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Chemistry for Engineers

Laxmi Publications

ENGINEERING CHEMISTRY FOR DIPLOMA

PHI Learning Pvt. Ltd. This book is written strictly for the first and second semester diploma students of engineering chemistry according to the revised syllabus. It aims to provide a thorough understanding of the chemical concepts, theories and principles in Engineering Chemistry in a clear and concise manner, so that the average students are able to grasp the intricacies of the subject. Explaining general concepts of atomic structure and chemical bond, the book covers all advanced topics such as acid-base theory, concentration of solutions, electrochemistry, corrosion, metallurgy, hydrocarbons, sources of water and its treatment, lubricants and adhesives, fuel, polymer and environmental chemistry. Each theoretical concept is well supported by illustrative examples. Besides, the book provides a large number of solved problems to reinforce the theoretical understanding of concepts. Each chapter contains glossary terms and provides short questions and long questions for practice. Previous year question papers and model questions with answers are appended at the end of the book to help students ace in examinations.

ENGINEERING CHEMISTRY WITH LABORATORY EXPERIMENTS

PHI Learning Pvt. Ltd. This book is primarily intended for the first year B.Tech students of all branches for their course on engineering chemistry. The main objective of this book is to provide a broad understanding of the chemical concepts, theories and principles of Engineering Chemistry in a clear and concise manner, so that even an average student can grasp the intricacies of the subject. It includes the general concepts of structure and bonding, phase rule, solid state, reaction kinetics and catalysis, electrochemistry, chemical thermodynamics and free energy. Besides, the book introduces topics of applied chemistry like water technology, polymer chemistry and nanotechnology. Each theoretical concept is well supported by illustrative examples. The book also provides a large number of solved problems and illustrations to reinforce the theoretical understanding of concepts. **KEY FEATURES** (i) Each chapter of the book provides a clear and easy understanding of the definitions, theories and principles. (ii) A large number of well-labelled diagrams help to understand the concepts easily and clearly. (iii) Chapter-wise glossary and important mathematical relations are given for quick revision. (iv) Provides multiple choice questions with answers, short questions and long questions for practice.

Advanced Physical Chemistry

Krishna Prakashan Media

Elements of Physical Chemistry

Oxford University Press The ideal course companion, Elements of Physical Chemistry is written specifically with the needs of undergraduate students in mind, and provides extensive mathematical and pedagogical support while remaining concise and accessible. For the seventh edition of this much-loved text, the material has been reorganized into short Topics, which are grouped into thematic Focuses to make the text more digestible for students, and more flexible for lecturers to teach from. At the beginning of each Topic, three questions are posed, emphasizing why it is important, what the key idea is, and what the student should already know. Throughout the text, equations are clearly labeled and annotated, and detailed 'justification' boxes are provided to help students understand the crucial mathematics which underpins physical chemistry. Furthermore, Chemist's toolkits provide succinct reminders of key mathematical techniques exactly where they are needed in the text. Frequent worked examples, in addition to self-test questions and end-of-chapter exercises, help students to gain confidence and experience in solving problems. This diverse suite

of pedagogical features, alongside an appealing design and layout, make *Elements of Physical Chemistry* the ideal course text for those studying this core branch of chemistry for the first time.

Nanostructured Ceramic Oxides for Supercapacitor Applications

CRC Press A fresh and innovative technology is currently being recognized as a viable replacement for batteries. Research in the field of supercapacitors, as well as in the area of ceramic materials and their application to supercapacitor development, has spawned *Nanostructured Ceramic Oxides for Supercapacitor Applications*. Featuring key contributions from well-established experts, this book highlights the field of high-energy and power storage devices, and considers the potential of nanostructured ceramic oxides for supercapacitors. It explores the role of different ceramic oxide systems and their surface nano-architecture in governing the efficacy of a supercapacitor, and presents a detailed understanding of the basic design and science associated with nanostructured ceramic oxide-based supercapacitors. It examines the history and development of this promising energy system, covering the fundamentals, science, and problems associated with this swiftly emerging field. The book also looks extensively into different measurement techniques that can evaluate the performance of this device. Presents an overview of a given field with examples chosen primarily for their educational purpose Provides exhaustive references at the end of each chapter Fits the background of various science and engineering disciplines Contains detailed mathematical analyses Each chapter includes several simple, well-illustrated equations and schematic diagrams to augment the research topics and help the reader grasp the subject. Background theories and techniques are introduced early on, leading to the evolution of the field of nanostructured ceramic oxide--based supercapacitors. *Nanostructured Ceramic Oxides for Supercapacitor Applications* chronicles significant strides in device development, and benefits seniors and graduate students studying physics, electrical and computer engineering, chemistry, mechanical engineering, materials science, and nanotechnology.

Silica-based Organic-inorganic Hybrid Nanomaterials: Synthesis, Functionalization And Applications In The Field Of Catalysis

World Scientific Currently the field of nanocatalysis is undergoing many exciting developments and the design of silica-based organic-inorganic hybrid nanocatalysts is a key focus of the researchers working in this field. This book aims to present a succinct overview of the recent research progress directed towards the fabrication of silica-based organic-inorganic hybrid catalytic systems encompassing the key advantages of silica nanoparticles and silica-coated magnetic nanoparticles in an integrated manner. Featuring comprehensive descriptions of almost all approaches utilized for the synthesis of nanomaterials including some latest techniques such as flow and microwave-assisted synthesis that enable large-scale synthesis, it proves useful not only to academics but also industrialists. It also includes a systematic discussion on the vital characterization techniques employed for authenticating the structure of these. The title also offers an enormous amount of knowledge about the fusion of nanotechnology with green chemistry that strives to meet the scientific challenges of protecting human health and the environment.

Green Sustainable Process for Chemical and Environmental Engineering and Science

Green Solvents for Environmental Remediation

Elsevier *Green Solvents for Environmental Remediation* provides an in-depth overview of environmental remediation by using eutectic solvents, ionic liquids, biosolvents, and switchable solvents, of ionic-liquids, biosolvents, Gas-expanded solvents Liquid polymers, supercritical fluids, Polymer-based green solvents, Switchable solvents, etc. This book offers all-types of green solvents for the removal of contaminations from the soil, air, and water. It summarizes in-depth literature on the application of various green solvents in the areas such as municipal water, extraction, bioremediation, phytoremediation, soil and sediment remediation, toxic gases removal, and various industrial effluents. A brief introduction, limitations, and advantages to the practical use of green solvents are also discussed. This book is authored by experts in a broad range of fields. It is an invaluable reference guide for the sustainable and environmentally friendly development of synthetic methodologies for environmental, analytical, engineering, and industrial technology. Provides an up-to-date research record on green solvents for environmental protection Includes latest advances in environmental remediation Outlines eco-friendly green solvents for toxic contaminants degradation and purification Covers all-types of green solvent-driven environmental remediation technologies Key references to obtain great results in environmental remediation using green solvents

Design of Experiments for Chemical, Pharmaceutical, Food, and Industrial Applications

IGI Global Statistics is a key characteristic that assists a wide variety of professions including business, government, and factual sciences. Companies need data calculation to make informed decisions that help maintain their relevance. Design of experiments (DOE) is a set of active techniques that provides a more efficient approach for industries to test their processes and form effective conclusions. Experimental design can be implemented into multiple professions, and it is a necessity to promote applicable research on this up-and-coming method. Design of Experiments for Chemical, Pharmaceutical, Food, and Industrial Applications is a pivotal reference source that seeks to increase the use of design of experiments to optimize and improve analytical methods and productive processes in order to use less resources and time. While highlighting topics such as multivariate methods, factorial experiments, and pharmaceutical research, this publication is ideally designed for industrial designers, research scientists, chemical engineers, managers, academicians, and students seeking current research on advanced and multivariate statistics.

Handbook of Universities

Atlantic Publishers & Dist The Most Authentic Source Of Information On Higher Education In India The Handbook Of Universities, Deemed Universities, Colleges, Private Universities And Prominent Educational & Research Institutions Provides Much Needed Information On Degree And Diploma Awarding Universities And Institutions Of National Importance That Impart General, Technical And Professional Education In India. Although Another Directory Of Similar Nature Is Available In The Market, The Distinct Feature Of The Present Handbook, That Makes It One Of Its Kind, Is That It Also Includes Entries And Details Of The Private Universities Functioning Across The Country. In This Handbook, The Universities Have Been Listed In An Alphabetical Order. This Facilitates Easy Location Of Their Names. In Addition To The Brief History Of These Universities, The Present Handbook Provides The Names Of Their Vice-Chancellor, Professors And Readers As Well As Their Faculties And Departments. It Also Acquaints The Readers With The Various Courses Of Studies Offered By Each University. It Is Hoped That The Handbook In Its Present Form, Will Prove Immensely Helpful To The Aspiring Students In Choosing The Best Educational Institution For Their Career Enhancement. In Addition, It Will Also Prove Very Useful For The Publishers In Mailing Their Publicity Materials. Even The Suppliers Of Equipment And Services Required By These Educational Institutions Will Find It Highly Valuable.

Smart Materials for Waste Water Applications

John Wiley & Sons Smart materials are used to develop more cost-effective and high-performance water treatment systems as well as instant and continuous ways to monitor water quality. Smart materials in water research have been extensively utilized for the treatment, remediation, and pollution prevention. Smart materials can maintain the long term water quality, availability and viability of water resource. Thus, water via smart materials can be reused, recycled, desalinized and also it can detect the biological and chemical contamination whether the source is from municipal, industrial or man-made waste. The 15 state-of-the-art review chapters contained in this book cover the recent advancements in the area of waste water, as well as the prospects about the future research and development of smart materials for the waste water applications in the municipal, industrial and manmade waste areas. Treatment techniques (nanofiltration, ultrafiltration, reverse osmosis, adsorption and nano-reactive membranes) are also covered in-depth. The chapters are divided into three groups: The first section includes the various carbon nanomaterials (such as carbon nanotubes, mixed oxides) with a focus on use of carbon at nanoscale applied for waste water research. The second section focuses on synthetic nanomaterials for pollutants removal. The third section highlights the bio-polymeric nanomaterials where the authors have used the natural polymers matrices in a composite and nanocomposite material for waste treatment. The large number of researchers working in the area will benefit from the fundamental concepts, advanced approaches and application of the various smart materials towards waste water treatment that are described in the book. It will also provide a platform for the researchers and graduate students to carry out advanced research and understand the building blocks.

Nanobiotechnology for Sustainable Bioenergy and Biofuel Production

CRC Press Nanobiotechnology for Sustainable Bioenergy and Biofuel Production provides insights into the most recent innovations, trends, concerns and challenges in the production of biofuels. This book highlights a number of key research topics and practical applications of modern nanomaterials and nanocomposite-driven enzyme biotechnology for biofuels production, including the advances in the nanoscaffolds design (nanomaterials support) for immobilizing bioenergy producing enzymes (nanobiocatalyst system), the recent trends in biomass processing (untreated/treated agriculture and food waste, grasses, algal, etc.) using advanced nanobiocatalysts for biofuels production and the scale-up study of bioenergy production using nanomaterials immobilized enzymes and biofuel harvesting using nanomaterials. At the outset of new nanobiotechnology applications in biofuel production, there is a need for a new resource in the bioenergy field. This book delivers an overview of the contributions of biofuel production and the most

up-to-date advances in nanobiotechnology to a diverse audience ranging from post-graduate students to researchers in biochemical engineering, biotechnology, bioremediation and environmental studies and pharmaceutical professionals. **Key Features** • Outlines the most recent nanobiotechnological advances in biofuels and bioenergy for biofuels productions • Covers biodiesel, bioethanol, biomethane, biohydrogen, biorefineries and biofuel harvesting using nanomaterials • Explains the scale-up nanobiotechnological study of biofuel production at the bioreactor level

Water Extraction of Bioactive Compounds

From Plants to Drug Development

Elsevier **Water Extraction of Bioactive Compounds: From Plants to Drug Development** draws together the expert knowledge of researchers from around the world to outline the essential knowledge and techniques required to successfully extract bioactive compounds for further study. The book is a practical tool for medicinal chemists, biochemists, pharmaceutical scientists and academics working in the discovery and development of drugs from natural sources. The discovery and extraction of bioactive plant compounds from natural sources is of growing interest to drug developers, adding greater fuel to a simultaneous search for efficient, green technologies to support this. Particularly promising are aqueous based methods, as water is a cheap, safe and abundant solvent. The book is a detailed guide to the fundamental concepts and necessary equipment needed to successfully undertake such processes, supported by application examples and highlighting the most influential variables. Part 1 begins with a thorough introduction to plants as sources of drugs, highlighting strategies for the discovery of novel bioactive constituents of botanicals, the need for standardization and a move toward more rational and greener techniques in the field, the development of plant-based extraction processes and pretreatments for the efficient extraction. Part 2 then reviews a broad range of available techniques, including sections on conventional hot water extraction and pressurized hot water extraction in a range of settings. Intensified processes are then discussed in detail, including sections on microwave-assisted processes, ultrasound-assisted processes and enzyme assisted extraction. Covers the theoretical background and range of techniques available to researchers, helping them to select the most appropriate extraction method for their needs Presents up-to-date and cutting edge applications by international experts Highlights current use and future potential for industrial scale applications Offers a thorough introduction to plants as sources of drugs, highlighting strategies for the discovery of novel bioactive constituents of botanicals

Molecular Chemistry and Biomolecular Engineering

Integrating Theory and Research with Practice

CRC Press This new volume is devoted to molecular chemistry and its applications to the fields of biology. It looks at the integration of molecular chemistry with biomolecular engineering, with the goal of creating new biological or physical properties to address scientific or societal challenges. It takes a both multidisciplinary and interdisciplinary perspective on the interface between molecular biology, biophysical chemistry, and chemical engineering. **Molecular Chemistry and Biomolecular Engineering: Integrating Theory and Research with Practice** provides effective support for the development of the laboratory and data analysis skills that researchers will draw on time and again for the practical aspects and also gives a solid grounding in the broader transferable skills.

Biotransformation of Agricultural Waste and By-Products

The Food, Feed, Fibre, Fuel (4F) Economy

Elsevier **Biotransformation of Agricultural Waste and By-Products in the 4F Economy: The Food, Feed, Fiber, Fuel (4F) Economy** presents an evaluation of plant species better exploitable for a particular transformation. As crops are already covering large parts of cultivable soils, it is not conceivable to try to extend the cultures beyond the limit of available soils, but a further increase in productivity is not easy to obtain. The book discusses advances in technology and plants design which support the exploitation and valorization of vegetable and fruit by-products through fermentation (feed-batch liquid fermentation, solid-state fermentation) in bio-based bio-chemicals/biofuels production. Pathways in the biosynthesis of fibers, sugars, and metabolites are provided with a focus on the lifecycle of bacteria, yeasts, and even plant species. The text analyzes cellular structures and the organization of cell walls in order to show which polysaccharides offer more favorable fermentative processes and which are detrimental. Provides an overview of all plant based biosources Includes examples of biochemical/biofuel production from plant waste Discusses the production of enzymes used in the plant fermentation processes Explores the new fermentation technologies and production of chemicals and fuels from various plants

Encyclopedia of Marine Biotechnology

John Wiley & Sons A keystone reference that presents both up-to-date research and the far-reaching applications of marine biotechnology Featuring contributions from 100 international experts in the field, this five-volume encyclopedia

provides comprehensive coverage of topics in marine biotechnology. It starts with the history of the field and delivers a complete overview of marine biotechnology. It then offers information on marine organisms, bioprocess techniques, marine natural products, biomaterials, bioenergy, and algal biotechnology. The encyclopedia also covers marine food and biotechnology applications in areas such as pharmaceuticals, cosmeceuticals, and nutraceuticals. Each topic in Encyclopedia of Marine Biotechnology is followed by 10-30 subtopics. The reference looks at algae cosmetics, drugs, and fertilizers; biodiversity; chitins and chitosans; aeroplysin-1, toluquinol, astaxanthin, and fucoxanthin; and algal and fish genomics. It examines neuro-protective compounds from marine microorganisms; potential uses and medical management of neurotoxic phycotoxins; and the role of metagenomics in exploring marine microbiomes. Other sections fully explore marine microbiology, pharmaceutical development, seafood science, and the new biotechnology tools that are being used in the field today. One of the first encyclopedic books to cater to experts in marine biotechnology Brings together a diverse range of research on marine biotechnology to bridge the gap between scientific research and the industrial arena Offers clear explanations accompanied by color illustrations of the techniques and applications discussed Contains studies of the applications of marine biotechnology in the field of biomedical sciences Edited by an experienced author with contributions from internationally recognized experts from around the globe Encyclopedia of Marine Biotechnology is a must-have resource for researchers, scientists, and marine biologists in the industry, as well as for students at the postgraduate and graduate level. It will also benefit companies focusing on marine biotechnology, pharmaceutical and biotechnology, and bioenergy.

TEXTBOOK OF PHYSICAL CHEMISTRY

PHI Learning Pvt. Ltd. This comprehensive textbook, now in its second edition, is mainly written as per the latest syllabi of physical chemistry of all the leading universities of India as well as the new syllabus recommended by the UGC. This thoroughly revised and updated edition covers the principal areas of physical chemistry, such as thermodynamics, quantum chemistry, molecular spectroscopy, chemical kinetics, electrochemistry and nanotechnology. In a methodical and accessible style, the book discusses classical, irreversible and statistical thermodynamics and statistical mechanics, and describes macroscopic chemical systems, steady states and thermodynamics at a molecular level. It elaborates the underlying principles of quantum mechanics, molecular spectroscopy, X-ray crystallography and solid state chemistry along with their applications. The book explains various instrumentation techniques such as potentiometry, polarography, voltammetry, conductometry and coulometry. It also describes kinetics, rate laws and chemical processes at the electrodes. In addition, the text deals with chemistry of corrosion and nanomaterials. This text is primarily designed for the undergraduate and postgraduate students of chemistry (B.Sc. and M.Sc.) for their course in physical chemistry. Key Features • Gives a thorough treatment to ensure a solid grasp of the material. • Presents a large number of figures and diagrams that help amplify key concepts. • Contains several worked-out examples for better understanding of the subject matter. • Provides numerous chapter-end exercises to foster conceptual understanding.

World Encyclopaedia of Nations and Nationalities

Discovery Publishing House The origins and development of the fascinating variety of continents, countries and communities of the world are the engrossing subjects of the present prize set of 17 Vols. in 34 Parts of the encyclopaedia. With marvelously lucid text and equally graphic illustrations, the writers and editors present a panoramic account of the splendid variety of the family of mankind, its numerous and varied habitations, its physical, human and economic geography of man and his activities, and the living dynamic relation that mankind had with fellow communities across land and sea as well as with the planet that sustains all of them. The World Encyclopaedia of Nations and Nationalities opens to students, teachers and general readers a vast and beautiful window onto the great as well as the little known customs, manners and cultures of the world, reveals the universal geographical features and singularities of all countries in the continents, the introduces in vivid detail the many kind of inhabitants that are found world-wide. Not only is this brilliantly conceived encyclopaedia the pride of many libraries across the world, but it is also regarded as an apt companion and complement to the earlier historic work of Darwin, namely, Origin of the Species. In its comprehensive sweep and vibrant treatment the present the present volumes of this encyclopaedia will be an essential part of all libraries.

Nanotechnology in Paper and Wood Engineering

Fundamentals, Challenges and Applications

Elsevier Nanotechnology in Paper and Wood Engineering: Fundamentals, Challenges and Applications describes recent advances made in the use of nanotechnology in the paper and pulp industry. Various types of nano-additives commonly used in the paper industry for modification of raw material to enhance final products are included, with other sections covering the imaging applications of nano-papers and nano-woods in pharmaceuticals, biocatalysis, photocatalysis and energy storage. This book is an important reference source for materials scientists and engineers who are looking to understand how nanotechnology is being used to create more efficient manufacturing processes in for the paper and wood industries. Provides information on nano-paper production and its applications Explains the major synthesis techniques and design concepts of cellulosic or wooden nanomaterials for industrial applications Assesses the major challenges of creating nanotechnology-based manufacturing systems for wood and paper

engineering

Advanced Inorganic Chemistry - Volume II

S. Chand Publishing *Advanced Inorganic Chemistry - Volume II* is a concise book on basic concepts of inorganic chemistry. **Beginning with Coordination Chemistry**, it presents a systematic treatment of all Transition and Inner-Transition chemical elements and their compounds according to the periodic table. Special topics such as Pollution and its adverse effects, chromatography, use of metal ions in biological systems, to name a few, are discussed to provide additional relevant information to the students. It primarily caters to the undergraduate courses (Pass and Honours) offered in Indian universities.

Food Bioactives

Extraction and Biotechnology Applications

Springer This book focuses on various types of bioactive compounds, including secondary metabolites, oligosaccharides, polysaccharides, flavonoids, peptides/proteins, carotenoid pigments, quinones, terpenes, and polyunsaturated fatty acids, and presents an overview of their nutraceutical activities. It covers the current status and future potential of food compounds, as well as extraction technologies for bioactives derived from plant, fungi and marine-derived bioactive agents. Finally, health-promoting effects of plant, fungi and marine-derived bioactive agents are discussed. Chapters come from top researchers in this area from around the globe. The volume caters to the needs of undergraduate and post-graduate students in the area of food biotechnology, food bioprocessing, biotechnology, food engineering, etc., and also contains information pertinent to researchers.

Geotherapy

Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO₂ Increase

CRC Press *A Practical, Get-Your-Hands-in-the-Soil Manual* Global climate change, increasing pollution, and continued rapid population growth is wreaking havoc on the planet. Stabilizing the environment at safe levels requires a large-scale restoration of damaged ecosystems. **Geotherapy: Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and**

Handbook of Water Purity and Quality

Academic Press *Handbook of Water Purity and Quality, Second Edition* provides those involved in water purification research and administration with a comprehensive resource of methods for analyzing water to assure its safety from contaminants, both natural and human caused. The book includes an overview of the subject and discusses major water-related issues in developing and developed countries. Issues covered include sampling for water analysis, regulatory considerations, and forensics in water quality and purity investigations. Microbial as well as chemical contaminations from inorganic compounds, radionuclides, disinfectants, pesticides, and pharmaceuticals, including endocrine disruptors, are discussed at length. In addition, the luxury of municipal water purified for human consumption is unavailable for a very large number of people. To help solve this problem, some economical water purification techniques, including a million-dollar Grainger prizewinner that can save millions of lives have been included. This fully updated second edition includes four new chapters on topics such as the GenX Water Contamination Problem, the impact of climate change on water, and green chemistry solutions to water pollution. Covers the scope of water contamination problems on a worldwide scale with an overview of major water-related issues in developing and developed countries, including monitoring techniques for potential terrorist-related activities Provides a rich source of methods for analyzing water to ensure its safety from natural and deliberate contaminants Includes a review of water quality forensics with the objective of tracking new potential water contaminants

World Guide to Universities - Internationales

Universitäts-Handbuch

Mathematical and Statistical Methods in Food Science

and Technology

John Wiley & Sons **Mathematical and Statistical Approaches in Food Science and Technology** offers an accessible guide to applying statistical and mathematical technologies in the food science field whilst also addressing the theoretical foundations. Using clear examples and case-studies by way of practical illustration, the book is more than just a theoretical guide for non-statisticians, and may therefore be used by scientists, students and food industry professionals at different levels and with varying degrees of statistical skill.

Valorization of Agri-Food Wastes and By-Products

Recent Trends, Innovations and Sustainability Challenges

Academic Press **Valorization of Agri-Food Wastes and By-Products: Recent Trends, Innovations and Sustainability Challenges** addresses the waste and by-product valorization of fruits and vegetables, beverages, nuts and seeds, dairy and seafood. The book focuses its coverage on bioactive recovery, health benefits, biofuel production and environment issues, as well as recent technological developments surrounding state of the art of food waste management and innovation. The book also presents tools for value chain analysis and explores future sustainability challenges. In addition, the book offers theoretical and experimental information used to investigate different aspects of the valorization of agri-food wastes and by-products. **Valorization of Agri-Food Wastes and By-Products: Recent Trends, Innovations and Sustainability Challenges** will be a great resource for food researchers, including those working in food loss or waste, agricultural processing, and engineering, food scientists, technologists, agricultural engineers, and students and professionals working on sustainable food production and effective management of food loss, wastes and by-products. Covers recent trends, innovations, and sustainability challenges related to food wastes and by-products valorization Explores various recovery processes, the functionality of targeted bioactive compounds, and green processing technologies Presents emerging technologies for the valorization of agri-food wastes and by-products Highlights potential industrial applications of food wastes and by-products to support circular economy concepts

Membrane Technology

Sustainable Solutions in Water, Health, Energy and Environmental Sectors

CRC Press **Contributed by multiple experts, the book covers the scientific and engineering aspects of membrane processes and systems. It aims to cover basic concepts of novel membrane processes including membrane bioreactors, microbial fuel cell, forward osmosis, electro-dialysis and membrane contactors. Maintains a pragmatic approach involving design, operation and cost analysis of pilot plants as well as scaled-up counterparts**

Resistant Starch

Sources, Applications and Health Benefits

John Wiley & Sons **The discovery of resistant starch is considered one of the major developments in our understanding of the importance of carbohydrates for health in the past twenty years. Resistant starch, which is resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the large intestine, is naturally present in foods. Resistant Starch: Sources, Applications and Health Benefits covers the intrinsic and extrinsic sources of resistant starch in foods, and compares different methods of measuring resistant starch and their strengths and limitations. Applications in different food categories are fully covered, with descriptions of how resistant starch performs in bakery, dairy, snack, breakfast cereals, pasta, noodles, confectionery, meat, processed food and beverage products.**

Principles of Physical Chemistry

CBS Publishers & Distributors Pvt Limited, India

Biomass, Biofuels, Biochemicals

Advances in Enzyme Catalysis and Technologies

Elsevier *Advances in Enzyme Catalysis and Technologies* intends to provide the basic structural and functional descriptions, and classification of enzymes. The scientific information related to the recombinant enzyme modifications, discovery of novel enzymes and development of synthetic enzymes are also presented. The translational aspects of enzyme catalysis and bioprocess technologies are illustrated, by emphasizing the current requirements and future perspectives of industrial biotechnology. Several case studies are included on enzymes for biofuels application, micro algal biorefineries, high-value bioactive molecules production and enzymes for environmental processes, such as enzymatic bioprocessing for functional food development, biocatalytic technologies for the production of functional sweetener, etc. Provides a conceptual understanding of enzyme catalysis, enzyme engineering, discovery of novel enzymes, and technology perspectives Includes comprehensive information about the inventions and advancement in enzyme system development for biomass processing and functional food developmental aspects Gives an updated reference for education and understanding of enzyme technology

Indian Books in Print

Catalyst-free Organic Synthesis

[Royal Society of Chemistry](#)

Novel Forms of Carbon: Volume 270

[Materials Research Society](#) The **MRS Symposium Proceeding** series is an internationally recognised reference suitable for researchers and practitioners.

Indian Book Industry

National Catalogue of University Level Books, 1971

Atkins' Physical Chemistry 11e

Volume 3: Molecular Thermodynamics and Kinetics

[Oxford University Press, USA](#) **Atkins' Physical Chemistry: Molecular Thermodynamics and Kinetics** is designed for use on the second semester of a quantum-first physical chemistry course. Based on the hugely popular **Atkins' Physical Chemistry**, this volume approaches molecular thermodynamics with the assumption that students will have studied quantum mechanics in their first semester. The exceptional quality of previous editions has been built upon to make this new edition of **Atkins' Physical Chemistry** even more closely suited to the needs of both lecturers and students. Re-organised into discrete 'topics', the text is more flexible to teach from and more readable for students. Now in its eleventh edition, the text has been enhanced with additional learning features and maths support to demonstrate the absolute centrality of mathematics to physical chemistry. Increasing the digestibility of the text in this new approach, the reader is brought to a question, then the math is used to show how it can be answered and progress made. The expanded and redistributed maths support also includes new 'Chemist's toolkits' which provide students with succinct reminders of mathematical concepts and techniques right where they need them. Checklists of key concepts at the end of each topic add to the extensive learning support provided throughout the book, to reinforce the main take-home messages in each section. The coupling of the broad coverage of the subject with a structure and use of pedagogy that is even more innovative will ensure **Atkins' Physical Chemistry** remains the textbook of choice for studying physical chemistry.

Phenolic Compounds

Natural Sources, Importance and Applications

[BoD - Books on Demand](#) Phenolic compounds as a large class of metabolites found in plants have attracted attention since long time ago due to their properties and the hope that they will show beneficial health effects when taken as dietary supplements. This book presents the state of the art of some of the natural sources of phenolic compounds, for example, medicinal plants, grapes or blue maize, as well as the modern methods of extraction, quantification, and identification, and there is a special section discussing the treatment, removal, and degradation of phenols, an important issue in those phenols derived from the pharmaceutical or petrochemical industries.

Handbook of Fruit Wastes and By-Products

Chemistry, Processing Technology, and Utilization

CRC Press Processing of fruits produces large volumes of wastes and these wastes can create pollution problems and also result in loss of valuable biomass and nutrients. The Handbook of Fruit Wastes and By-Products: Chemistry, Processing Technology, and Utilization deals with the various techniques and methods involved in processing of fruit by-products. Although there are some general books on by-products of food processing industry but they are limited in context to the by-products of some particular fruits. This is the first book devoted to fruit processing by-products of wide range of important fruits including tropical, subtropical and temperate fruits; and their possible utilization in food and non-food industries. **Key Features** Discusses the valorization of fruit processing by-products Covers the role of the by-products as prebiotics and dietary fibers Presents extraction techniques of bioactive compounds from fruit wastes This book provides in-depth information about the fruit processing by-products, their nutritional composition, biochemistry, processing technology of by-products and the utilization of by-products into various food applications. This book also offers comprehensive coverage on the role of the fruit by-products as prebiotics and dietary fibers, their potential as the source of bioactive ingredients and their utilization in the development of novel functional foods. It also includes various novel technologies useful in extraction and evaluation of the functional components from these fruit processing by-products. The book addresses how the proper utilization of fruit processing by-products would not only emerge as a source of extra profit to the fruit processing industry but also will help in lessen the environment pollution due to these fruit processing by-products.

Metabolic Engineering in Plants

Springer Nature This edited book highlights the plant and cell/organ culture systems, and environmental and genetic transformation-based modulation of biochemical pathways. Special focus is given to microRNA-based technology, heterologous systems expression of enzymes and pathways leading to products of interest, as well as applications using both model and non-model plant species. Metabolic engineering is usually defined as the re-routing of one or more enzymatic reactions to generate new compounds, increase the production of existing compounds, or facilitate the degradation of compounds. Plants are the foundation of numerous compounds which are synthesized via assimilated complex biosynthetic routes. Plants have evolved an incredible arrangement of metabolic pathways leading to molecules/compounds capable of responding promptly and effectively to stress situations imposed by biotic and abiotic factors, some of which supply the ever-growing needs of humankind for natural chemicals, such as pharmaceuticals, nutraceuticals, agrochemicals, food and chemical additives, biofuels, and biomass. However, in foreseeable future we will be forced to think about the accessibility of resources for the generations to come. For these reasons, the book proposes alternative options of food/food supplement, medicines and other essential items, by using plant metabolic engineering approach. This book is of interest to teachers, researchers and academic experts. Also, the book serves as additional reading material for undergraduate and graduate students of biotechnology and molecular biology of plants.

Principles of Inorganic Chemistry

Larsen and Keller Education The synthesis and behavior of organometallic and inorganic compounds are studied in inorganic chemistry. All chemical compounds that do not have a carbon-hydrogen bond are known as inorganic compounds. These are generally classified as coordination compounds, transition metal compounds, cluster compounds, bioinorganic compounds, etc. The concepts of the Bohr model of the atom, ligand field theory, molecular orbital theory, density functional theory, VSEPR theory and the molecular symmetry group theory are integral to the development of this field. Inorganic chemistry has applications in all aspects of the chemical industry, such as in catalysis, coatings, surfactants, pigments, etc. besides the agriculture and medicine industry. This textbook is a valuable compilation of topics, ranging from the basic to the most complex theories and principles in the field of inorganic chemistry. It attempts to understand the multiple branches that fall under this discipline and how such concepts have practical applications. It aims to serve as a resource guide for students and experts alike and contribute to the growth of the discipline.