

Lignin Structural Analysis Applications In Biomaterials And Ecological Significance Biochemistry Research Trends

Recognizing the way ways to get this ebook **Lignin Structural Analysis Applications In Biomaterials And Ecological Significance Biochemistry Research Trends** is additionally useful. You have remained in right site to start getting this info. acquire the Lignin Structural Analysis Applications In Biomaterials And Ecological Significance Biochemistry Research Trends partner that we have enough money here and check out the link.

You could buy lead Lignin Structural Analysis Applications In Biomaterials And Ecological Significance Biochemistry Research Trends or get it as soon as feasible. You could quickly download this Lignin Structural Analysis Applications In Biomaterials And Ecological Significance Biochemistry Research Trends after getting deal. So, like you require the ebook swiftly, you can straight get it. Its suitably enormously simple and for that reason fats, isnt it? You have to favor to in this look

Encyclopedia of Applied Plant Sciences - 2003-09-25

A multi-faceted reference work, the Encyclopedia of Applied Plant Sciences addresses the core knowledge, theories, and techniques employed by plant scientists, while also concentrating on applications of these in research and in industry. Plants influence all our lives as sources of sustenance, fuel and building materials. The Encyclopedia of Applied Plant Sciences is a comprehensive yet succinct publication that covers the application of current advances in the biological sciences, through which scientists can now better produce sustainable, safe food, feed and food ingredients, and renewable raw materials for industry and society. This three-volume set also covers the concerns over continuing advances in the application of knowledge in the areas of ecology and plant pathology, genetics, physiology, biochemistry and biotechnology, as well as the ethical issues involved in the use of the powerful techniques available to modern plant science. An invaluable reference, the Encyclopedia of Applied Plant Sciences will be an indispensable addition to the library of anyone involved in the study of plant sciences. The Encyclopedia of Applied Plant Sciences is available online on ScienceDirect. The print edition price for this reference work does not include online access. For more information on pricing for access to the online edition, please review our Licensing Options. The richness and authority of Elsevier reference works is now lent valuable functionality and accessibility through the online launch of Elsevier Reference Works on ScienceDirect. Features: Extensive browsing and searching across subject, thematic, alphabetical, author and cited author indexes - as applicable to the work Basic and advanced search functionality within volumes, parts of volumes, or across the whole work Ability to build, save and re-run searches as well as combine saved searches Internal cross-referencing between articles in the work, plus dynamic linking to journal articles and abstract databases, making navigation flexible and easy All articles are available as full-text HTML files, and as PDF files that can be viewed, downloaded or printed out in their original print format A dedicated Reference Works navigation tab and homepage on ScienceDirect to enable easy linking from your OPAC or library website For more information about the Elsevier Reference Works on ScienceDirect Program, please visit: http://www.info.sciencedirect.com/reference_works. Comprehensively covers both the key theoretical and practical aspects of plant sciences Edited and written by a distinguished international group of editors and contributors Well-organized format provides for concise, readable entries, easy searches, and thorough cross-references Presents complete up-to-date information on over 25 separate areas of plant science Features many tables and figures, with a color plate section in each volume New terms clearly explained in glossary sections of each article

Recent Advancement in White Biotechnology Through Fungi - Ajar Nath Yadav 2019-03-08

White biotechnology, or industrial biotechnology as it is also known, refers to the use of living cells and/or their enzymes to create industrial products that are more easily degradable, require less energy, create less waste during production and sometimes perform better than products created using traditional chemical processes. Over the last decade considerable progress has been made in white biotechnology research, and further major scientific and technological breakthroughs are expected in the future. Fungi are ubiquitous in

nature and have been sorted out from different habitats, including extreme environments (high temperature, low temperature, salinity and pH), and may be associated with plants (epiphytic, endophytic and rhizospheric). The fungal strains are beneficial as well as harmful for human beings. The beneficial fungal strains may play important roles in the agricultural, industrial, and medical sectors. The fungal strains and their products (enzymes, bioactive compounds, and secondary metabolites) are very useful for industry (e.g., the discovery of penicillin from *Penicillium chrysogenum*). This discovery was a milestone in the development of white biotechnology as the industrial production of penicillin and antibiotics using fungi moved industrial biotechnology into the modern era, transforming it into a global industrial technology. Since then, white biotechnology has steadily developed and now plays a key role in several industrial sectors, providing both high value nutraceutical and pharmaceutical products. The fungal strains and bioactive compounds also play an important role in environmental cleaning. This volume covers the latest developments and research in white biotechnology with a focus on diversity and enzymes.

Japanese Technical Periodical Index - 1986

Environmental Biosensors - Vernon Somerset 2011-07-18

This book is a collection of contributions from leading specialists on the topic of biosensors for health, environment and biosecurity. It is divided into three sections with headings of current trends and developments; materials design and developments; and detection and monitoring. In the section on current trends and developments, topics such as biosensor applications for environmental and water monitoring, agro-industry applications, and trends in the detection of nerve agents and pesticides are discussed. The section on materials design and developments deals with topics on new materials for biosensor construction, polymer-based microsystems, silicon and silicon-related surfaces for biosensor applications, including hybrid film biosensor systems. Finally, in the detection and monitoring section, the specific topics covered deal with enzyme-based biosensors for phenol detection, ultra-sensitive fluorescence sensors, the determination of biochemical oxygen demand, and sensors for pharmaceutical and environmental analysis.

Recent Advancement in Microbial Biotechnology - Surajit De Mandal 2021-08-27

The rapid increase in microbial resources along with the development of biotechnological methods has revolutionized the field of microbial biotechnology. Genome characterization methods and metagenomic approaches further illustrate the role of microorganisms in various fields of research. Recent Advancement in Microbial Biotechnology: Agricultural and Industrial Approach provides an overview on the recent application of the microorganisms in agricultural and industrial improvements. The purpose of this book is to integrate all these diverse areas of research in a common platform. Recent advancement in Microbial Biotechnology targets researchers from both academia and industry, professors and graduate students working in molecular biology, microbiology and biotechnology. Gives insight in the exploration of microbial functional diversity in different systems Highlights important microbes and their role in enhancing agricultural productivity Provides understanding to the basics with advance information of microbial

biotechnology Explores the importance of microbial genomes studies in agricultural and industrial applications

Polymer Molecular Weights, (2 Part) - Philip E. Slade 1975-03-01

This two-part book incorporates in one definitive publication the major techniques used to determine the molecular weights of polymers as presented by some of the most respected authorities in the field. Part I of this practical guide covers membrane osmometry, end group determinations, absolute colligative property methods, and light-scattering methods. Discussions on theoretical background are included for every experimental procedure, as are examples of applications in polymeric processes. The information contained in *Polymer Molecular Weights* cannot be found in any other single publication, making it the most convenient source of information on molecular weight measurement for polymer chemists and physicists, analytical and physical chemists, biochemists, and other scientists in the plastics and synthetic fiber industries. Book jacket.

Handbook of Composites from Renewable Materials, Nanocomposites - Vijay Kumar Thakur 2017-04-06

The Handbook of Composites From Renewable Materials comprises a set of 8 individual volumes that brings an interdisciplinary perspective to accomplish a more detailed understanding of the interplay between the synthesis, structure, characterization, processing, applications and performance of these advanced materials. The handbook covers a multitude of natural polymers/ reinforcement/ fillers and biodegradable materials. Together, the 8 volumes total at least 5000 pages and offers a unique publication. This 7th volume Handbook is solely focused on Nanocomposites: Science and Fundamentals. Some of the important topics include but not limited to: preparation, characterization and applications of nano materials from renewable resources; hydrogels and its nanocomposites from renewable resources: preparation of chitin-based nanocomposite materials through gelation with ionic liquid; starch based bionanocomposites; biorenewable nanofiber and nanocrystal; investigation of wear characteristics of dental composite reinforced with rice husk derived nanosilica filler particles; performance of regenerated cellulose/vermiculite nanocomposites fabricated via ionic liquid; preparation, structure, properties and interactions of the PVA/cellulose composites; green composites with cellulose nano-reinforcements; biomass composites from bamboo-based micro/nano fibers; synthesis and medicinal properties of polycarbonates and resins from renewable sources; nanostructured polymer composites with modified carbon nanotubes; organic-inorganic nanocomposites derived from polysaccharides; natural polymer based nanocomposites; cellulose whisker based green polymer composites; poly (lactic acid) nanocomposites reinforced with different additives; nanocrystalline cellulose; halloysite based bionanocomposites; nanostructured composites based on biodegradable polymers and silver nanoparticles; starch-based biomaterials and nanocomposites; green nanocomposites based on PLA and natural organic fillers; chitin and chitosan based nanocomposites.

Lignin Utilization Strategies - Chang Geun Yoo 2021

Emerging applications of lignin Lignin has great potential as a sustainable, renewable resource for aromatic molecules that can be used in downstream applications. However, its natural heterogeneity and complexity are substantial barriers to its efficient utilization. Industrial lignin, a byproduct from the pulping and biorefinery industries, is usually burned or directly discharged as waste. This work provides a comprehensive exploration of recent lignin utilization strategies with chapters written by experts from agricultural science and engineering, biotechnology, biology, catalysis, chemical engineering, chemistry, wood science, and other related fields.

Sustainable Polymers from Biomass - Chuanbing Tang 2017-02-21

Offering a unique perspective summarizing research on this timely important topic around the globe, this book provides comprehensive coverage of how molecular biomass can be transformed into sustainable polymers. It critically discusses and compares a few classes of biomass - oxygen-rich, hydrocarbon-rich, hydrocarbon and non-hydrocarbon (including carbon dioxide) as well as natural polymers - and equally includes products that are already commercialized. A must-have for both newcomers to the field as well as established researchers in both academia and industry.

Cereal Straw as a Resource for Sustainable Biomaterials and Biofuels - RunCang Sun 2010-01-18

Materials from renewable resources are receiving increased attention, as leading industries and

manufacturers attempt to replace declining petrochemical-based feedstocks with products derived from natural biomass, such as cereal straws. Cereal straws are expected to play an important role in the shift toward a sustainable economy, and a basic knowledge of the composition and structure of cereal straw is the key to using it wisely. *Cereal Straw as a Resource for Sustainable Biomaterials and Biofuels: Chemistry, Extractives, Lignins, Hemicelluloses and Cellulose* provides an introduction to straw chemistry. Topics discussed include the structure, ultrastructure, and chemical composition of straw; the structure and isolation of extractives from the straw; the three main components of straw: cellulose, hemicelluloses, and lignins; and chemical modifications of straw for industrial applications. This book will be helpful to scientists interested in the areas of natural resource management, environmental chemistry, plant chemistry, material science, polysaccharide chemistry, and lignin chemistry. It will also be of interest to academic and industrial scientists/researchers interested in novel applications of agricultural residues for industrial and/or recycling technologies. Provides the basics of straw composition and the structure of its cell walls Details the procedures required to fractionate straw components to produce chemical derivatives from straw cellulose, hemicelluloses, and lignins Elucidates new techniques for the production of biodegradable materials for the energy sector, chemical industry, and pulp and paper business

Lignin and Lignans - Cyril Heitner 2016-04-19

Over the past four decades, there has been immense progress in every area of lignin science, ranging from the enzymology of lignin biodegradation, to the delignification of wood fiber during pulping and bleaching, to advances in spectroscopy. *Lignin and Lignans: Advances in Chemistry* captures the developments that have been achieved by world-class scientists in the most critical aspects of this burgeoning field. Tools for the characterization of lignin and lignans After an overview of the topic, the book discusses the significance and comparative performances of the most commonly used chemical degradation methods and presents lignin structural information based on the use of these methods. Next, the book explores spectroscopic methods, including UV-visible absorption, fluorescence, Raman, infra red (IR), near-infrared (NIR), nuclear magnetic resonance (NMR), and heteronuclear NMR spectroscopy. It then compares the results of studies of lignin in situ with studies of isolated lignins. Predicting reactivity The authors discuss polymer properties related to thermal stability and molecular motion of lignin in the solid state. They describe applications of electronic structure calculations to the chemistry of lignin, and they explore lignin reactions that occur during the chemical pulping of wood by soda, kraft, AQ, and polysulfide processes. Chemistry associated with industrial processes The book describes chemical pulp bleaching, oxidative and reductive lignin-retaining bleaching, and lignin biodegradation. It also examines the application of microorganisms and the enzymes they produce in the manufacturing of chemical and mechanical pulp. The book closes with chapters on photodegradation and chromophore formation and the pharmacological properties of lignans. Highlighting significant developments on selected topics, this essential reference for those in industry and academia is designed to fuel further research and discovery in this specialized area, especially in the emerging field of biorefining.

Lignin - Matheus Poletto 2018-03-21

Lignin - Trends and Applications consists of 11 chapters related to the lignin structure, modification, depolymerization, degradation process, computational modeling, and applications. This is a useful book for readers from diverse areas, such as physics, chemistry, biology, materials science, and engineering. It is expected that this book may expand the reader's knowledge about this complex natural polymer.

Advances of Basic Science for Second Generation Bioethanol from Sugarcane - Marcos S. Buckeridge 2017-03-10

This book focuses on the basic science recently produced in Brazil for the improvement of sugarcane as a bioenergy crop and as a raw material for 2nd generation bioethanol production. It reports achievements that have been advancing the science of cell walls, enzymes, genetics, and sustainability related to sugarcane technologies and give continuity to the research reported in the "Routes to Cellulosic Ethanol", from Springer. The Introduction (Chapter I) explains how the National Institute of Science and Technology of Bioethanol, founded in 2008 in Brazil, became part of the main international initiatives that started to search for forms to use biomass for bioethanol production in Brazil, US and Europe. Part I reports the advances in plant cell wall composition, structure and architecture, and physical characteristics of

sugarcane biomass. These discoveries are opening the way to increased efficiency of pretreatments and hydrolysis, being therefore important information for 2nd generation processes as well as for biorefinery initiatives. Part II focuses on the discovery and characterization of hydrolases from microorganisms that could be used in industrial processes. Recent advances in the search for hydrolases using metagenomics is reported. A great number of genes and enzymes from microorganisms have been discovered, affording improvement of enzyme cocktails better adapted to sugarcane biomass. Part III reports two key issues in the process of 2G ethanol, pentose fermentation and sugarcane genetics. These are the discoveries of new yeast species capable of producing ethanol more efficiently from xylose and the advances made on the sugarcane genetics, a key issue to design varieties adapted to 2G ethanol production. Part IV approaches sustainability through two chapters, one discussing the sustainability of the sugarcane agricultural and environmental system and another discussing how national and mainly international policies of Brazil regarding 2G ethanol production affected the country's strategies to establish itself as an international player in renewable energy area.

Biochar for Environmental Management - Johannes Lehmann 2012-05-16

Biochar is the carbon-rich product when biomass (such as wood, manure or crop residues) is heated in a closed container with little or no available air. It can be used to improve agriculture and the environment in several ways, and its stability in soil and superior nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. This book is the first to synthesize the expanding research literature on this topic. The book's interdisciplinary approach, which covers engineering, environmental sciences, agricultural sciences, economics and policy, is a vital tool at this stage of biochar technology development. This comprehensive overview of current knowledge will be of interest to advanced students, researchers and professionals in a wide range of disciplines.

Index Medicus - 2004

Monomers, Polymers and Composites from Renewable Resources - Mohamed Naceur Belgacem 2011-10-10

The progressive dwindling of fossil resources, coupled with the drastic increase in oil prices, have sparked a feverish activity in search of alternatives based on renewable resources for the production of energy. Given the predominance of petroleum- and carbon-based chemistry for the manufacture of organic chemical commodities, a similar preoccupation has recently generated numerous initiatives aimed at replacing these fossil sources with renewable counterparts. In particular, major efforts are being conducted in the field of polymer science and technology to prepare macromolecular materials based on renewable resources. The concept of the bio-refinery, viz. the rational exploitation of the vegetable biomass in terms of the separation of its components and their utilisation as such, or after suitable chemical modifications, is thus gaining momentum and considerable financial backing from both the public and private sectors. This collection of chapters, each one written by internationally recognised experts in the corresponding field, covers in a comprehensive fashion all the major aspects related to the synthesis, characterization and properties of macromolecular materials prepared using renewable resources as such, or after appropriate modifications. Thus, monomers such as terpenes and furans, oligomers like rosin and tannins, and polymers ranging from cellulose to proteins and including macromolecules synthesized by microbes, are discussed with the purpose of showing the extraordinary variety of materials that can be prepared from their intelligent exploitation. Particular emphasis has been placed on recent advances and imminent perspectives, given the incessantly growing interest that this area is experiencing in both the scientific and technological realms. Discusses bio-refining with explicit application to materials Replete with examples of applications of the concept of sustainable development Presents an impressive variety of novel macromolecular materials

Quantitative Level of Chemical Reactions - Gennadiĭ Efremovich Zaikov 2003

Using recent kinetic methods of investigations as well as such spectroscopic methods as electron spin

resonance, nuclear magnetic resonance, and chemiluminescence, 11 papers examine quantum-level calculations of chemical reactions. Presented by Zaikov (Institute of Biochemical Physics, Russia) and Jimenez (University of Alicante, Spain), the papers discuss such specific topics as the behaviour of molecules of low-molecular substances in the presence of chain molecules, ozone degradation of polyolefins with the example of paraffines and polyolefins, interactions of surfactants and cellulose derivatives in homogenous and heterogeneous systems, and transcrystallinity in natural fillers-polypropylene composites.

Lignin - Fachuang Lu 2014-05-10

The use of biologically derived polymers is emerging as an important component of sustainable economic development. Technical lignins, derivatives from naturally occurring lignin polymers in woody plants, are generated commercially in large quantities - up to 70 million tons worldwide annually. Besides being burned as fuels, only a small percentage of these lignins are used for various applications because technical lignins present relatively unpredictable structural characteristics and are therefore unreliable feedstocks to make products with consistent and satisfactory quality. Over the past two decades, there has been great progress in the research and commercialization of lignin-based products and processes that add significant value to lignins. This book provides critical reviews and the latest research results relating to selected fields of lignin structural analysis and applications. Featuring the significant advances in selected topics of the lignin research field, this reference book is for college students and scientists with the intent of promoting further research and innovations in this specialized field. (Nova)

Lignin and Lignans as Renewable Raw Materials - Francisco G. Calvo-Flores 2015-12-14

As naturally occurring and abundant sources of non-fossil carbon, lignin and lignans offer exciting possibilities as a source of commercially valuable products, moving away from petrochemical-based feedstocks in favour of renewable raw materials. Lignin can be used directly in fields such as agriculture, livestock, soil rehabilitation, bioremediation and the polymer industry, or it can be chemically modified for the fabrication of specialty and high-value chemicals such as resins, adhesives, fuels and greases. Lignin and Lignans as Renewable Raw Materials presents a multidisciplinary overview of the state-of-the-art and future prospects of lignin and lignans. The book discusses the origin, structure, function and applications of both types of compounds, describing the main resources and values of these products as carbon raw materials. Topics covered include: • Structure and physicochemical properties • Lignin detection methods • Biosynthesis of lignin • Isolation methods • Characterization and modification of lignins • Applications of modified and unmodified lignins • Lignans: structure, chemical and biological properties • Future perspectives This book is a comprehensive resource for researchers, scientists and engineers in academia and industry working on new possibilities for the application of renewable raw materials. For more information on the Wiley Series in Renewable Resources, visit www.wiley.com/go/rrs

Hemicellulose Biorefinery: A Sustainable Solution for Value Addition to Bio-Based Products and Bioenergy - Michel Brienzo 2022-01-03

This edited book provides knowledge about hemicelluloses biorefinery approaching production life cycle, circular economy, and valorization by obtaining value-added bioproducts and bioenergy. A special focus is dedicated to chemical and biochemical compounds produced from the hemicelluloses derivatives platform. Hemicelluloses are polysaccharides located into plant cell wall, with diverse chemical structures and properties. It is the second most spread organic polymer on nature and found in vast lignocellulosic materials from agro and industrial wastes, therefore, hemicelluloses are considered as abundant and renewable raw material/feedstock. Biorefinery concept contributes to hemicelluloses production associated with biomass industrial processes. Hemicelluloses are alternative sources of sugars for renewable fuels and as platform for chemicals production. This book reviews chemical processes for sugar production and degradation, obtaining of intermediate and final products, and challenges for pentose fermentation. Aspects of hemicelluloses chain chemical and enzymatic modifications are presented with focus on physicochemical properties improvement for bioplastic and biomaterial approaches. Hemicelluloses are presented as sources for advanced materials in biomedical and pharmaceutical uses, and as hydrogel for chemical and medicine deliveries. An interdisciplinary approach is needed to cover all the processes involving hemicelluloses, its conversion into final and intermediate value-added compounds, and bioenergy production. Covering this context, this book is of interest to teachers, students, researchers, and scientists

dedicated to biomass valorization. This book is a knowledge source of basic aspects to advanced processing and application for graduate students, particularly. Besides, the book serves as additional reading material for undergraduate students (from different courses) with a deep interest in biomass and waste conversion, valorization, and chemical products from hemicelluloses

Biosorption - Jan Derco 2018-07-18

Municipal and industrial wastewaters contain a wide spectrum of pollutants. Their effective removal presents a challenge for water treatment technology. Biosorption of nutrients and pollutants has been used in sewage treatment since the discovery of the activated sludge process. It is a passive uptake process by which pollutants are adsorbed on the surface of cell walls and/or dissolved in structures of microorganism cells that are present in sludge. Sorbed pollutants remain in the sludge and can be potentially released back into the environment depending on their condition and the reversibility of the pollutant-sludge interaction. An overview of typical biosorption applications for the removal of nutrients, organic pollutants, and metals in wastewater treatment is provided in different areas of their use for the protection of aquatic ecosystems and human health. This book will be of interest to operators of wastewater treatment plants and sludge treatment and disposal facilities as well as to researchers and university students in the field of environmental engineering.

Algae Based Polymers, Blends, and Composites - Khalid Mahmood Zia 2017-06-19

Algae Based Polymers, Blends, and Composites: Chemistry, Biotechnology and Material Sciences offers considerable detail on the origin of algae, extraction of useful metabolites and major compounds from algal bio-mass, and the production and future prospects of sustainable polymers derived from algae, blends of algae, and algae based composites. Characterization methods and processing techniques for algae-based polymers and composites are discussed in detail, enabling researchers to apply the latest techniques to their own work. The conversion of bio-mass into high value chemicals, energy, and materials has ample financial and ecological importance, particularly in the era of declining petroleum reserves and global warming. Algae are an important source of biomass since they flourish rapidly and can be cultivated almost everywhere. At present the majority of naturally produced algal biomass is an unused resource and normally is left to decompose. Similarly, the use of this enormous underexploited biomass is mainly limited to food consumption and as bio-fertilizer. However, there is an opportunity here for materials scientists to explore its potential as a feedstock for the production of sustainable materials. Provides detailed information on the extraction of useful compounds from algal biomass Highlights the development of a range of polymers, blends, and composites Includes coverage of characterization and processing techniques, enabling research scientists and engineers to apply the information to their own research and development Discusses potential applications and future prospects of algae-based biopolymers, giving the latest insight into the future of these sustainable materials

Biomass Recalcitrance - Michael Himmel 2008-06-23

This book examines the connection between biomass structure, ultrastructure, and composition, to resistance to enzymatic deconstruction, with the aim of discovering new cost-effective technologies for biorefineries. It contains chapters on topics extending from the highest levels of biorefinery design and biomass life-cycle analysis, to detailed aspects of plant cell wall structure, chemical treatments, enzymatic hydrolysis, and product fermentation options."--Pub. desc.

Biomass Utilization - Wilfred Cote 2013-12-01

This proceedings volume represents the culmination of nearly three years of planning, organizing and carrying out of a NATO Advanced Study Institute on Biomass Utilization. The effort was initiated by Dr. Harry Sobel, then Editor of Biosources Digest, and a steering committee representing the many disciplines that this field brings together. . When the fiscal and logistical details of the original plan could not be worked out, the idea was temporarily suspended. In the spring of 1982, the Renewable Materials Institute of the State University of New York at the College of Environmental Science and Forestry in Syracuse, New York revived the plan. A number of modifications had to be made, including the venue which was changed from the U.S.A. to Portugal. Additional funding beyond the basic support provided by the Scientific Affairs Division of NATO had to be obtained. Ultimately there were supplementary grants from the Foundation for Microbiology and the Anne S. Richardson Fund to assist student participants. The New York State College

of Forestry Foundation, Inc. provided major support through the Renewable Materials Institute. The ASI was held in Alcabideche, Portugal from September 26 to October 9, 1982. Eighty participants including fifteen principal lecturers were assembled at the Hotel Sintra Estoril for the program that was organized as a comprehensive course on biomass utilization. The main lectures were supplemented by relevant short papers offered by the participants.

Quinone Methides - S. E. Rokita 2009-02-17

Multidisciplinary perspectives and approaches to quinone methides research The Wiley Series on Reactive Intermediates in Chemistry and Biology investigates reactive intermediates from the broadest possible range of disciplines. The contributions in each volume offer readers fresh insights into the latest findings, emerging applications, and ongoing research in the field from a diverse perspective. This inaugural volume in the series, Quinone Methides, represents the first book devoted to this fascinating and useful intermediate. The authors of this work reflect the many disciplines and approaches to quinone methides research. The volume therefore covers a broad range of topics, including theoretical treatments, generation and detection of intermediates, characterization and applications in chemistry and biochemistry, and biological reactivity. Among the chapters are: Photochemical generation and characterization of quinone methides Quinone methide stabilization by metal complexation Self-immolative dendrimers based on quinone methides Characterization of quinone methides by spectral global fitting and ¹³C labeling Formation and reactions of xenobiotic quinone methides in biology Quinone methides in lignification With this collection of topics, readers already familiar with quinone methides have the opportunity to advance their own research by discovering new inspiration and opportunities in allied areas. Moreover, the range of topics and perspectives covered make this volume accessible to readers with a broad range of interests, including organic and physical chemistry, biochemistry, biotechnology, and pharmaceuticals.

Chitin and Chitosan - Lambertus A. M. van den Broek 2020-01-21

Offers a comprehensive guide to the isolation, properties and applications of chitin and chitosan Chitin and Chitosan: Properties and Applications presents a comprehensive review of the isolation, properties and applications of chitin and chitosan. These promising biomaterials have the potential to be broadly applied and there is a growing market for these biopolymers in areas such as medical and pharmaceutical, packaging, agricultural, textile, cosmetics, nanoparticles and more. The authors - noted experts in the field - explore the isolation, characterization and the physical and chemical properties of chitin and chitosan. They also examine their properties such as hydrogels, immunomodulation and biotechnology, antimicrobial activity and chemical enzymatic modifications. The book offers an analysis of the myriad medical and pharmaceutical applications as well as a review of applications in other areas. In addition, the authors discuss regulations, markets and perspectives for the use of chitin and chitosan. This important book: Offers a thorough review of the isolation, properties and applications of chitin and chitosan. Contains information on the wide-ranging applications and growing market demand for chitin and chitosan Includes a discussion of current regulations and the outlook for the future Written for Researchers in academia and industry who are working in the fields of chitin and chitosan, Chitin and Chitosan: Properties and Applications offers a review of these promising biomaterials that have great potential due to their material properties and biological functionalities.

Handbook of Biofuels - Sanjay Sahay 2021-10-31

Handbook of Biofuels looks at the many new developments in various type of bioenergy, along with the significant constraints in their production and/or applications. Beyond introducing current approaches and possible future directions of research, this title covers sources and processing of raw materials to downstream processing, constraints involved and research approaches to address and overcome these needs. Different combinations of products from the biorefinery are included, along with the material to answer questions surrounding the optimum process conditions for conversion of different feedstocks to bioenergy, the basis for choosing conversion technology, and what bioenergy products make economic sense. With chapters on the techno-economic analysis of biofuel production and concepts and step-by-step approaches in bioenergy processing, the objective of this book is to present a comprehensive and all-encompassing reference about bioenergy to students, teachers, researchers and professionals. Reviews all existing and emerging technologies surrounding the production of advanced biofuels, including biodiesel

and bioethanol Includes biofuel applications with compatible global application case studies Offers new pathways for converting biomass

Biomass, Biofuels, Biochemicals - Thallada Bhaskar 2021-01-22

Biomass, Biofuels, Biochemicals: Lignin Biorefinery discusses the scientific and technical information relating to the structure and physico-chemical characteristics of lignin. The book covers the different processes (biological, thermal and catalytic routes) available for lignin conversion into specialty chemicals or fuels, activity relationships, and how optimized process parameters help establish the feasible size of the commercial plant in a centralized or decentralized model. In addition, the advantages and limitations of different technologies are discussed, considering local energy, chemicals, biopolymers, drug intermediates, activated carbons, and much more. Includes information on the most advanced and innovative processes for lignin conversion Covers information on biochemical and thermo-chemical processes for lignin valorization Provides information on lignin chemistry and its conversion into high value chemicals and fuels Presents a book designed as a text book, not merely a collection of research articles

Pectins - 2020-01-22

This book deepens the study and knowledge on pectins, especially in the processes of extraction, purification, and characterization, in short its many and wide applications. Among the most prominent applications are the food, pharmaceutical, and other industries. The development of pectins has a very promising future with a marked annual increase and with a wide range of sources. As written above, this book will help its readers to expand their knowledge on this biopolymer with vast application in the industry worldwide.

Current Developments in Biotechnology and Bioengineering - Ashok Pandey 2016-09-17

Current Developments in Biotechnology and Bioengineering: Production, Isolation and Purification of Industrial Products provides extensive coverage of new developments, state-of-the-art technologies, and potential future trends, focusing on industrial biotechnology and bioengineering practices for the production of industrial products, such as enzymes, organic acids, biopolymers, and biosurfactants, and the processes for isolating and purifying them from a production medium. During the last few years, the tools of molecular biology and genetic and metabolic engineering have rendered tremendous improvements in the production of industrial products by fermentation. Structured by industrial product classifications, this book provides an overview of the current practice, status, and future potential for the production of these agents, along with reviews of the industrial scenario relating to their production. Provides information on industrial bioprocesses for the production of microbial products by fermentation Includes separation and purification processes of fermentation products Presents economic and feasibility assessments of the various processes and their scaling up Links biotechnology and bioengineering for industrial process development

Composites in Biomedical Applications - S. M. Sapuan 2020-09-27

Composites in Biomedical Applications presents a comprehensive overview on recent developments in composites and their use in biomedical applications. It features cutting-edge developments to encourage further advances in the field of composite research. Highlights a completely new research theme in polymer-based composite materials Outlines a broad range of different research fields, including polymer and natural fiber reinforcement used in the development of composites for biomedical applications Discusses advanced techniques for the development of composites and biopolymer-based composites Covers fatigue behavior, conceptual design in ergonomics design application, tissue regeneration or replacement, and skeletal bone repair of polymer composites Details the latest developments in synthesis, preparation, characterization, material evaluation, and future challenges of composite applications in the biomedical field This book is a comprehensive resource for advanced students and scientists pursuing research in the broad fields of composite materials, polymers, organic or inorganic hybrid materials, and nano-assembly.

Recent Developments in Bioenergy Research - Vijai G. Gupta 2020-07-07

Recent Developments in Bioenergy Research reviews all these topics, reports recent research findings, and presents potential solutions to challenging issues. The book consolidates the most recent research on the (bio)technologies, concepts and commercial developments that are currently in progress on different types

of widely-used biofuels and integrated biorefineries across biochemistry, biotechnology, biochemical engineering and microbiology. Chapters include very recent/emerging topics, such as non-ionic and ionic liquids/surfactants for enhancement of lignocellulose enzymatic hydrolysis and lignocellulose biomass as a rich source of bio-ionic liquids. The book is a useful source of information for those working in the area of industrial wastewater treatment and microbial fuel cells, but is also a great resource for senior undergraduate and graduate students, researchers, professionals, biochemical engineers and other interested individuals/groups working in the field of biofuel/bioenergy. Provides unique information on biomass-based biofuels for fundamental and applied research Outlines research advancements in the areas of bio-hydrogen, bioethanol, bio-methane and biorefineries Includes emerging topics on biomass (including wastes) characterization and its uses as a resource for environmental bioremediation and bioenergy Reviews enzyme engineering for biomass to bioproducts and biochemicals, lipids/bio-oil Focuses on biological/ biochemical routes, as these options have the greatest potential to be the most cost-effective methods for biofuel/bioenergy production

Actinobacteria - Dharumadurai Dhanasekaran 2016-02-11

This book presents an introductory overview of Actinobacteria with three main divisions: taxonomic principles, bioprospecting, and agriculture and industrial utility, which covers isolation, cultivation methods, and identification of Actinobacteria and production and biotechnological potential of antibacterial compounds and enzymes from Actinobacteria. Moreover, this book also provides a comprehensive account on plant growth-promoting (PGP) and pollutant degrading ability of Actinobacteria and the exploitation of Actinobacteria as ecofriendly nanofactories for biosynthesis of nanoparticles, such as gold and silver. This book will be beneficial for the graduate students, teachers, researchers, biotechnologists, and other professionals, who are interested to fortify and expand their knowledge about Actinobacteria in the field of Microbiology, Biotechnology, Biomedical Science, Plant Science, Agriculture, Plant pathology, Environmental Science, etc.

Japan English Publications in Print - 1993

Handbook of Biomolecules - Chandrabhan Verma 2022-06-01

Handbook of Biomolecules: Fundamentals, Properties and Applications is a comprehensive resource covering new developments in biomolecules and biomaterials and their industrial applications in the fields of bioengineering, biomedical engineering, biotechnology, biochemistry, and their detection methods using biosensors. This book covers the fundamentals of biomolecules, their roll in living organism, structure, sources, important characteristics, and the industrial applications of these biomaterials. Sections explore amino acids, carbohydrates, nucleic acids, proteins, lipids, metabolites and natural products, then go on to discuss purification techniques and detection methods. Applications in biomolecular engineering, biochemistry and biomedical engineering, among others, are discussed before concluding with coverage of biomolecules as anticorrosion materials. Provides the chronological advancement of biomolecules, their biochemical reaction, and many modern industrial applications in engineering and science Serves as a valuable source for researchers interested in the fundamentals, basics and modern applications of biomolecules Covers both synthetic and natural biomolecule synthesis and purification processes and their modern applications Bridges the gap between the fundamental science of biomolecular chemistry and the relevant technology and industrial applications

Lignin Valorization - Gregg T. Beckham 2018-03-29

A comprehensive, interdisciplinary picture of how lignocellulosic biorefineries could potentially employ lignin valorization technologies.

Bio-Based Polymers and Composites - Richard Wool 2011-08-30

Bio-Based Polymers and Composites is the first book systematically describing the green engineering, chemistry and manufacture of biobased polymers and composites derived from plants. This book gives a thorough introduction to bio-based material resources, availability, sustainability, biobased polymer formation, extraction and refining technologies, and the need for integrated research and multi-disciplinary working teams. It provides an in-depth description of adhesives, resins, plastics, and composites derived from plant oils, proteins, starches, and natural fibers in terms of structures, properties, manufacturing, and

product performance. This is an excellent book for scientists, engineers, graduate students and industrial researchers in the field of bio-based materials. * First book describing the utilization of crops to make high performance plastics, adhesives, and composites * Interdisciplinary approach to the subject, integrating genetic engineering, plant science, food science, chemistry, physics, nano-technology, and composite manufacturing. * Explains how to make green materials at low cost from soyoil, proteins, starch, natural fibers, recycled newspapers, chicken feathers and waste agricultural by-products.

Products and Applications of Biopolymers - Casparus Verbeek 2012-03-07

It is interesting to consider that biopolymers are by no means new to this world. It is only because of our fascination with petrochemical products that these wonderful materials have been neglected for so long. Today we face a different challenge. Environmental pressure is pushing away from synthetic or petro-chemically derived products, while economic factors are pulling back from often more expensive "green" options. This book presents two aspects of biopolymers; potential products and some applications of biopolymers covering the current relevance of biopolymers.

Lignin - Fachuang Lu 2014

The use of biologically derived polymers is emerging as an important component of sustainable economic development. Technical lignins, derivatives from naturally occurring lignin polymers in woody plants, are generated commercially in large quantities -- up to 70 million tons world-wide annually. Besides being burned as fuels, only a small percentage of these lignins are used for various applications because technical

lignins present relatively unpredictable structural characteristics and are therefore unreliable feedstocks to make products with consistent and satisfactory quality. Over the past two decades, there has been great progress in the research and commercialisation of lignin-based products and processes that add significant value to lignins. This book provides critical reviews and the latest research results relating to selected fields of lignin structural analysis and applications. Featuring the significant advances in selected topics of the lignin research field, this reference book is for college students and scientists with the intent of promoting further research and innovations in this specialised field.

Bio-Inspired Innovation and National Security - National Defense University 2010-10-01

Despite the vital importance of the emerging area of biotechnology and its role in defense planning and policymaking, no definitive book has been written on the topic for the defense policymaker, the military student, and the private-sector bioscientist interested in the "emerging opportunities market" of national security. This edited volume is intended to help close this gap and provide the necessary backdrop for thinking strategically about biology in defense planning and policymaking. This volume is about applications of the biological sciences, here called "biologically inspired innovations," to the military. Rather than treating biology as a series of threats to be dealt with, such innovations generally approach the biological sciences as a set of opportunities for the military to gain strategic advantage over adversaries. These opportunities range from looking at everything from genes to brains, from enhancing human performance to creating renewable energy, from sensing the environment around us to harnessing its power.