regularly employed for antimicrobial and antibiofilm applications without causing damage to host tissues. The implications of these nanoparticles toward achieving sustainability in agriculture by providing systemic resistance against a variety of phytopathogens therefore plays crucial role in growth and crop productivity. Also the advent of smart and hybrid

nanomaterials such as metal-based polymer nanocomposites, lipid-based nanomaterials and liposomes have the inherent potential to eradicate bacterial biofilm-related infections in an efficient manner. The recent development of carbon-based nanomaterials such as carbon nanotubes (CNTs) and silica based nanomaterials such as mesoporous silica nanoparticles (MSNs) also exploit a target of dreadful healthcare conditions such as cancer, immunomodulatory diseases, and microbial infections, as well as biofilm-related issues owing to their stability profile, biocompatibility, and unique physio-chemical properties. Recently novel physical approaches such as photothermal therapy (PTT) and antimicrobial photodynamic therapy (aPDT) also revolutionized conventional strategies and are engaged in eradicating microbial biofilm-related infections and related health consequences. These promising advancements in the development of novel strategies to treat microbial infections and biofilm-related multidrug resistance (MDR) phenomenon may provide new avenues and aid to conventional antimicrobial therapeutics.

Python Programming - Reema Thareja 2019

Python Programming is designed as a textbook to fulfil the requirements of the first-level course in Python programming. It is suited for undergraduate degree students of computer science engineering, IT as well as computer applications. This book will enable students to apply the Python programming concepts in solving real-world problems. The book begins with an introduction to computers, problem solving approaches, programming languages, object oriented programming, and Python

programming. Separate chapters dealing with the important constructs of Python language such as control statements, functions, strings, files, data structures, classes and objects, inheritance, operator overloading, and exceptions are provided in the book.

Structural Health Monitoring (SHM) of Civil Structures - Gangbing Song 2018-04-20

This book is a printed edition of the Special Issue "Structural Health Monitoring (SHM) of Civil Structures" that was published in Applied Sciences

FOOD PROCESSING AND PRESERVATION - B. SIVASANKAR 2002-01-01

The book provides comprehensive coverage of the processing and preservation aspects of food science that include chemical, microbiological and technological processes on the one hand, and assessment of food quality and safety, new and modified foods by fermentation, food-boene diseases and food spoilage on the other. The preservation operations involving the use of high and low temperatures and radiation have also been discussed in detail. Intended as a textbook for undergraduate students of science and engineering, this study would also be of great help to postgraduate students offering courses in food science, and to professionals as well as academicians.

Issues in Chemical Engineering and other Chemistry Specialties: 2012 Edition - 2013-01-10

Issues in Chemical Engineering and other Chemistry Specialties: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Chemical Engineering. The editors have built Issues in

Chemical Engineering and other Chemistry Specialties: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Chemical Engineering 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 Chemical Engineering and other Chemistry Specialties: 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/.

Chemistry-I (As per AICTE) - Dasmohapatra, Gourkrishna

The book has been designed according to the new AICTE syllabus and will cater to the needs of engineering students across all branches. The book provides the basis which is necessary for dealing with different types of physicochemical phenomena. Great care has been taken to explain the physical meaning of mathematical formulae, when and where they are required, followed by lucid development and discussion of experimental behaviour of systems. Every chapter has a set of solved problems and exercises. The idea is to instil sound understanding of the fundamental principles and applications of the subject. The author is known for explaining the concepts of Engineering Chemistry with full clarity, leaving no ambiguity in the minds of the

readers.Although this book is primarily intended for BTech/BE students, it will also cater to the requirements of those pursuing BSc and MSc, including those of other disciplines like materials science and environmental science.

Nanomaterials - R. Praveen Kumar 2021-05-19

Nanomaterials: Application in Biofuels and Bioenergy Production Systems looks at how biofuels and bioenergy can be part of the "sustainable" solution to the worlds energy problems. By addressing bioenergy products compared to their fossil energy counterparts, covering research and development in biofuels applied with nanomaterials this book analyzes the future trends and how biofuels and bioenergy can contribute to its optimization. Starting from fundamentals up to synthesis, characterization and applications of nanomaterials in biofuels and bioenergy production systems, the chapters include the procedures needed for introducing nanomaterials in these specific sectors along with the benefits derived from their applications. Including the hazards and environmental effects of nanomaterials in bioenergy applications, sustainability issues and a techno-economic analysis of the topic, this book provides researchers in bioscience, energy & environment and bioengineering with an up to date look at the full life cycle assessment of nanomaterials in bioenergy. Provides a one stop solution manual for applications of nanomaterials in bioenergy and biofuels Includes biofuel applications with compatible global application case studies Addresses the demand for environmental and techno-economic analysis of nanomaterials applications

Engineering Chemistry - Praveen P. Singh

2018-04-30
Engineering Chemistry includes comprehensive, lucid and accurate presentations of the subject matter, which is easy to understand and stimulates the interest of students. It provides the in-depth information required to understand the principles and practice of applied chemistry, and presents coherent and adequate coverage of various topics. The fundamentals have been explained with the help of illustrations, diagrams and tables to facilitate better understanding. A balance between theoretical and applied aspects have been maintained in this book. The solved examples in the chapter and exercises at the end of each chapter help in strengthening the theoretical concepts.
Green Technologies and Environmental Sustainability - Ritu Singh 2017-04-05
In the present scenario, green technologies are playing significant role in changing the course of nation's economic growth towards sustainability and providing an alternative socio-economic model that will enable present and future generations to live in a clean and healthy environment, in harmony with nature. Green technology, which is also known as clean technology, refers to the development and extension of processes, practices, and applications that improve or replace the existing technologies facilitating society to meet their own needs while substantially decreasing the impact of human on the planet, and reducing environmental risks and ecological scarcities. The concepts of Green Technologies, if endorsed and pervaded into the lives of all societies, will facilitate the aim of the Millennium Development Goals of keeping the environment intact and improve it for the

civilization to survive. Green Technologies and Environmental Sustainability is focused on the goals of green technologies which are becoming increasingly important for ensuring sustainability. This book provides different perspectives of green technology in sectors like energy, agriculture, waste management and economics and contains recent advancements made towards sustainable development in the field of bioenergy, nanotechnology, green chemistry, bioremediation, degraded land reclamation. This book is written for a large and broad readership, including researchers, scientists, academicians and readers from diverse backgrounds across various fields such as nanotechnology, chemistry, agriculture, environmental science, water engineering, waste management and energy. It could also serve as a reference book for graduates and post-graduate students, faculties, environmentalist and industrial personnel who are working in the area of green technologies.

The Metaphysics of Good and Evil - David S. Oderberg 2019-11-22

The Metaphysics of Good and Evil is the first, full-length contemporary defence, from the perspective of analytic philosophy, of the Scholastic theory of good and evil – the theory of Aristotle, Augustine, Aquinas, and most medieval and Thomistic philosophers. Goodness is analysed as obedience to nature. Evil is analysed as the privation of goodness. Goodness, surprisingly, is found in the non-living world, but in the living world it takes on a special character. The book analyses various kinds of goodness, showing how they fit into the Scholastic theory. The privation theory of evil is given its most comprehensive

contemporary defence, including an account of truthmakers for truths of privation and an analysis of how causation by privation should be understood. In the end, all evil is deviance – a departure from the goodness prescribed by a thing's essential nature. Key Features: Offers a comprehensive defence of a venerable metaphysical theory, conducted using the concepts and methods of analytic philosophy. Revives a much neglected approach to the question of good and evil in their most general nature. Shows how Aristotelian-Thomistic theory has more than historical relevance to a fundamental philosophical issue, but can be applied in a way that is both defensible and yet accessible to the modern philosopher. Provides what, for the Scholastic philosopher, is arguably the only solid metaphysical foundation for a separate treatment of the origins of morality.

Advanced Catalysis for Drop-in Chemicals - Putla Sudarsanam 2021-09-28 Biomass conversion into drop-in chemicals using novel heterogeneous bulk- and nano-scale catalysts is currently a hot research topic with the aim of replacing petrochemicals in the chemical industry. Considering the importance of this subject to the scientific community, Advanced Catalysis for Drop-in Chemicals provides the latest developments in the catalytic synthesis of drop-in chemicals mainly from lignocellulose, carbohydrates (cellulose, hemicellulose, C6 and C5 sugars, and their derivatives), lignin, and glycerol. The role of both heterogeneous bulk solid and nanostructured catalysts, along with their advantages and disadvantages for drop-in chemicals synthesis are critically summarized. Addressing the frontiers

and prospects for using drop-in chemicals in place of petrochemicals in the chemical industry is also a key topic of this book. • Describes fossil fuels, biomass, drop-in chemicals, catalysis, and nano- and atomic-scale catalysts • Includes pre- and post-treatment strategies for biomass upgrading • Provides green catalytic processes for drop-in chemicals synthesis • Outlines stabilization of nano- and atomic-scale catalysts • Examines using drop-in chemicals in place of petrochemicals in the chemical industry

ENGINEERING CHEMISTRY (AS PER NEP 2020, VTU) - Dr. Hari Krishna S 2022-02-20

Indian National Bibliography - B. S. Kesavan 2009