



BIOPROCESSING

FOR

VALUE-ADDED PRODUCTS

FROM

RENEWABLE RESOURCES

NEW TECHNOLOGIES AND APPLICATIONS

EDITED BY
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Bioprocessing For Value Added Products From Renewable Resources New Technologies And Applications

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Bioprocessing For Value Added Products From Renewable Resources New Technologies And Applications:

Bioprocessing for Value-Added Products from Renewable Resources Shang-Tian Yang, 2011-08-11 Bioprocessing for Value Added Products from Renewable Resources provides a timely review of new and unconventional techniques for manufacturing high value products based on simple biological material The book discusses the principles underpinning modern industrial biotechnology and describes a unique collection of novel bioprocesses for a sustainable future This book begins in a very structured way It first looks at the modern technologies that form the basis for creating a bio based industry before describing the various organisms that are suitable for bioprocessing from bacteria to algae as well as their unique characteristics This is followed by a discussion of novel experimental bioprocesses such as the production of medicinal chemicals the production of chiral compounds and the design of biofuel cells The book concludes with examples where biological renewable resources become an important feedstock for large scale industrial production This book is suitable for researchers practitioners students and consultants in the bioprocess and biotechnology fields and for others who are interested in biotechnology engineering industrial microbiology and chemical engineering Reviews the principles underpinning modern industrial biotechnology Provides a unique collection of novel bioprocesses for a sustainable future Gives examples of economical use of renewable resources as feedstocks Suitable for both non experts and experts in the bioproduct industry **Bioprocessing for Value-Added Products from Renewable Resources** Elsevier, 2005-06

Bioprocessing Technologies in Biorefinery for Sustainable Production of Fuels, Chemicals, and Polymers Shang-Tian Yang, Hesham El-Ensashy, Nuttha Thongchul, 2013-05-24 Sets the stage for large scale production of biofuels and bio based chemicals In response to diminishing supplies as well as the environmental hazards posed by fossil fuels and petrochemicals interest and demand for green sustainable biofuels and bio based chemicals are soaring Biomass may be the solution It is an abundant carbon neutral renewable feedstock that can be used for the production of fuels and chemicals Currently biorefineries use corn soybeans and sugarcane for bioethanol and biodiesel production however there are many challenges facing biorefineries preventing biomass from reaching its full potential This book provides a comprehensive review of bioprocessing technologies that use lignocellulosic biomass for the production of biofuels biochemicals and biopolymers It begins with an overview of integrated biorefineries Next it covers Biomass feedstocks including sugar starch oil and energy crops as well as microalgae Pretreatment technologies for lignocellulosic biomass Hydrolytic enzymes used in biorefineries for the hydrolysis of starch and lignocelluloses Bioconversion technologies for current and future biofuels such as ethanol biodiesel butanol hydrogen and biogas Specialty chemicals building block chemicals and biopolymers produced via fermentation Phytochemicals and functional food ingredients extracted from plant materials All the chapters have been written and edited by leading experts in bioprocessing and biorefining technologies Contributions are based on a thorough review of the literature as well as the authors firsthand experience developing and working with bioprocessing technologies

By setting forth the current state of the technology and pointing to promising new directions in research Bioprocessing Technologies in Biorefinery for Sustainable Production of Fuels Chemicals and Polymers will enable readers to move towards large scale sustainable and economical production of biofuels and bio based chemicals *Bioreduction of Selenite and Tellurite by Phanerochaete Chrysosporium* Erika Jimena Espinosa-Ortiz,2021-12-24 Selenium Se and tellurium Te are metalloids of commercial interest due to their physicochemical properties The water soluble oxyanions of these elements selenite selenate tellurite and tellurate exhibit high toxicities hence their release in the environment is of great concern This study demonstrates the potential use of fungi as Se and Te reducing organisms The response of Phanerochaete chrysosporium to the presence of selenite and tellurite was evaluated as well as its potential application in wastewater treatment and production of nanoparticles Growth stress and morphological changes were induced in P chrysosporium when exposed to selenite and tellurite Synthesis of Se₀ and Te₀ nanoparticles entrapped in the fungal biomass was observed as well as the formation of unique Se₀ Te₀ nanocomposites when the fungus was cultivated concurrently with Se and Te The response of P chrysosporium to selenite exposure was investigated in different modes of fungal growth pellets and biofilm A bioprocess for selenite removal and Se₀ nanoparticles recovery using an up flow fungal pelleted reactor was developed 70% selenite removal 10 mg Se L⁻¹ d⁻¹ was achieved under continuous mode The use of Se₀ nanoparticles immobilized in P chrysosporium pellets as a new sorbent material for the removal of heavy metals from wastewater was demonstrated

Dietary Carbohydrate Digestibility and Metabolic Effects in Human Health F. Javier Moreno,Oswaldo Hernandez-Hernandez,Robert Rastall,2019-12-09 **Handbook of Ionic Liquids** Sanchayita Rajkhowa,Pardeep Singh,Anik Sen,Jyotirmoy Sarma,2023-12-27 Handbook of Ionic Liquids A one stop reference for researchers interested in ionic liquids and their applications Handbook of Ionic Liquids Fundamentals Applications and Sustainability constitutes an overview of the latest advances in ionic liquid chemistry It offers a comprehensive summary of the development history of ionic liquids their design and the diverse array of applications including green and sustainable synthesis catalysis drug development and medicine biotechnology materials science and electrochemistry The authors explain a variety of processes used to develop novel materials with ionic liquids and describe likely future developments using practical examples taken from contemporary research and development in the field The book includes discussions of biomass conversion CO₂ capture and more You ll also discover A thorough introduction to the theory of ionic liquids as well as their different types and recycling methods Comprehensive explorations of the physico chemical properties of ionic liquids Practical discussions of ionic liquid synthesis and analysis including green synthesis and heterocyclic chemistry applications Summary of the use of ionic liquids in materials science including polymers energy conversion and storage devices Perfect for organic catalytic physical analytical and environmental chemists Handbook of Ionic Liquids Fundamentals Applications and Sustainability will also benefit electrochemists materials scientists and biotechnologists with an interest in ionic liquids and their application Advances

in Biofeedstocks and Biofuels, Liquid Biofuel Production Lalit Kumar Singh, Gaurav Chaudhary, 2019-05-16 Biofuels production is one of the most extensively studied fields in the energy sector that can provide an alternative energy source and bring the energy industry closer to sustainability Biomass based fuel production or renewable fuels are becoming increasingly important as a potential solution for man made climate change depleted oil reserves and the dangers involved with hydraulic fracturing or fracking The price of oil will always be volatile and changeable and so long as industry and private citizens around the world need energy there will be a need for alternative energy sources The area known as biofuels and biofeedstocks is one of the most important and quickly growing pieces of the energy pie Biofuels and biofeedstocks are constantly changing and new processes are constantly being created changed and improved upon The area is rapidly changing and always innovative It is important therefore that books like the volumes in this series are published and the information widely disseminated to keep the industry informed of the state of the art This third volume in the Advances in Biofeedstocks and Biofuels series focuses on the production of liquid biofuel covering all of the major biofuels such as biodiesel biobutanol bioethanol and others This engaging text touches on all of the most important new processes and technologies providing the most up to date coverage of the science available to industry It is a must have for any engineer or scientist working with biofuel technology

Alginate Md Saquib Hasnain, Amit Kumar Nayak, 2019-04-01 This new volume explores the latest research on the use of alginate as a biopolymer in various biomedical applications and therapeutics The uses of alginates and modified alginates discussed in this book include tissue regeneration encapsulation and delivery of drugs nucleic acid materials proteins and peptides genes herbal therapeutic agents nutraceuticals and more This book also describes the synthesis and characterizations of various alginate and modified alginate systems such as hydrogels gels composites nanoparticles scaffolds etc used for the biomedical applications and therapeutics Alginate a biopolymer of natural origin is of immense interest for its variety of applications in pharmaceuticals as medical diagnostic aids and in materials science It is the one of the most abundant natural biopolymers and is considered an excellent excipient because of its non toxic stable and biodegradable properties Several research innovations have been made on applications of alginate in drug delivery and biomedicines There needs to be a thorough understanding of the synthesis purification and characterization of alginates and its derivatives for their utility in healthcare fields and this volume offers an abundance of information toward that end

Food Science and Technology Oluwatosin Ademola Ijabadeniyi, 2020-12-07 Food Science and Technology Trends and Future Prospects presents different aspects of food science i e food microbiology food chemistry nutrition process engineering that should be applied for selection preservation processing packaging and distribution of quality food The authors focus on the fundamental aspects of food and also highlight emerging technology and innovations that are changing the food industry The chapters are written by leading researchers lecturers and experts in food chemistry food microbiology biotechnology nutrition and management This book is valuable for researchers and students in food science and technology

and it is also useful for food industry professionals food entrepreneurs and farmers *Microalgal Biotechnology* Ajam Shekh,Peer Schenk,R Sarada,2021-05-10 Microalgae are a group of single celled photosynthetic microorganisms They are of great commercial interest as they are capable of producing biomass with a vast array of biochemical using sunlight CO₂ and various other naturally occurring nutrients Correctly utilised they have the potential to provide sustainable supply of commercially relevant biochemicals biofuels nutraceuticals food and feed supplements The field of microalgal biotechnology is a fast paced area of research with technologies coming ever closer to commercial viability Microalgal Biotechnology consolidates the latest research in the field together with a look at market potential and policy considerations Highlighting the huge potential of microalgae as commercial commodities it covers progress on various fronts including bio refinery and its technological challenges genetic engineering biosafety and regulatory issues open and closed photo bioreactors for biomass production market space and sustainability for algal products This book is a useful resource for researchers academicians postgraduate students industries policy makers and anyone interested in the status and future possibilities of microalgae commercialisation

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