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Current wastewater treatment technologies are not sustainable simply due to their high operational costs and process inefficiency. Integrated Microbial Fuel Cells for Wastewater Treatment is intended for professionals who are searching for an innovative method to improve the efficiencies of wastewater treatment processes by exploiting the potential of Microbial Fuel Cells (MFCs) technology. The book is broadly divided into four sections. It begins with an overview of the "state of the art" bioelectrochemical systems (BESs) as well as the fundamentals of MFC technology and its potential to enhance wastewater treatment efficiencies and reduce electricity generation cost. In section two, discusses the integration, installation, and optimization of MFC into conventional wastewater treatment processes such as activated sludge process, lagoons, constructed wetlands, and membrane bioreactors. Section three outlines integrations of MFCs into other wastewater processes. The final section provides explorative studies of MFC integrated systems for large scale wastewater treatment and the challenges which are inherent in the upscaling process. Clearly describes the latest techniques for integrating MFC into traditional wastewater treatment processes such as activated sludge process, lagoons, constructed wetlands, and membrane bioreactors Discusses the fundamentals of bioelectrochemical

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systems for degrading the contaminants from the municipal and industrial wastewater Covers methods for the optimization of integrated systems

Due to various issues in the world including rapid urbanization and industrial processes, waste generation has reached levels that are becoming detrimental to the environment and the global population. Waste management has remained a challenging issue for many professional sectors as it is directly linked to an organization's performance; however, the implementation of efficient and cost-effective waste minimization plans is the first step in improving the global environment. Innovative technologies in waste management are emerging and can help professionals looking to implement more efficient methods of pollution control. The Handbook of Research on Waste Diversion and Minimization Technologies for the Industrial Sector is a pivotal reference source that provides vital research on the application of modern pollution-control methodologies in industrialized environments. While highlighting topics such as life cycle assessment, bioremediation, and thermal waste treatment, this publication explores environmental risk reduction scenarios as well as sustainable waste-collecting solutions. This book is ideally designed for researchers, industrialists, environmentalists, practitioners, policymakers, scientists, students, and academicians seeking current research on innovative advancements in waste minimization techniques.

?Universe books,New York,1974????

This book critically discusses different aspects of algal

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production systems and several of the drawbacks related to microalgal biomass production, namely, low biomass yield, and energy-consuming harvesting, dewatering, drying and extraction processes. These provide a background to the state-of-the-art technologies for algal cultivation, CO₂ sequestration, and large-scale application of these systems. In order to tap the commercial potential of algae, a biorefinery concept has been proposed that could help to extract maximum benefits from algal biomass. This refinery concept promotes the harvesting of multiple products from the feedstock so as to make the process economically attractive. For the last few decades, algal biomass has been explored for use in various products such as fuel, agricultural crops, pigments and pharmaceuticals, as well as in bioremediation. To meet the huge demand, there has been a focus on large-scale production of algal biomass in closed or open photobioreactors. Different nutritional conditions for algal growth have been explored, such as photoautotrophic, heterotrophic, mixotrophic and oleaginous. This book is aimed at a wide audience, including undergraduates, postgraduates, academics, energy researchers, scientists in industry, energy specialists, policy makers and others who wish to understand algal biorefineries and also keep abreast of the latest developments. The book covers all aspects of fermentation technology such as principles, reaction kinetics, scaling up of processes, and applications. The 20 chapters written by subject matter experts are divided into two parts: Principles and Applications. In the first part subjects

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covered include: Modelling and kinetics of fermentation technology Sterilization techniques used in fermentation processes Design and types of bioreactors used in fermentation technology Recent advances and future prospect of fermentation technology The second part subjects covered include: Lactic acid and ethanol production using fermentation technology Various industrial value-added product biosynthesis using fermentation technology Microbial cyp450 production and its industrial application Polyunsaturated fatty acid production through solid state fermentation Application of oleaginous yeast for lignocellulosic biomass based single cell oil production Utilization of micro-algal biomass for bioethanol production Poly-lactide production from lactic acid through fermentation technology Bacterial cellulose and its potential impact on industrial applications

The only single-source reference on the science of olives and olive oil nutrition and health benefits *Olives and Olive Oil as Functional Foods* is the first comprehensive reference on the science of olives and olive oil. While the main focus of the book is on the fruit's renowned health-sustaining properties, it also provides an in-depth coverage of a wide range of topics of vital concern to producers and researchers, including post-harvest handling, packaging, analysis, sensory evaluation, authentication, waste product utilization, global markets, and much more. People have been cultivating olives for more than six millennia, and olives and olive oil have been celebrated in songs and legends for their life-sustaining properties since antiquity. However, it is only within the last several decades that the unique health

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benefits of their consumption have become the focus of concerted scientific studies. It is now known that olives and olive oil contain an abundance of phenolic antioxidants, as well as the anti-cancer compounds such as squalene and terpenoids. This centerpiece of the Mediterranean diet has been linked to a greatly reduced risk of heart disease and lowered cancer risk. Bringing together contributions from some of the world's foremost experts on the subject, this book: Addresses the importance of olives and olive oil for the agricultural economy and the relevance of its bioactive components to human health Explores the role that olive oil plays in reducing oxidative stress in cells-a well-known risk factor in human health Provides important information about new findings on olive oil and lipids which reviews the latest research Explores topics of interest to producers, processors, and researchers, including the fruit's chemical composition, processing considerations, quality control, safety, traceability, and more Edited by two scientists world-renowned for their pioneering work on olive oil and human health, this book is an indispensable source of timely information and practical insights for agricultural and food scientists, nutritionists, dieticians, physicians, and all those with a professional interest in food, nutrition, and health.

Food Waste to Valuable Resources: Applications and Management compiles current information pertaining to food waste, placing particular emphasis on the themes of food waste management, biorefineries, valuable specialty products and technoeconomic analysis. Following its introduction, this book explores new

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environmental problems. The book presents new methods and technologies to combat the aforementioned problems and focuses on the importance of using the recycled products. The technologies related to waste and sludge treatment are economical, eco-friendly and bring economic returns, and can be applied to most of the developing countries where waste treatment technologies, viz. composting, anaerobic digestion, recycling of plastic and agricultural waste in construction can be used. The aim of the book is to support everyone who is involved in academics, teaching, research related to solid waste management and water and wastewater treatment study in the leading academic and research organizations globally. This book will be of prodigious value to upcoming researchers, scholars, scientists and professionals in Environmental Science and Engineering fields, and global and local authorities and policy makers responsible for the management of solid wastes and sludge. Globally, universities can develop new prospectuses on sustainable and eco-friendly waste and sludge management, which are relating to the book's theme. This book can also be of great source for designing and operation of waste reuse and recycling programmes.

Biovalorisation of Wastes to Renewable Chemicals and Biofuels addresses advanced technologies for converting waste to biofuels and value-added products.

Biovalorisation has several advantages over conventional bioremediation processes as it helps reduce the costs of bioprocesses. Examples are provided of several successfully commercialized

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technologies, giving insight into developing, potential processes for biovalorisation of different wastes. Different bioprocess strategies are discussed for valorising the wastes coming from the leather industry, olive oil industry, pulp and paper, winery, textile, and food industries, as well as aquaculture. A section on biorefinery for hydrocarbons and emerging contaminants is included to cover concepts on biodesulfurization of petroleum wastes, leaching of heavy metals from E - waste, and bioelectrochemical processes for CO₂. Chapters on algal biorefinery are also included to focus on the technologies for conversion of CO₂ sequestration and wastewater utilization. Biovalorisation of Wastes to Renewable Chemicals and Biofuels can be used as course material for graduate students in chemical engineering, chemistry, and biotechnology, and as a reference for industrial professionals and researchers who want to gain a basic understanding on the subject. Covers a wide range of topics, from the conversion of wastes to organic acids, biofuels, biopolymers and industrially relevant products Bridges the gap between academics and industry Written in a lucid and self-explanatory style Includes activities/quiz/critical questions

"Microalgae Biotechnology for Food, Health and High Value Products" presents the latest technological innovations in microalgae production, market status of algal biomass-based products, and future prospects for microalgal applications. It provides stimulating overviews from different perspectives of application that demonstrate how rapidly the commercial production of

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microalgae-based food, health and high value products is advancing. It also addresses a range of open questions and challenges in this field. The book highlights the latest advances of interest to those already working in the field, while providing a comprehensive overview for those readers just beginning to learn about the promise of microalgae as a sustainable source of both specialty and commercial products. It offers a valuable asset for commercial algae producers, algae product developers, scientific researchers and students who are dedicated to the advancement of microalgae biotechnology for applications in health, diet, nutrition, cosmetics, biomaterials etc.

This database encompasses all aspects of the impact of people and technology on the environment and the effectiveness of remedial policies and technologies, featuring more than 950 journals published in the U.S. and abroad. The database also covers conference papers and proceedings, special reports from international agencies, non-governmental organizations, universities, associations and private corporations. Other materials selectively indexed include significant monographs, government studies and newsletters.

This edited book discusses various processes of feedstocks bioconversion such as bioconversion of food waste, human manure, industrial waste, beverage waste, kitchen waste, organic waste, fruit and vegetable, poultry waste, solid waste, agro-industrial waste, cow dung, steroid, lignocellulosic residue, biomass, natural gas etc. Nowadays, the industrial revolution and urbanization have made human life comfortable. However, this

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requires excess usage of natural resources starting from food and food products, to energy resources, materials as well as chemicals. The excess use of natural resources for human comfort is expected to high fuel prices, decline natural resources as well as cause a huge hike in the cost of raw materials. These factors are pushing researchers to grow environmentally friendly processes and techniques based on inexpensive and sustainable feedstock to accomplish such worldwide targets. Bioconversion, otherwise called biotransformation, is the change of natural materials, for example, plant or animal waste, into usable items or energy sources by microorganisms. Bioconversion is an environmentally friendly benevolent choice to supplant the well-established chemical procedures utilized these days for the production of chemicals and fuels. A variety of alternatives advancements are being considered and are directly accessible to acquire diverse valuable end-products through bioprocesses. This book discusses in detail the process and techniques of bioconversion by focusing on the organic feedstock of animal and plant origin. It brings solutions to the bioconversion of various feedstock into value-added products.

Advances in Environmental Pollution Management: Wastewater Impacts and Treatment Technologies has been designed to bind novel knowledge of wastewater pollution-induced impacts on various aspects of our environment. The book also contains novel methods and tools for the monitoring and treatment of produced wastewater.

The rapid growth of industries has resulted in the generation of high volume of solid and liquid waste. Today, there is a need of Clean and Green technology for the sustainable

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waste management. Biochemical and Environmental Bioprocessing: Challenges and Developments explore the State-of-art green technologies to manage the waste and to recover value added products. Microbes play an important role in the bioremediation. Bioprocess engineering an interdisciplinary connects the Science and Technology. The bioconversion and bioremediation is essentially required for the management of various hazardous substances in the environment. This book will give an intensive knowledge on the application of Biochemical and Bioprocess technologies for the eco-friendly management of pollution. This book serves as a fundamental to the students, researchers, academicians and Engineers working in the area of Environmental Bioremediation and in the exploration of various bioproducts from waste. Features Reviews various biological methods for the treatment of effluents from Industries by using biomass and biopolymers. Highlights the applications of various bioreactors like Anaerobic Sequential Batch Reactor, Continuously stirred anaerobic digester, Up-flow anaerobic sludge blanket reactor, Fluidized and expanded bed reactors. Presents the cultivation of algae in Open Pond, Closed loop System, and Photo-bioreactors for bioenergy production. Discusses the intensified and integrated biorefinery approach by Microwave Irradiation, Pyrolysis, Acoustic cavitation, Hydrodynamic cavitation, Electron beam irradiation, High pressure Autoclave reactor, Steam explosion and photochemical oxidation. Outlines the usage of microbial fuel cell (MFC) for the production bioelectricity generation in different modules Tubular MFC, Stacked MFC, Separate electrode modules Cutting edge research of synthesis of biogenic nanoparticles and Pigments by green route for the health care and environment management.

This multi-volume directory which lists more than 40,000

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companies is indexed by company name, geographic area, SIC code, and non-U.S. parent companies. Profiles are provided for each company listed, and company rankings given under each industry.

This book addresses waste generation problems from various sectors, including industries, agriculture, and household. It focuses on how modern biotechnological approaches could help manage waste in an eco-friendly manner and generate precious bioenergy. It discusses the inadequate waste management systems damaging the environment and its adverse impacts on climate change-related problems. This book covers all the essential information regarding various types of waste and their management. It is a comprehensive compilation for understanding the efficient generation of bioenergy. It is a relevant reading material (resource) for anyone who wishes to study waste management as Chemist, Biologist, Biotechnologist, Industrialist, Ecologist, Microbiologist, Economist, and all disciplines related to the environment.

The fundamental purpose of this book is to synthesise the divergent literature on aquatic lipids into a co-ordinated, digestible form. A large part of the book addresses lipid composition and production in freshwater organisms, with chapters on phytoplankton, zooplankton and benthic invertebrates. A common theme throughout the book is the function of lipids in aquatic food webs, with a chapter devoted exclusively to lipids as indicators of health in fish populations. A complementary chapter highlights the role of lipids and essential fatty acids in mariculture. Methodologies to determine the lipid content of aquatic samples and suggestions as to the utility of fatty acids as trophic markers are included, as is one chapter on the role of lipids in the bioaccumulation and bioconcentration of toxicants and another on the relationships between lipids and surface films

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and foams. The final chapter highlights the similarities and differences between lipids of marine and freshwater origin. Students and researchers in ecology, phycology, aquatic toxicology, physiological ecology and limnology will find this an invaluable guide and reference.

This book focuses on the different kinds of biofuels and biofuel resources. Biofuels represent a major type of renewable energy. As part of a larger bio-economy, they are closely linked to agriculture, forestry and manufacturing. Biofuels have the potential to improve regional energy access, reduce dependence on fossil fuels and contribute to climate protection. Further, this alternative form of energy could revitalize the forestry and agricultural sector and promote the increased use of renewable resources as raw materials in a range of industrial processes. Efforts are continuously being made to develop economically competitive biofuels, and microbes play important roles in the production of biofuels from various bioresources. This book elaborates on recent advances in existing microbial technologies and on sustainable approaches to improving biofuel production processes. Additionally, it examines trends in, and the limitations of, existing processes and technologies. The book offers a comprehensive overview of microbial bioresources, microbial technologies, advances in bioconversion and biorefineries, as well as microbial and metabolic engineering for efficient biofuel production. Readers will also learn about the environmental impacts and the influence of climate change on the sustainability of biofuel production. This book is intended for researchers and students whose work involves biorefinery technologies, microbiology, biotechnology, agriculture, environmental biology and related fields.

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Production of Top 12 Biochemicals Selected by USDOE from Renewable Resources: Status and Innovation covers all important technological aspects of the production of biochemicals from renewable feedstock. All the important technological aspects of biomass conversion for example biomass pretreatment, enzymatic hydrolysis for cellulosic sugars production followed by the fermentation into chemicals and downstream recovery of the products is reviewed. Recent technological advancements in suitable microorganism development, bioprocess engineering for biomass conversion for cellulosic sugars production and various fermentation strategies and downstream recovery of these top 12 products is presented. Each bio-chemical selected by US Department of Energy i.e. ethanol, xylitol/sorbitol, furans (5-HMF, 2,5-FDCA,), glycerol & its derivatives, hydrocarbons) isoprene, iso-butadienes and others), lactic acid, succinic acid, 3-hydroxy propionic acid, levulinic acid and biohydrogen/biogas is included in a single book chapter. In addition to the technical aspects of these 12 biochemicals, general technological challenges dealing with lignocellulose refining, perspectives and solutions are elaborated in the book. Also, life cycle analysis, techno-economic viability, and sustainability index of biofuels/biochemicals are comprehensively reviewed in the book. covers uniquely designed scientific and technical literature on USDOE top listed biochemicals production with clear images and tables in the context of biomass valorisation Includes the clear and simplistic illustration of technological updates on biomass processing, system biology, microbial fermentation, catalysis, regeneration and monitoring of renewable energy and chemicals production Presents fast and reliable source of information on techno-economic analysis, life cycle analysis,

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technological scouting at industrial scale Entails fundamental aspects, recent developments in production of renewable chemicals as building block materials for commodity chemicals production

Vols. for 1964- have guides and journal lists.

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