Esterification Reaction The Synthesis And Purification Of

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Applications of Ion Exchange Materials in Chemical and Food Industries - Inamuddin 2019-02-04
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.
Esterification - Junzo Otera 2006-08-21
Here, Professor J. Otera brings together for the first time the combined knowledge about this elementary yet multifaceted reaction. Starting from the methodical basics right up to practical applications, this book represents a comprehensive overview of this type of reaction, saving readers time-consuming research among the literature - and not just in practical matters. All set to become a standard reference for every organic chemist. From the contents: METHODOLOGY Reaction of Alcohols with Carboxylic Acids and Their Derivatives Reactions with Carboxylic Acids Reaction with Esters: Transesterification Reaction with Acid Anhydrides Reaction with Acid Halides and Related Compounds Conversion of Alcohols to Esters through Carbonylation SYNTHETIC APPLICATIONS Kinetic Resolution Enzymatic Resolution Nonenzymatic Resolution Asymmetric Desymmetrization Deacetylation through Transesterification Selective Esterification Applications to Natural Product Synthesis New Reaction Media Industrial Uses
Peanuts: Processing Technology and Product Development - Qiang Wang 2016-05-31
Peanuts: Processing Technology and Product Development provides an overall review of the latest peanut and peanut-related research development worldwide, including not only peanut production and processing progress, but also peanut-related product (oil, protein) production technologies, and by-products utilization technologies (peptides, polyphenol, polysaccharide, and dietary fiber). The book focuses on technology practicability, and all the technologies introduced, have been partly or fully applied. It is a valuable book and important reference for technicians and R and D persons in the peanut processing industry, and can also be used as a reference book for professional teaching and scientific research in the field of food science and engineering. Provides the latest worldwide research in the field of peanut production and processing, incorporating the author’s research findings on new product development Presents technologies that have already been partly or fully applied in the peanut industry, providing effective guidance for the processing of peanuts and their by-products Includes topics on peanut production, peanut research progress, main peanut components, raw material quality evaluation, processing and utilization of peanut products (oil, protein), and by-products (peptide, polyphenol, polysaccharide, dietary fiber)
Polymers for Tissue Engineering - M. Molly S. Shoichet 1998-01-01
The articles included in this text highlight the important advances in polymer science that impact tissue engineering. The breadth of polymer science is well represented with the relevance of both polymer chemistry and morphology emphasized in terms of cell and tissue response.
The Synthesis and Biological Activity of Steroidal Ester of 3-indoleacetic Acid - John Frederick Hofert 1959

Handbook of Industrial Biocatalysis - Ching T. Hou 2005-06-09
Until now, no comprehensive handbook on industrial biocatalysis has been available. Soliciting chapters on virtually every aspect of biocatalysis from international experts most actively researching the field, the Handbook of Industrial Biocatalysis fills this need. The handbook is divided into three sections based on types of substrates. T
Enzymes in Food Processing - Parmjit S. Panesar 2010
This book reflects an in depth study of high academic standards dealing in a coherent and lucid way the most comprehensive and advances in application of enzymes in food processing. This indispensable treatise is the product of combined efforts of leading experts of excellent academic credentials in the area of food technology and biotechnology. This unique volume gives a holistic view about the interventions of enzymes in food processing i.e. " Handles different enzymes used in food processing at one platform. " Discusses the methods of enzyme immobilization and application of immobilized enzymes in food processing. " Describes the use of enzymes as food analytical tools including biosensors " Illustrates the knowledge about novel strategies in enzyme designing. " Numerous tables and figures throughout the volume provide illustrative material to support the detailed information The present volume is an excellent resource of information especially for food scientists/technologists, biotechnologists, biochemical engineers, biochemists, organic chemists, graduate and research students.
Sustainable Solutions for Environmental Pollution, Volume 1 - Nour Shafik El-Gendy 2021-10-12
SUSTAINABLE SOLUTIONS FOR ENVIRONMENTAL POLLUTION This first volume in a broad, comprehensive two-volume set, Sustainable Solutions for Environmental Pollution, concentrates on the role of waste management in solving pollution problems and the value-added products that can be created out of waste, turning a negative into an environmental and economic positive. Environmental pollution is one of the biggest problems facing our world today, in every country, region, and even down to local landfills. Not just solving these problems, but turning waste into products, even products that can make money, is a huge game-changer in the world of environmental engineering. Finding ways to make fuel and other products from solid waste, setting a course for the production of future biorefineries, and creating a clean process for generating fuel and other products are just a few of the topics covered in the groundbreaking new first volume in the two-volume set, Sustainable Solutions for Environmental Pollution. The valorization of waste, including the creation of biofuels, turning waste cooking oil into green chemicals, providing sustainable solutions for landfills, and many other topics are also covered in this extensive treatment on the state of the art of this area in environmental engineering. This groundbreaking new volume in this forward-thinking set is the most comprehensive coverage of all of these issues, laying out the latest advances and addressing the most serious current concerns in environmental pollution. Whether for the veteran engineer or the student, this is a must-have for any library. AUDIENCE Petroleum, chemical, process, and environmental engineers, other scientists and engineers working in the area of environmental pollution, and students at the university and graduate level studying these areas
Fluorous Chemistry - István T. Horváth 2011-11-03
Structural, Physical, and Chemical Properties of Fluorous Compounds, by J.A. Gladysz Selective Fluoroalkylation of Organic Compounds by Tackling the “Negative Fluorine Effect”, by W. Zhang, C. Ni and J. Hu Synthetic and Biological Applications of Fluorous Reagents as Phase Tags, by S. Fustero, J. L. Aceña and S. Catalán Chemical Applications of Fluorous Reagents and Scavengers, by Marvin S. Yu Fluorous Methods for the Synthesis of Peptides and Oligonucleotides, by B. Miriyala Fluorous Organic Hybrid Solvents for Non-Fluorous Organic Synthesis, by I. Ryu Fluorous Catalysis: From the Origin to Recent Advances, by J.-M. Vincent Fluorous

Organocatalysis, by W. Zhang Thiourea Based Fluorous Organocatalyst, by C. Cai Fluoroponytailed Crown Ethers and Quaternary Ammonium Salts as Solid–Liquid Phase Transfer Catalysts in Organic Synthesis, by G. Pozzi and R. H. Fish Fluorous Hydrogenation, by X. Zhao, D. He, L. T. Mika and I. T. Horváth Fluorous Hydrosilylation, by M. Carreira and M. Contel Fluorous Hydroformylation, by X. Zhao, D. He, L.T. Mika and I. Horvath Incorporation of Fluorous Glycosides to Cell Membrane and Saccharide Chain Elongation by Cellular Enzymes, by K. Hatanaka Teflon AF Materials, by H. Zhang and S. G. Weber Ecotoxicology of Organofluorous Compounds, by M. B. Murphy, E. I. H. Loi, K. Y. Kwok and P. K. S. Lam Biology of Fluoro-Organic Compounds, by X.-J. Zhang, T.-B. Lai and R. Y.-C. Kong

Cumulated Index Medicus - 1999

Carotenoid Esters in Foods - Adriana Z Mercadante 2019-02-19

Carotenoids are found in some food plants, flowers and animals, in free form and also esterified with fatty acids. Recent research has concentrated on the extent of carotenoid esters in these sources, how to assess their presence and the amount available for potential health effects. Focusing on the occurrence and assembly in foods, biosynthesis, analytical methods for identification and quantification, dietary intake and metabolism, the most recent research is represented and a balanced overview of what is known about carotenoid esters is provided. As the first book to address this topic in a comprehensive way, it ensures a better understanding of the importance of carotenoid esters to both food and health, and provides one source for researchers in food science, nutrition, natural products and the food and pharmaceutical industries. Carotenoid Esters in Foods will be a valued addition to the literature, specifically for those conducting research into carotenoids and carotenoid esters in foods. It is a unique contribution and a must-have source for those in this community.

Extremophilic Fungi - Sanjay Sahay 2022-04-22

This contributory volume is a comprehensive account of recent research on extremophilic fungi. It brings to the readers, latest information on all categories of extremophilic fungi, their isolation, culture, and potential applications. The book aims at providing the audience in-depth and updated theoretical concepts, also application on the field. It will serve as a supplementary reading material in addition to basic mycology textbooks. The book fills the gap in literature and will be useful to the postgraduate students and researchers in the field of mycology, agriculture, biotechnology and Microbiology.

Microscale Organic Laboratory - Dana W. Mayo 2010-01-12

This is a laboratory text for the mainstream organic chemistry course taught at both two and four year schools, featuring both microscale experiments and options for scaling up appropriate experiments for use in the macroscale lab. It provides complete coverage of organic laboratory experiments and techniques with a strong emphasis on modern laboratory instrumentation, a sharp focus on safety in the lab, excellent pre- and post-lab exercises, and multi-step experiments. Notable enhancements to this new edition include inquiry-driven experimentation, validation of the purification process, and the implementation of greener processes (including microwave use) to perform traditional experimentation.

Enzyme or Whole Cell Immobilization for Efficient Biocatalysis: Focusing on Novel Supporting Platforms and Immobilization Techniques - Wen-Yong Lou 2021-04-21

Current Trends and Future Developments on (Bio-) Membranes - Angelo Basile 2022-10-28

Integrated Membrane Reactors explores recent developments and future perspectives in the area of membrane reactor (MR) systems. It includes fundamental principles, the different types of membrane materials (such as polymeric and inorganic), the different types of membrane reactors (such as Micro MRs, Enzymatic MRS, Photo-catalytic MRs, Pervaporation MRs, Electrochemical MRs, etc.), their industrial perspective and, finally, there also is an economic evaluation of the metallic MRs. The book provides an extensive review in the area of MRs for each kind of application present in the specialized literature and discusses their modelling and design approaches necessary for MR systems validation in achieving high conversions, energy savings, high yields and high hydrogen (or others) products of the reactions studied. Includes membrane preparation and characterization Describes all the kinds of membrane reactors today under study Focuses on many applications of membrane reactors in the area of chemical and biochemical engineering Discusses simulation of membrane reactors enabling their design Introduces the concepts of process intensification and process integration Illustrates all the advantages of membrane reactors with respect to the so-called traditional/convention reactor

Side Reactions in Peptide Synthesis - Yi Yang 2015-09-01

Side Reactions in Peptide Synthesis, based on the author's academic and industrial experience, and backed by a thorough review of the current literature, provides analysis of, and proposes solutions to, the most frequently encountered side reactions during peptide and peptidomimetic synthesis. This valuable handbook is ideal for research and process chemists working with peptide synthesis in diverse settings across academic, biotech, and pharmaceutical research and development. While peptide chemistry is increasingly prevalent, common side reactions and their causes are often poorly understood or anticipated, causing unnecessary waste of materials and delay. Each chapter discusses common side reactions through detailed chemical equations, proposed mechanisms (if any), theoretical background, and finally, a variety of possible solutions to avoid or alleviate the specified side reaction. Provides a systematic examination on how to troubleshoot and minimize the most frequent side reactions in peptide synthesis Gives chemists the background information and the practical tools they need to successfully troubleshoot and improve results Includes optimization-oriented analysis of side reactions in peptide synthesis for improved industrial process development in peptidyl API (active pharmaceutical ingredient) production Answers the growing, global need for improved, replicable processes to avoid impurities and maintain the integrity of the end product. Presents a thorough discussion of critical factors in peptide synthesis which are often neglected or underestimated by chemists Covers solid phase and solution phase methodologies, and provides abundant references for further exploration

Membrane Reactors for Energy Applications and Basic Chemical Production - Angelo Basile 2015-02-10

Membrane Reactors for Energy Applications and Basic Chemical Production presents a discussion of the increasing interest in membrane reactors that has emerged in recent years from both the scientific and industrial communities, in particular their usage for energy applications and basic chemical production. Part One of the text investigates membrane reactors for syngas and hydrogen production, while Part Two examines membrane reactors for other energy applications, including biodiesel and bioethanol production. The final section of the book reviews the use of membrane reactors in basic chemical production, including discussions of the use of MRs in ammonia production and the dehydrogenation of alkanes to alkenes. Provides comprehensive coverage of membrane reactors as presented by a world-renowned team of experts Includes discussions of the use of membrane reactors in ammonia production and the dehydrogenation of alkanes to alkenes Tackles the use of membrane reactors in syngas, hydrogen, and basic chemical production Keen focus placed on the industry, particularly in the use of membrane reactor technologies in energy

Poly(lactic acid) Science and Technology - Alfonso Jiménez 2014-11-13

A comprehensive overview of the synthesis, characterisation, properties and applications of poly(lactic acid) science and technology covering scientific, ecological, social and economic issues.

Advances in Biofuels - Pogaku Ravindra 2013-03-02

Biofuels will play a key role in the 21st century as the world faces two critical problems; volatile fuel prices and global climatic changes. Both of these are linked to the overdependence on the fossil fuels: petroleum, natural gas, and coal. Transportation is almost totally dependent on petroleum based fuels such as gasoline, diesel fuel, liquefied petroleum gas, and on natural gas. Despite a significant amount of research into biofuels, the field has not been able to replace fossil fuels. Recent advances will change this scenario. Extracting fuel from biomass has been very expensive (both monetarily and in land usage), time consuming, unusable byproducts, etc. Technology to obtain liquid fuel from non-fossil sources must be improved to be faster, more efficient and more cost-effective. This book will cover the current technology used for a variety of plant types and explore shortcomings with each.

Methods of Biochemical Analysis - David Glick 2009-09-24

Biochemical analysis is a rapidly expanding field and is a key component of modern drug discovery and research. Methods of Biochemical Analysis provides a periodic and authoritative review of the latest achievements in biochemical analysis. Founded in 1954 by Professor David Glick, Methods of Biochemical Analysis provides a timely review of the latest developments in the field.

Industrial Enzymes - Julio Polaina 2007-05-16

Recent developments in genetic engineering and protein chemistry are

bringing ever more powerful means of analysis to bear on the study of enzyme structure. This volume reviews the most important types of industrial enzymes. In a balanced manner it covers three interrelated aspects of paramount importance for enzyme performance: three-dimensional protein structure, physicochemical and catalytic properties, and the range of both classical and novel applications.

Purification of Laboratory Chemicals - W.L.F. Armarego 2009-07-23

A best seller since 1966, Purification of Laboratory Chemicals keeps engineers, scientists, chemists, biochemists and students up to date with the purification of the chemical reagents with which they work, the processes for their purification, and guides readerd on critical safety and hazards for the safe handling of chemicals and processes. The Sixth Edition is updated and provides expanded coverage of the latest chemical products and processing techniques, safety and hazards. The book has been reorganised and is now fully indexed by CAS Registry Numbers. Compounds are now grouped to make navigation easier and literature references for all substances and techniques have been added, and ambiguous alternate names and cross references have been removed. The only comprehensive chemical purification reference, a market leader since 1966, Amarego delivers essential information for research and industrial chemists, pharmacists and engineers: '... (it) will be the most commonly used reference book in any chemical or biochemical laboratory' (MDPI Journal) An essential lab practice and proceedures manual. Improves efficiency, results and safety by providing critical information for day-to-day lab and processing work. Improved, clear organization and new indexing delivers accurate, reliable information on processes and techniques of purification along with detailed physical properties. The Sixth Edition has been reorganised and is fully indexed by CAS Registry Numbers; compounds are now grouped to make navigation easier; literature references for all substances and techniques have been added; ambiguous alternate names and cross references removed; new chemical products and processing techniques are covered; hazards and safety remain central to the book.

A Guide to Organophosphorus Chemistry - Louis D. Quin 2000-02-04

An authoritative and comprehensive introduction to organophosphorus chemistry The broad, exciting field of organophosphorus chemistry has grown tremendously over the last few decades, with a wealth of opportunities for research and applications development. A Guide to Organophosphorus Chemistry offers chemists in academia and industry complete, up-to-date coverage of the fundamentals with an eye on future developments in this area. Internationally recognized authority Louis D. Quin extends his experienced perspective and insight on the topic by: * Surveying the most important phosphorus-containing functional groups * Including representative methods of synthesis, plus references to detailed synthetic procedures * Outlining advances in stereochemical aspects of phosphorus chemistry * Covering areas of current research, such as unusual coordination states, heterocycles, applications of 31P-NMR, and other spectroscopic methods * Providing numerous references to important review articles and recent literature * Presenting electronic mechanisms and reactive intermediates where established * Discussing the importance of phosphorus compounds in living systems and in agricultural applications Liberally illustrated with equations and structural formulas, A Guide to Organophosphorus Chemistry presents a virtually unparalleled introduction to the subject matter, making it an indispensable instructional tool for aspiring chemists and practicing chemists alike.

Enzymatic Transformation - Soundar Divakar 2012-12-18

Transformations using enzymes have been extensively investigated in the last two decades and the results promise great potential for this growing field, especially in the area of synthetic organic chemistry mainly due to of its many advantages. Accordingly, this book has attempted to bring out the advantages of using enzymes involving complex underivatized and unprotected substrates in non-polar media under homogenous and heterogeneous reaction conditions. Merits and demerits of using enzymes in terms of yields and selectivity/specificity are presented without any prejudice. Almost all the reactions dealt with are from the author’s laboratory comprising diverse substrates, and the catalysis involves two important hydrolyzing enzymes, extensively examined for the reverse reactions. Thus, esterification involving lipses and glycosylation involving glycosidases were investigated with respect to various strategies like optimization of reaction conditions, response surface methodology and kinetics, carrying out reactions under solvent, non-solvent and super critical carbon dioxide conditions. In short, the work presented is to ensure the comprehension of the problems faced by the researchers in this area so as to work out further efficient strategies for carrying out enzymatic transformations in the laboratory successfully with better yields and specificity.

Handbook of Plasticizers - George Wypych 2004

A comprehensive source providing theoretical, historical and up-to-date information on placticizers' physical and mechanical properties, action, behavior, uses, functions, mechanisms, effects on other materials, the environment, and more.

Production of Biodiesel from Used Cooking Oil (UCO) Using Ion Exchange Resins as Catalysts - Sumaiya Zainal-Abidin-Murad 2012

This study focuses on the development of novel two-stage esterification-transesterification synthesis of biodiesel from used cooking oil (UCO) using novel heterogeneous catalysts. The esterification of the UCO was investigated using three types of ion exchange resins catalysts including Purolite D5081, Purolite D5082 and Amberlyst 15. Of all the catalysts investigated, Purolite D5081 resin showed the best catalytic performance and was selected for further optimisation studies. From the optimisation study, it was found that the external and internal mass transfer resistance has negligible effect on the esterification reaction. At the optimum reaction conditions, Purolite D5081 achieved 92% conversion of FFA. During reusability study, the conversion of FFA dropped by 10% after each cycle and it was found that progressive pore blockage and sulphur leaching were dominant factors that decreased the catalytic performance of the Purolite D5081 catalyst. A kinetic modelling for FFA esterification was carried out using Purolite D5081 as a catalyst. Three types of kinetic models were investigated i.e. pseudo homogeneous (PH), Eley-Rideal (ER) and Langmuir-Hinshelwood-Hougen-Watson (LHHW). Experimental data obtained from the batch kinetic studies was successfully represented by the PH model and a good agreement between experimental and calculated values was obtained. The activation energy for esterification and hydrolysis reaction was found to be 53 and 107 kJ/moL. The transesterification of pre-treated cooking oil (P-UCO) was investigated using various types of heterogeneous catalysts including Purolite CT-122, Purolite CT-169, Purolite CT-175, Purolite CT-275, Purolite D5081, Diaion PA306s and Cs-supported heteropolyacids catalysts. Of all the catalysts investigated, Diaion PA306s catalyst showed the highest conversion of triglycerides and was selected for further optimisation studies. At the optimum reaction conditions, Diaion PA306s achieved ca. 75% of triglycerides conversion. During the reusability study, Diaion PA306s catalyst gave a similar conversion of triglycerides after being reused once. Therefore, it was concluded that the resin can be used several times without losing catalytic activity. Several purification methods have been investigated and dry washing method was chosen as the best alternative for biodiesel purification.

A Comprehensive Study Of Esterification Of Free Fatty Acid To Biodiesel In a Simulated Moving Bed System - Nillohit Mitra Ray 2015

Simulated Moving Bed (SMB) systems are used for separations that are difficult using traditional separation techniques. Due to the advantage of adsorption-based chromatographic separation, SMB has shown promising application in petrochemical and sugar industries, and of late, for chiral drug separations. In recent years, the concept of integration of reaction and in-situ separation in a single unit has achieved considerable attention. The simulated moving bed reactor (SMBR) couples both these unit operations bringing down the operation costs while improving the process performance, particularly for products that require mild operating conditions. However, its application has been limited due to complexity of the SMBR process. Hence, to successfully implement a reaction in SMB, a detailed understanding of the design and operating conditions of the SMBR corresponding to that particular reaction process is necessary. Biodiesel has emerged has a viable alternative to petroleum-based diesel as a renewable energy source in recent years. Biodiesel can be produced by esterification of free fatty acids (present in large amounts in waste oil) with alcohol. The reaction is equilibriumlimited, and hence, to achieve high purity, additional purification steps increases the production cost. Therefore, combining reaction and separation in SMBR to produce high purity biodiesel is quite promising in terms of bringing down the production cost. In this work, the reversible esterification reaction of oleic acid with methanol catalyzed by Amberlyst 15 resin to form methyl oleate (biodiesel) in SMBR has been investigated both theoretically and experimentally. First, the adsorption and kinetic constants were determined for the biodiesel synthesis reaction by performing experiments in a single column packed with Amberlyst 15, which acts as both adsorbent and catalyst. Thereafter, a rigorous model was used to describe the dynamic behaviour of multi-column SMBR followed by experimental verification of the mathematical model. Sensitivity analysis is done to determine robustness of the model. Finally, a few simple multi-

objective optimization problems were solved that included both existing and design-stage SMBRs using non-dominated sorting genetic algorithm (NSGA). Pareto-optimal solutions were iii obtained in both cases, and moreover, it was found that the performance of the SMBR could be improved significantly under optimal operating conditions.

Apolipoproteins, Triglycerides and Cholesterol - Viduranga Yashasvi Waisundara 2020-06-17

Lipids are one of the most important biomolecules and, given their relationship with several non-communicable diseases at large, this makes them significant to be studied both biochemically and clinically. As the title of the book suggests, apolipoproteins, triglycerides, and cholesterol are focused herein with fresh perspectives and novel insights, while certain overlooked areas are given their due attention. Although these three terms are very broad, the book aims at primarily serving as an update to existing knowledge. It is hoped that the readers will benefit from this book in advancing their understanding about the biochemical pathways, clinical applications, and remedial action in terms of ensuring health and wellbeing, as well as in identifying gaps that would help set the directions of scientific investigations in the future.

Biotechnology for Fuels and Chemicals - Jonathan R. Mielenz 2009-12-24

In Biotechnology for Fuels and Chemicals: The Twenty-Eighth Symposium, leading researchers exchange cutting-edge technical information and update current trends in the development and application of biotechnology for sustainable production of fuels and chemicals. This symposium emphasizes advances in biotechnology to produce high-volume, low-price products from renewable resources, while improving the environment.

Cellulose Science and Technology - Thomas Rosenau 2018-12-27

This book addresses both classic concepts and state-of-the-art technologies surrounding cellulose science and technology. Integrating nanoscience and applications in materials, energy, biotechnology, and more, the book appeals broadly to students and researchers in chemistry, materials, energy, and environmental science. • Includes contributions from leading cellulose scientists worldwide, with five Anselm Payen Cellulose Award winners and two Hayashi Jisuke Cellulose Award winners • Deals with a highly applicable and timely topic, considering the current activities in the fields of bioeconomies, biorefineries, and biomass utilization • Maximizes readership by combining fundamental science and application development

Applied Biocatalysis - Adrie J.J. Straathof 2003-09-02

This book describes the essential steps in the development of biocatalytic processes from concept to completion. It is a carefully integrated text which combines the fundamentals of biocatalysis with technological experience and in-depth commercial case studies. The book starts with an introductory look at the characteristics and present applications of biocatalysts, followed by more detailed overviews of these areas.

Biodiesel Production - Samuel Lalthazuala Rokhum 2022-05-05

An incisive discussion of biofuel production from an economically informed technical perspective that addresses sustainability and commercialization together In Biodiesel Production: Feedstocks, Catalysts and Technologies, renowned chemists Drs Rokhum, Halder, Ngaosuwan and Assabumrungrat present an up-to-date account of the most recent developments, challenges, and trends in biodiesel production. The book addresses select feedstocks, including edible and non-edible oils, waste cooking oil, microalgae, and animal fats, and highlights their advantages and disadvantages from a variety of perspectives. It also discusses several catalysts used in each of their methods of preparation, as well as their synthesis, reactivity, recycling techniques, and stability. The contributions explore recently developed technologies for sustainable production of biodiesel and provides robust treatments of their sustainability, commercialization, and their prospects for future biodiesel production. A thorough introduction to the various catalysts used in the preparation of biodiesel and their characteristics Comprehensive explorations of biofuel production from technical and economic perspectives, with complete treatments of their sustainability and commercialization Practical discussions of the development of new strategies for sustainable and economically viable biodiesel production In-depth examinations of biodiesel feedstocks, catalysts, and technologies Perfect for academic researchers and industrial scientists working in fields that involve biofuels, bioenergy, catalysis, and materials science, Biodiesel Production: Feedstocks, Catalysts and Technologies will also earn a place in the libraries of bioenergy regulators.

Comprehensive Organic Chemistry Experiments for the Laboratory Classroom - Carlos A M Afonso 2020-08-28

This expansive and practical textbook contains organic chemistry experiments for teaching in the laboratory at the undergraduate level covering a range of functional group transformations and key organic reactions.The editorial team have collected contributions from around the world and standardized them for publication. Each experiment will explore a modern chemistry scenario, such as: sustainable chemistry; application in the pharmaceutical industry; catalysis and material sciences, to name a few. All the experiments will be complemented with a set of questions to challenge the students and a section for the instructors, concerning the results obtained and advice on getting the best outcome from the experiment. A section covering practical aspects with tips and advice for the instructors, together with the results obtained in the laboratory by students, has been compiled for each experiment. Targeted at professors and lecturers in chemistry, this useful text will provide up to date experiments putting the science into context for the students.

Recycling of Polyethylene Terephthalate Bottles - Sabu Thomas 2018-10-29

Recycling of Polyethylene Terephthalate Bottles provides an overview of PET chemistry, highlighting the main degradation, depolymerization processes and pathways of PET, along with the applications of recycled monomers derived from PET waste. The latest methodologies of recycling and feedstock recovery are covered, providing critical foundational information. In addition, the book discusses a range of established methods of polymer recycling, with an emphasis on real world industrial case studies and the latest academic research. Users will find in-depth lifecycle and cost analysis of each waste management method, comparing the suitability and feasibility of each to support the decision - making process. Polyethylene Terephthalate (PET) is the most recycled plastic in the world, but still represents a significant amount of landfill waste. This book presents an update on new regulations, providing recommendations for new opportunities in this area, including new processing methods and applications for recycled PET. Features a comprehensive introduction to the waste management of PET bottles, from regulatory concerns, to the range of different methods of materials recovery Enables practitioners to choose the most efficient and effective waste management process Includes detailed lifecycle and cost analysis information Compares traditional thermal recycling methods with more recently developed monomer recovery and chemical recycling methods

Advances in Synthesis Gas: Methods, Technologies and Applications - Mohammad Reza Rahimpour 2022-10-28

Advances in Synthesis Gas: Methods, Technologies and Applications: Syngas Products and Usage considers the applications and usages of syngas for producing different chemical materials such as hydrogen, methanol, ethanol, methane, ammonia, and more. In addition, power generation in fuel cells, or in combination with heat from syngas, as well as iron reduction with economic and environmental challenges for syngas utilization are described in detail. Introduces syngas characteristics and its properties Describes various methods and technologies for producing syngas Discusses syngas production from different roots and feedstocks

Unique Sequence Signatures in Plant Lipolytic Enzymes: Emerging Research and Opportunities - Ben Halima, Nihed 2018-12-04

Lipids are biomolecules that constitute a significant amount of biomass in the earth, and plant lipids are rapidly growing in interest due to their roles in improving food technology, medicine, nutrition, and biotechnology. With recent advances in protein chemistry, biochemistry, and enzymology promoting research on lipolytic enzymes, it is important for research to address the mechanisms of such enzymes and their diverse functions. Unique Sequence Signatures in Plant Lipolytic Enzymes: Emerging Research and Opportunities provides innovative insights into the biochemistry of plant lipases and phospholipases as well as their structures and catalytic mechanisms. The book explores the conserved domains and motifs of plant lipolytic enzymes by identifying the main residues involved in the catalysis in the enzymes and the phylogeny of important plant lipolytic enzymes, as well as calculating the evolutionary distance in those enzymes. Organized into six chapters, it is a vital reference source for researchers, chemists, biologists, academicians, practitioners, medical professionals, engineers, and graduate students.

Alternative Energy Sources for Green Chemistry - Georgios Stefanidis 2016-08-24

The use of alternative energy forms and transfer mechanisms is one of the key approaches of process intensification. In recent years, significant amounts of research have been carried out in developing chemical processing technologies enhanced by plasma, electric and magnetic fields, electromagnetic and ultra-sound waves and high gravity fields.

Discussing the broad impact of alternative energy transfer technologies on reactions, separations and materials synthesis, this book reports on recent breakthrough results in various application areas. It provides a comprehensive overview of the current developments in the field. The book enables industrialists, academics and postgraduates in alternative-energy based processing to see the potential of alternative energies for green chemistry and sustainability of chemical manufacturing.

Carboxylic Ester Hydrolases—Advances in Research and Application: 2012 Edition - 2012-12-26

Carboxylic Ester Hydrolases—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Carboxylic Ester Hydrolases. The editors have built Carboxylic Ester Hydrolases—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Carboxylic Ester Hydrolases 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 Carboxylic Ester Hydrolases—Advances in Research and Application: 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/.

Encyclopedia of Surface and Colloid Science - P. Somasundaran 2006

Lipid Technologies and Applications - FredB. Padley 2018-05-02

""Provides a comprehensive review of the major technologies and applications of lipids in food and nonfood uses, including current and future trends. Discusses the nature of lipids, their major sources, and role in nutrition.