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Biodiesel production is a rapidly advancing field worldwide, with biodiesel fuel increasingly being used in compression ignition (diesel) engines. Biodiesel has been extensively studied and utilised in developed countries, and it is increasingly being introduced in developing countries, especially in regions with high potential for sustainable biodiesel production. Initial sections systematically review feedstock resources and vegetable oil formulations, including the economics of vegetable oil conversion to diesel fuel, with additional coverage of emerging energy crops for biodiesel production. Further sections review the transesterification process, including chemical (catalysis) and biochemical (biocatalysis) processes, with extended coverage of industrial process technology and control methods, and standards for biodiesel fuel quality assurance. Final chapters cover the sustainability, performance and environmental issues of biodiesel production, as well as routes to improve glycerol by-product usage and the development of next-generation products. Biodiesel science and technology: From soil to oil provides a comprehensive reference to fuel engineers, researchers and academics on the technological developments involved in improving biodiesel quality and production capacity that are crucial to the future of the industry. Evaluates biodiesel as a renewable energy source and documents global biodiesel development The outlook for biodiesel science and technology is presented exploring the challenges faced by the global diesel industry Reviews feedstock resources and vegetable oil formation including emerging crops and the agronomic potential of underexploited oil crops

A range of alternative mechanisms can usually be postulated for most organic chemical reactions, and identification of the most likely requires detailed investigation. Investigation of Organic Reactions and their Mechanisms will serve as a guide for the trained chemist who needs to characterise an organic chemical reaction and investigate its mechanism, but who is not an expert in physical organic chemistry. Such an investigation will lead to an understanding of which bonds are broken, which are made, and the order in which these processes happen. This information and knowledge of the associated kinetic and thermodynamic parameters are central to the development of safe, efficient, and profitable industrial chemical processes, and to extending the synthetic utility of new chemical reactions in chemical and pharmaceutical manufacturing, and academic environments. Written as a coherent account of the principal methods currently used in mechanistic investigations, at a level accessible to academic researchers and graduate chemists in industry, the book is highly practical in approach. The contributing authors, an international group of expert practitioners of the techniques covered, illustrate their contributions by examples from their own research and from the relevant wider chemical literature. The book covers basic aspects such as product analysis, kinetics, catalysis, and investigation of reactive intermediates. It also includes material on significant recent developments, e.g. computational chemistry, calorimetry, and electrochemistry, in addition to topics of high current industrial relevance, e.g. reactions in multiphase systems, and synthetically useful reactions involving free radicals and catalysis by organometallic compounds.

This open access book presents a comprehensive analysis of biofuel use strategies from an interdisciplinary perspective using

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sustainability science. This interdisciplinary perspective (social science-natural science) means that the strategies and policy options proposed will have significant impacts on the economy and society alike. Biofuels are expected to contribute to reducing greenhouse gas emissions, revitalizing economies in agricultural communities and alleviating poverty. However, despite these anticipated benefits, international organizations such as the FAO, OECD and UN have published reports expressing concerns that biofuel promotion may lead to deforestation, water pollution and water shortages. The impacts of biofuel use are extensive, cross-sectoral and complex, and as such, comprehensive analyses are required in order to assess the extent to which biofuels can contribute to sustainable societies. Applying interdisciplinary sustainability science concepts and methodologies, the book helps to enhance the establishment of a sustainable society as well as the development of appropriate responses to a global need for urgent action on current issues related to biofuels.

Architecture Engineering is a simple e-Book for Architecture Diploma & Engineering Course, Revised Syllabus in 2018, It contains objective questions with underlined & bold correct answers MCQ covering all topics including all about the latest & Important about Construction Project Management, Strength of Material, Interior and Exterior Design, Foundation Design, Civil Draftsman and Architecture, Building Constructions, Concrete Technology, Business Communication, Structural Engineering, Elective subject, Information Technology, Architectural Design and lots more.

This book presents a complete picture of the current state-of-the-art in alternative and green solvents used for laboratory and industrial natural product extraction in terms of the latest innovations, original methods and safe products. It provides the necessary theoretical background and details on extraction, techniques, mechanisms, protocols, industrial applications, safety precautions and environmental impacts. This book is aimed at professionals from industry, academicians engaged in extraction engineering or natural product chemistry research, and graduate level students. The individual chapters complement one another, were written by respected international researchers and recognized professionals from the industry, and address the latest efforts in the field. It is also the first sourcebook to focus on the rapid developments in this field.

Exponential growth of the worldwide population requires increasing amounts of water, food, and energy. However, as the quantity of available fresh water and energy sources directly affecting cost of food production and transportation diminishes, technological solutions are necessary to secure sustainable supplies. In direct response to this reality, this book focuses on the water-energy-food nexus and describes in depth the challenges and processes involved in efficient water and energy production and management, wastewater treatment, and impact upon food and essential commodities. The book is organized into 4 sections on water, food, energy, and the future of sustainability, highlighting the interplay among these topics. The first section emphasizes water desalination, water management, and wastewater treatment. The second section discusses cereal processing, sustainable food security, bioenergy in food production, water and energy consumption in food processing, and mathematical modeling for food undergoing phase changes. The third section discusses fossil fuels, biofuels, synthetic fuels, renewable energy, and carbon capture. Finally, the book concludes with a discussion of the future of sustainability, including coverage of the role of molecular

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thermodynamics in developing processes and products, green engineering in process systems, petrochemical water splitting, petrochemical approaches to solar hydrogen generation, design and operation strategy of energy-efficient processes, and the sustainability of process, supply chain, and enterprise.

This book is aimed at engineers and technicians who need to have a clear, practical understanding of the essentials of process control, loop tuning and how to optimize the operation of their particular plant or process. The reader would typically be involved in the design, implementation and upgrading of industrial control systems. Mathematical theory has been kept to a minimum with the emphasis throughout on practical applications and useful information. This book will enable the reader to:

- * Specify and design the loop requirements for a plant using PID control
- * Identify and apply the essential building blocks in automatic control
- * Apply the procedures for open and closed loop tuning
- * Tune control loops with significant dead-times
- * Demonstrate a clear understanding of analog process control and how to tune analog loops
- * Explain concepts used by major manufacturers who use the most up-to-date technology in the process control field

· A practical focus on the optimization of process and plant

· Readers develop professional competencies, not just theoretical knowledge

· Reduce dead-time with loop tuning techniques

Solid Acids and Bases: Their Catalytic Properties reviews developments in the studies of acidic and basic properties of solids, including the efficacy and special characteristics of solid acid and base catalysts. This book discusses the determination of basic and acidic properties on solid surfaces and relationship between acid strength and acid amount. The structure and acid-base properties of mixed metal oxides and correlation between acid-base properties and catalytic activity and selectivity are also deliberated. This publication is useful to professional chemists and graduate students in the fields of organic, inorganic and physical chemistry, petroleum chemistry and catalysis, including readers interested in the acidic and basic properties on solid surfaces.

The second edition of this popular industrial guide describes over 2,800 currently available epoxy resins, curing agents, compounds, and modifiers, based on information supplied by 71 manufacturers or distributors of these products. Epoxy resins have experienced tremendous growth since their introduction in the 1950s. Future growth will be in new markets in the specialty performance areas and high-technology applications. Each raw material or product is described, as available, with typical assay or checkpoint figures and a brief summary of important features or applications. Additional sections useful to the reader are the Suppliers' Addresses and a Trade Name Index.

Sets the stage for the development of sustainable, environmentally friendly fuels, chemicals, and materials Taking millions of years to form, fossil fuels are nonrenewable resources; it is estimated that they will be depleted by the end of this century. Moreover, the production and use of fossil fuels have resulted in considerable environmental harm. The generation of environmentally friendly energy from renewable sources such as biomass is therefore essential. This book focuses on the integration of green chemistry concepts into biomass processes and conversion in order to take full advantage of the potential of biomass to replace nonsustainable resources and meet global needs for fuel as well as other chemicals and materials. **The Role of Green Chemistry**

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in Biomass Processing and Conversion features contributions from leading experts from Asia, Europe, and North America. Focusing on lignocellulosic biomass, the most abundant biomass resource, the book begins with a general introduction to biomass and biorefineries and then provides an update on the latest advances in green chemistry that support biomass processing and conversion. Next, the authors describe current and emerging biomass processing and conversion techniques that use green chemistry technologies, including: Green solvents such as ionic liquids, supercritical CO₂, and water Sustainable energy sources such as microwave irradiation and sonification Green catalytic technologies Advanced membrane separation technologies The last chapter of the book explores the ecotoxicological and environmental effects of converting and using fuels, chemicals, and materials from biomass. Recommended for professionals and students in chemical engineering, green chemistry, and energy and fuels, *The Role of Green Chemistry in Biomass Processing and Conversion* sets a strong foundation for the development of a competitive and sustainable bioeconomy. This monograph includes a Foreword by James Clark (University of York, UK). The production of low cost and environmentally friendly highperforming carbon materials is crucial for a sustainable future. *Sustainable Carbon Materials from Hydrothermal Processes* describes a sustainable and alternative technique to produce carbon from biomass in water at low temperatures, a process known as Hydrothermal Carbonization (HTC). *Sustainable Carbon Materials from Hydrothermal Processes* presents an overview of this new and rapidly developing field, discussing various synthetic approaches, characterization of the final products, and modern fields of application for of sustainable carbon materials. Topics covered include:

- Green carbon materials
- Porous hydrothermal carbons
- HTC for the production of valuable carbon hybrid materials
- Functionalization of hydrothermal carbon materials
- Characterization of HTC materials
- Applications of HTC in modern nanotechnology: Energy storage, electrocatalysis in fuel cells, photocatalysis, gas storage, water purification, sensors, bioapplications
- Environmental applications of HTC technology: Biochar production, carbon sequestration, and waste conversion
- Scale-up in HTC

Sustainable Carbon Materials from Hydrothermal Processes will serve as a comprehensive guide for students and newcomers in the field, as well as providing a valuable source of information for researchers and investors looking for alternative technologies to convert biomass into useful products.

The second edition of this invaluable handbook covers converting vegetable oils, animal fats, and used oils into biodiesel fuel. The *Biodiesel Handbook* delivers solutions to issues associated with biodiesel feedstocks, production issues, quality control, viscosity, stability, applications, emissions, and other environmental impacts, as well as the status of the biodiesel industry worldwide. Incorporates the major research and other developments in the world of biodiesel in a comprehensive and practical format Includes reference materials and tables on biodiesel standards, unit conversions, and technical details in four appendices Presents details on other uses of biodiesel and other alternative diesel fuels from oils and fats

In a reactive distillation column, both the chemical conversion and the distillative separation of the product mixture are carried out simultaneously. Through this integrative strategy, chemical equilibrium limitations can be overcome, higher selectivities can be achieved and heat of reaction can be directly used for distillation. Increased process efficiency and reduction of investments and

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operational costs are the direct results of this approach. Highly renowned international experts from both industry and academia review the state-of-the-art and the future directions in application, design, analysis and control of Reactive Distillation processes. Part I surveys various industrial applications and covers both established large scale processes as well as new chemical reaction schemes with high future potential. Part II provides the vital details for analysis of reactive phase equilibria, and discusses the importance of chemical reaction kinetics, while Part III focuses on identifying feasible column configurations and designing their internal structure. Analysis and control of the complex dynamic and steady-state behavior of reactive distillation processes are described in Part IV. Reactive Distillation - a very promising alternative to conventional reaction-distillation flow schemes. Offering a materials science point of view, the author covers the theory and practice of adsorption and diffusion applied to gases in microporous crystalline, mesoporous ordered, and micro/mesoporous amorphous materials. Examples used include microporous and mesoporous molecular sieves, amorphous silica, and alumina and active carbons, akaganeites, prussian blue analogues, metal organic frameworks and covalent organic frameworks. The use of single component adsorption, diffusion in the characterization of the adsorbent surface, pore volume, pore size distribution, and the study of the parameters characterizing single component transport processes in porous materials are detailed.

The consumption of petroleum has surged during the 20th century, at least partially because of the rise of the automobile industry. Today, fossil fuels such as coal, oil, and natural gas provide more than three quarters of the world's energy. Unfortunately, the growing demand for fossil fuel resources comes at a time of diminishing reserves of these nonrenewable resources. The worldwide reserves of oil are sufficient to supply energy and chemicals for only about another 40 years, causing widening concerns about rising oil prices. The use of biomass to produce energy is only one form of renewable energy that can be utilized to reduce the impact of energy production and use on the global environment. Biomass can be converted into three main products such as energy, biofuels and fine chemicals using a number of different processes. Today, it is a great challenge for researchers to find new environmentally benign methodology for biomass conversion, which are industrially profitable as well. This book focuses on the conversion of biomass to biofuels, bioenergy and fine chemicals with the interface of biotechnology, microbiology, chemistry and materials science. An international scientific authorship summarizes the state-of-the-art of the current research and gives an outlook on future developments.

The first all-in-one reference for the beet-sugar industry Beet-Sugar Handbook is a practical and concise reference for technologists, chemists, farmers, and research personnel involved with the beet-sugar industry. It covers: * Basics of beet-sugar technology * Sugarbeet farming * Sugarbeet processing * Laboratory methods of analysis The book also includes technologies that improve the operation and profitability of the beet-sugar factories, such as: * Juice-softening process * Molasses-softening process * Molasses-desugaring process * Refining cane-raw sugar in a beet-sugar factory The book ends with a review of the following: * Environmental concerns of a beet-sugar factory * Basics of science related to sugar technology * Related tables for use in calculations Written in a conversational, engaging style, the book is userfriendly and practical in its presentation of relevant

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scientific and mathematical concepts for readers without a significant background in these areas. For ease of use, the book highlights important notes, defines technical terms, and presents units in both metric and British systems. Operating problem-solving related to all stations of sugar beet processing, frequent practical examples, and given material/energy balances are other special features of this book.

The collection of the six contributions of the 7th International Seminar on Modern Synthetic Methods, written by leading experts in their fields, gives an overview on the state of the art, trends, and new accomplishments in solvent effects on chemical transformations, in reactions on surfaces, in the synthesis of oligosaccharides and nucleic acid analogues, and in antibody catalysis. This volume is an invaluable companion to both the active research chemists and the advanced students, fascinated by the world of biologically important compounds and by the creativity in synthetic techniques directed towards their preparation. The importance of biofuels in greening the transport sector in the future is unquestionable, given the limited available fossil energy resources, the environmental issues associated to the utilization of fossil fuels, and the increasing attention to security of supply. This comprehensive reference presents the latest technology in all aspects of biofuels production, processing, properties, raw materials, and related economic and environmental aspects. Presenting the application of methods and technology with minimum math and theory, it compiles a wide range of topics not usually covered in one single book. It discusses development of new catalysts, reactors, controllers, simulators, online analyzers, and waste minimization as well as design and operational aspects of processing units and financial and economic aspects. The book rounds out by describing properties, specifications, and quality of various biofuel products and new advances and trends towards future technology.

For fifty years, Hydrosilylation has been one of the most fundamental and elegant methods for the laboratory and industrial synthesis of organosilicon and silicon related compounds. Despite the intensive research and continued interest generated by organosilicon compounds, no comprehensive book incorporating its various aspects has been published this century. The aim of this book is to comprehensively review the advances of hydrosilylation processes since 1990. The survey of the literature published over the last two decades enables the authors to discuss the most recent aspects of hydrosilylation advances (catalytic and synthetic) and to elucidate the reaction mechanism for the given catalyst used and the reaction utilization. New catalytic pathways under optimum conditions necessary for efficient synthesis of organosilicon compounds are presented. This monograph shows the extensive development in the application of hydrosilylation in organic and asymmetric syntheses and in polymer and material science.

This volume originates from the proceedings of the International Conference on Nano for Energy and Water (NEW) & Indo French Workshop on Water Networking, 22-24 February, 2017 in Dehar. NEW-2017 is aimed at students, educators, researchers, scientists, engineers and industrialists, engaged in a wide range of nanotechnology fields and related applications. NEW-2017 will provide an ideal environment to develop new collaborations and meet experts of thematic areas. The conference aims to exchange the technical/scientific information with the representatives of various industries and R & D Organisations, to provide

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technical support to government and non-government agencies across the globe in policy planning and implementation in the relevant areas, to promote and document the recent developments in nanotechnology for energy and water applications and to highlight the future need of nanotechnology in different fields.

Natural Products Isolation: Second Edition presents a practical overview of just how natural products can be extracted, prepared, and isolated from the source material. Maintaining the main theme and philosophy of the first edition, this second edition incorporates all the new significant developments in this field of research. The chapters are divided into four distinct sections: introduction, extraction, chromatography, and special topics. This second edition provides substantial background information for natural product researchers and will prove a useful reference guide to all of the available techniques.

Volume I mainly focuses on the current understanding of the reaction pathways and mechanisms involved in several important catalytic conversions of cellulose and carbohydrates. It starts with nanoscale illustrations of biomass structures and describes various reactions including cellulose depolymerization to sugars, catalytic aldose-ketose isomerization and dehydration, selective oxidation, hydrogenolysis of cellulose and sugars, and the conversion of short carbohydrates. The specificity and function of different catalysts and reaction media in relation to the catalytic performances for these reactions are discussed with significant mechanistic details. Marcel Schlaf, PhD, is a Professor at the Department of Chemistry, University of Guelph, Canada. Z. Conrad Zhang, PhD, is a Professor at the Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China.

Handbook of Cosmetic Science: An Introduction to Principles and Applications is a guidebook that aids in addressing several areas of concerns in cosmetic science. The book is comprised of 24 chapters that cover the wide spectrum of issues in cosmetics, from application of products up to the proper handling and packaging of cosmetic products. The text first discusses the importance of the body surfaces to which perfumes and cosmetics are applied such as the skin, hair, and teeth. Next the book deals with the chemistry of the raw materials that are processed in the cosmetics industry. The next chapters cover the formulation, production, and packaging of cosmetic products, along with product evaluation and measures to prevent damage to the goods. The text will be of great use to individuals involved in the research, development, production, and application of cosmetic products.

The history of environmental protection has dealt with hazardous substances by cleaning them up or treating them after the substances have formed. Green Chemistry, however, designs products and processes so that no hazardous materials are used or made in the first place. With applications from plastic to paints, from automobiles to pharmaceuticals, Green Chemistry is revolutionising science and industry and its impact on the environment.

Prodrug Design: Perspectives, Approaches and Applications in Medicinal Chemistry provides a focused overview of this critical area of drug discovery, as that continuous process strives not only to discover new drug compounds but also to modify the existing ones. This valuable primer supports this mission of drug development and its goal of reducing undesired effects and improving therapeutic effectiveness of drug compounds. Providing a unique compilation of data, insightful case studies, and review of existing literature in the area, the book will promote innovation in medicinal and

pharmaceutical chemistry research, exploring the limitations of existing drugs and their improvement. Prodrug Design reviews marketed compounds, the safety of promoieties, and a detailed classification of prodrugs organized by therapeutic area for easy reference. Offers unique, detailed overview of Prodrug research and literature Provides detailed chemical structures Includes Prodrug listing by therapeutic area

An Introduction to Filter Media -- Textiles -- Filter Papers and Filter Sheets -- Media for air and gas filters -- Screens and Meshes -- Porous Sheets and Tubes (excluding Membranes) -- Membranes -- Cartridges and Special Fabrications -- Loose Powders, granules and fibres -- Testing filter media.

Since the beginning of human civilization, plants have been our true companions. Plants contribute not only to our existence but also serve us through discovery, design and the treatment of various diseases where there is no satisfactory cure in modern medicine. This has focused Natural Product Chemists to unravel plants therapeutic potential in the light of modern analytical and pharmacological understandings. Presence of multiple active phytochemicals in medicinal plants offers exciting opportunity for the development of novel therapeutics, providing scientific justification for their use in traditional medicines. Non-food plants have been recognized as biofactories for the production of eco-friendly value added materials including agricultural, food products, enzymes, nutraceuticals etc. They have also been widely explored for personal care, industrial products and sources of energy generation. The proven efficacy of botanicals has been appreciated by the scientific community and strengthened plant-human relationship. The synergism in the Phytoproducts, the result of the interaction of two or more moieties, is not simply additive but multiplicative. Recent acceptance of the Food and Drug Administration (US) for herbal-medicine based preparation has renewed interest in Natural Product Research. The year 2011 is declared as the International Year of Chemistry (IYC 2011) by the United Nations Assembly. On this occasion, the present conference CPHEE 2011 aims to offer chemists from diverse areas to come to a common platform to share the knowledge and unveil the chemistry and magic potentials of phytoproducts for the mankind.

Green Synthetic Approaches for Biologically Relevant Heterocycles, Second Edition, Volume One: Advanced Synthetic Techniques reviews this significant group of organic compounds within the context of sustainable methods and processes, expanding on the first edition with fully updated coverage and a whole range of new chapters. Volume One explores advanced synthetic techniques, with each chapter presenting in-depth coverage of various green protocols for the synthesis of a wide variety of bioactive heterocycles that are classified on the basis of ring-size and/or the presence of heteroatoms. Techniques covered range from high pressure cycloaddition reactions and microwave irradiation to sustainable one-pot domino reactions. This updated edition is an essential resource on sustainable approaches for

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academic researchers, R&D professionals, and students working across medicinal, organic, natural product and green chemistry. Provides fully updated coverage of the field of greener heterocycle synthesis Includes new chapters on varied multicomponent reactions, alongside both traditional and novel approaches Presents information in an accessible style with an emphasis on sustainability

This book offers a comprehensive review on biomass resources, examples of biorefineries and corresponding products. The first part of this book covers topics such as different biorefinery resources from agriculture, wood processing residues and transport logistics of plant biomass. In the second part, expert contributors present biorefinery concepts of different biomass feedstocks, including vegetable-oils, sugarcane, starch, lignocellulose and microalgae. Readers will find here a summary of the syngas utilization and the bio-oil characterization and potential use as an alternative renewable fuel and source for chemical feedstocks. Particular attention is also given to the anaerobic digestion-based and Organosolv biorefineries. The last part of the book examines relevant products and components such as alcohols, hydrocarbons, bioplastics and lignin, and offers a sustainability evaluation of biorefineries.

Membrane Technologies for Biorefining highlights the best practices needed for the efficient and environmentally-compatible separation techniques that are fundamental to the conversion of biomass to fuels and chemicals for use as alternatives to petroleum refining. Membrane technologies are increasingly of interest in biorefineries due to their modest energy consumption, low chemical requirements, and excellent separation efficiency. The book provides researchers in academia and industry with an authoritative overview of the different types of membranes and highlights the ways in which they can be applied in biorefineries for the production of chemicals and biofuels. Topics have been selected to highlight both the variety of raw materials treated in biorefineries and the range of biofuel and chemical end-products. Presents the first book to focus specifically on membrane technologies in biorefineries Provides a comprehensive overview of the different types of membranes and highlight ways in which they can be applied in biorefineries for the production of chemicals and biofuels Topics selected highlight both the variety of raw materials treated using membranes in biorefineries and the range of biofuel and chemical end-products

Progress in Filtration and Separation contains reference content on fundamentals, core principles, technologies, processes, and applications. It gives detailed coverage of the latest technologies and research, models, applications and standards, practical implementations, case studies, best practice, and process selection. Extensive worked examples are included that cover basic calculations through to process design, including the effects of key variables. Techniques and topics covered include pervaporation, electrodialysis, ion exchange, magnetic (LIMS, HIMS, HGMS), ultrasonic, and more. Solves the needs of university based researchers and R&D engineers in industry for high-level overviews of sub-

topics within the solid-liquid separation field Provides insight and understanding of new technologies and methods

Combines the expertise of several separations experts

Nanomaterials Characterization Techniques, Volume Two, part of an ongoing series, offers a detailed analysis of the different types of spectroscopic methods currently being used in nanocharacterization. These include, for example, the Raman spectroscopic method for the characterization of carbon nanotubes (CNTs). This book outlines the different kinds of spectroscopic tools being used for the characterization of nanomaterials and discusses under what conditions each should be used. The book is intended to cover all the major spectroscopic techniques for nanocharacterization, making it an important resource for both the academic community at the research level and the industrial community involved in nanomanufacturing. Explores how spectroscopy and X-ray-based nanocharacterization techniques are applied in modern industry Analyzes all the major spectroscopy and X-ray-based nanocharacterization techniques, allowing the reader to choose the best for their situation Presents a method-orientated approach that explains how to successfully use each technique

This book presents the applications of ion-exchange materials in the chemical and food industries. It includes topics related to the application of ion exchange chromatography in water softening, purification and separation of chemicals, separation and purification of food products and catalysis. This title is a highly valuable source of knowledge on ion-exchange materials and their applications suitable for postgraduate students and researchers but also to industrial R&D specialists in chemistry, chemical, and biochemical technology. Additionally, this book will provide an in-depth knowledge of ion-exchange column and operations suitable for engineers and industrialists.

Liquid Filtration is a state-of-the-art review of liquid filtration in the chemical process and allied industries. Interpretations of the phenomenological observations of the hydrodynamics of filtration are given in the hopes of establishing more theoretical and generalized bases of design methodology. Specific design and selection criteria are reviewed, and typical industrial problems and their solutions are presented. Nicholas Cheremisinoff is known internationally as one of the foremost engineers with Exxon and as the author of numerous books, articles and periodical contributions. Most recently his international consulting role has seen him active the Ukraine, part of the former Soviet Union, where the modernising of these industrial processes has been key. Liquid Filtration is a fundamental unit operation extensively practiced throughout the chemical process, petroleum, and allied industries. It involves the separation, removal, and collection of a discrete phase of matter existing in a dispersed or colloidal state in suspension. This separation is most often performed in the presence of a complex media structure in which physical, physiochemical and/or electrokinetic forces interact. Guide to an essential industrial operation Single reference source for many industries Author has world-wide experience and reputation

Efficient Methods for Preparing Silicon Compounds is a unique and valuable handbook for chemists and students involved in advanced studies of preparative chemistry in academia and industry. Organized by the various coordination numbers (from two to six) of the central silicon atom of the reported compounds, this book provides researchers with a handy and immediate reference for any compound or properties needed in the area. Edited by a renowned expert in the field, each chapter explores a different type of compound, thoroughly illustrated with useful schemes and supplemented by additional references. Knowledgeable contributors report on a broad range of

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compounds on which they have published and which are already used on a broad scale or have the potential to be used in the very near future to develop a new field of research or application in silicon chemistry. Includes contributions and edits from leading experts in the field Includes detailed chemical schemes and useful references for each preparative method Organized by the coordination numbers of the central silicon atom for each compound for easy navigation Serves as a go-to primer for researchers in novel compositions of silicon matter Modern Synthetic Methods 1995 John Wiley & Sons

This volume provides an overview of recent developments and scope in the use of flow chemistry in relevance to heterocyclic synthesis. The heterocyclic ring is the most prominent structural motif in the vast majority of natural products as well as pharmaceutical compounds since this facilitates tuneable interactions with the biological target besides conferring a degree of structural and metabolic stability. In recent times, flow chemistry has heralded a paradigm shift in organic synthesis as it offers several unique advantages over conventional methods like drastic acceleration of sluggish transformations, enhanced yields, cleaner reactions etc and is gradually gaining a lot of attention among organic chemist worldwide. Given the importance of heterocycles in natural products, medicinal chemistry and pharmaceuticals, this is a well warranted volume and complements the previous volume of Topics in Organometallic Chemistry 'Organometallic Flow Chemistry'. This volume offers a versatile overview of the topic, besides discussing the recent progress in the flourishing area of flow chemistry in relevance to heterocyclic chemistry; it will also help researchers to better understand the chemistry behind these reactions. This in turn provides a platform for future innovations towards the designing of novel transformations under continuous flow. Thus, this volume will appeal to both the novices in this field as well as to experts in academia and industry.

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