

Production Of Biodiesel From Vietnamese Waste Coffee Beans

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Biomass for Energy Application - David Herak 2021-03-09

This book focuses on the utilization of biomass for energy applications and mainly covers the original research and studies related to thermochemical conversion, biological conversion and physical conversion. It contains a summary the current scientific knowledge in the field of biomass utilization, which is the first of its kind in the literature. Energy potentials and different principles of energy transformation from various renewable energy sources (bamboo, wood residue, straw, sorrel, hay, pines, sunflower stalks, hazelnut husks, quinoa, camelina, crambe, safflower, muscantus and municipal sewage sludge, among others) are described in detail in this book. Different types of pyrolysis or torrefaction processing, combustion, thermal degradation, mechanical properties affecting processing, pre-treatment or treatment processes, or other processes based on thermochemical methods are described as well. The integral part of this book is the bibliometric analysis of worldwide publication trends on biomass and bioenergy with respect to the research evolution with the possibility of predicting future scenarios and the participation of stakeholders in the sector.

Our Energy Future - Christian Ngo 2016-03-14

Presents an overview on the different aspects of the energy value chain and discusses the issues that future energy is facing This book covers energy and the energy policy choices which face society. The book presents easy-to-grasp information and analysis, and includes statistical data for energy production, consumption and simple formulas. Among the aspects considered are: science, technology, economics and the impact on health and the environment. In this new edition two new chapters have been added: The first new chapter deals with unconventional fossil fuels, a resource which has become very important from the economical point of view, especially in the United States. The second new chapter presents the applications of nanotechnology in the energy domain. Provides a global vision of available and potential energy sources Discusses advantages and drawbacks to help prepare current and future generations to use energy differently Includes new chapters covering unconventional fossil fuels and nanotechnology as new energy Our Energy Future: Resources, Alternatives and the Environment, Second Edition, is written for professionals, students, teachers, decision-makers and politicians involved in the energy domain and interested in environmental issues.

The Blue Economy - Gunter A. Pauli 2010

Dr. Gunter Pauli is challenging the green movement he has been so much a part of to do better, to do more. He is the entrepreneur who launched Ecover; those products are probably in many of your homes. He built the largest ecologically-sound factory in the world. His participation in the Club of Rome and the founding of Zero Emissions Research Institute (ZERI) has made an immense contribution to sustainability both in terms of research, public awareness and articulating a visionary direction. He has dedicated himself to teaching and the hands-on implementation of projects that have brought healthy environments, good nutrition, health care and jobs in sustainable commerce to a myriad of places in the world.

The Handbook of Polyhydroxyalkanoates - Martin Koller 2020-11-06

The first volume of the "Handbook of Polyhydroxyalkanoates (PHA): Microbial Biosynthesis and Feedstocks" focusses on feedstock aspects, enzymology, metabolism and genetic engineering of PHA biosynthesis. It addresses better understanding the mechanisms of PHA biosynthesis in scientific terms and profiting from this understanding in order to enhance PHA biosynthesis in bio-technological terms and in terms of PHA microstructure. It further discusses making PHA competitive for outperforming established petrol-based plastics on industrial scale and obstacles for market penetration of PHA. Aimed at professionals and graduate students in Polymer (plastic) industry, wastewater treatment plants, food industry, biodiesel industry, this book Covers the intracellular on-goings in PHA-accumulating bacteria Assesses diverse feedstocks to be used as carbon source for PHA production including current knowledge on PHA biosynthesis starting from inexpensive waste feedstocks Summarizes recent relevant results dealing with PHA production from various organic by-products Presents the key elements to understand and fine-tune the microstructure and sequence-controlled molecular architecture of PHA co-polyesters Discusses the use of CO-rich syngas, sourced from various organic waste materials, for PHA biosynthesis

Coffee - Yi-Fang Chu 2012-03-27

Coffee: Emerging Health Benefits and Disease Prevention presents a comprehensive overview of the recent scientific advances in the field. The book focuses on the following topics: coffee constituents; pro- and antioxidant properties of coffee constituents; bioavailability of coffee constituents; health benefits and disease prevention effects of coffee; and potential negative impacts on health. Multiple chapters describe coffee's positive impact on health and various diseases: type 2 diabetes; neurodegenerative diseases (Parkinson's and Alzheimer's); cancer (prostate, bladder, pancreatic, breast, ovarian, colon and colorectal); cardiovascular health; and liver health. Coffee's positive effects on mood, suicide rate and cognitive performance are addressed as are the negative health impacts of coffee on pregnancy, insulin sensitivity, dehydration, gastric irritation, anxiety, and withdrawal syndrome issues. Written by many of the top researchers in the world, Coffee: Emerging Health Benefits and Disease Prevention is a must-have reference for food professionals in academia, industry, and governmental and regulatory agencies whose work involves coffee.

Food Wastes and By-products - Rocio Campos-Vega 2020-02-03

A complete guide to the evolving methods by which we may recover by-products and significantly reduce food waste Across the globe, one third of cereals and almost half of all fruits and vegetables go to waste. The cost of such waste – both to economies and to the environment – is a serious and increasing concern within the food industry. If we are to overcome this crisis and move towards a sustainable future, we must do everything possible to utilize innovative new methods of extracting and processing valuable by-products of all kinds. Food Wastes and By-products represents a complete primer to this important and complex process. Edited and written by leading researchers, the text provides essential information on the supply of waste and its composition, identifies foods rich in valuable bioactive compounds, and explores

revolutionary methods for creating by-products from fruit, vegetable, and seed waste. Other chapters discuss the nutraceutical properties of value-added by-products and their uses in the manufacturing of dietary fibers, food flavors, supplements, pectin, and more. This book: Explains how reconstituted by-products can best be used to radically reduce food waste Discusses the potential nutraceutical assets of recovered food waste Covers a broad range of by-product sources, such as mangos, cacao, flaxseed, and spent coffee grounds Describes novel extraction processes and the emerging use of nanotechnology A significant contribution to the field, Food Wastes and By-products is a timely and essential resource for food industry professionals, government agencies and NGOs involved in nutrition, agriculture, and food production, and university instructors and students in related areas.

Coffee Science - Akula Ramakrishna 2022-08-18

Coffee Science: Biotechnological Advances, Economics and Health Benefits highlights the important advances in coffee research and an all-inclusive collection of information on the current status of global coffee production and market, sustainable benefits, novel methods and recent developments in coffee metabolites analysis, advancements in coffee processing technology and improvement of coffee quality by fermentation, solid-liquid extraction methods, and post-harvesting processes to improve the beverage quality and produce coffees with different sensory profiles. The book compiles insights into the biotechnological advances to improve coffee quality. It also describes specialty coffees, which are gaining consumer acceptance and enjoying a good global market. This book collates work on the influence of various coffee metabolites such as methyl xanthine, polyphenols, phenolic compounds, indoleamines, biogenic amines, and coffee diterpenes in human health effects such as cardiovascular diseases, cancer, type 2 diabetes mellitus, Alzheimer's disease, and Parkinson's disease. This book is a useful resource for scientists, academicians, and professionals all over the world who are engaged in coffee cultivation, research, business and coffee consumers' health. Key Features Current status on coffee production and the global market Novel methods and recent developments in the determination of coffee metabolites Advancements in coffee bean processing technology and improvement of coffee quality Biotechnological advances to improve coffee quality: The role of molecular markers, tissue culture, transgenic technology, and micro RNAs Effects of coffee consumption on human health Knowledge contributions from acknowledged experts from across the world

Active Polymers: Volume 1190 - Andreas Lendlein 2009-11-19

The MRS Symposium Proceeding series is an internationally recognised reference suitable for researchers and practitioners.

Coffee Biotechnology and Quality - T. Sera 2000-11-30

Coffee Biotechnology and Quality is a comprehensive volume containing 45 specialised chapters by internationally recognised experts. The book aims to provide a guide for those wishing to learn about recent advances in coffee cultivation and post-harvest technology. It provides a quantitative and rational approach to the major areas of coffee research, including breeding and cloning, tissue culture and genetics, pest control, post-harvest technology and bioconversion of coffee industry residues into commercially valuable products. The chapters review recent experimental work, allowing a conceptual framework for future research to be identified and developed. The book will be of interest to researchers and students involved in any area of coffee research. Consequently, plant breeders, microbiologists, biotechnologists and biochemical engineers will find the book to be a unique and invaluable guide.

Sugarcane ethanol - Peter Zuurbier 2008-11-07

Climate change is a challenge facing human life. It will change mobility and asks for new energy solutions. Bioenergy has gained increased attention as an alternative to fossil fuels. Energy based on renewable sources may offer part of the solution. Bio ethanol based on sugar cane offers advantages to people, the environment and the economy. Not surprisingly, governments currently enact powerful incentives for the development and exploitation of bio

ethanol. However, every inch we come closer to this achievement, evokes more scepticism. Many questions are raised relating to whether sugar cane is really a sustainable solution. Still much is unknown about the net release of carbon dioxide and what the impacts of sugar cane expansion are on green house gas emissions. This book looks at the scientific base of the debate on sugar cane bio ethanol. Authors from Europe, Brazil and the USA capture many aspects of what is known and address assumptions while not denying that still much is unknown. It covers impacts on climate change, land use, sustainability and market demands. This publication discusses public policy impacts, technology developments, the fuel-food dilemma and the millennium development goals. This makes this publication unique and extremely relevant for policymakers, scientists and the private energy sector worldwide.

Integrated Processing Technologies for Food and Agricultural By-Products - Zhongli Pan 2019-07-13

Feeding our globally expanding population is one of the most critical challenges of our time and improving food and agricultural production efficiencies is a key factor in solving this problem. Currently, one-third of food produced for humans is wasted, and for every pound of food produced, roughly an equal amount of nonfood by-product is also generated, creating a significant environmental impact. In Integrated Processing Technologies for Food and Agricultural By-Products experts from around the world present latest developments, recognizing that while some by-products have found use as animal feed or are combusted for energy, new technologies which integrate conversion of production and processing by-products into higher-value food or nonfood products, nutraceuticals, chemicals, and energy resources will be a critical part of the transition to a more sustainable food system. Organized by agricultural crop, and focusing on those crops with maximum economic impact, each chapter describes technologies for value-added processing of by-products which can be integrated into current food production systems. Integrated Processing Technologies for Food and Agricultural By-Products is a valuable resource for industry professionals, academics, and policy-makers alike. Provides production-through-processing coverage of key agricultural crops for a thorough understanding and translational inspiration Describes and discusses major by-product sources, including physical and chemical biomass characterizations and associated variability in detail Highlights conversions accomplished through physical, biological, chemical, or thermal methods and demonstrates examples of those technologies

Biofuels and the Sustainability Challenge - Aziz Elbehri 2013

Biofuels global emergence in the last two decades is met with increased concerns over climate change and sustainable development. This report addresses the core issue of biofuel sustainability of biofuels and related feedstocks, drawing from a wide range of sustainability related studies, reports, policy initiatives. The report critically examines the economic, environmental and social sustainability dimensions of biofuels and review the major certification initiatives, schemes and regulations. In doing so, the report relies on extensive review of a number of country case studies covering a broad range of current biofuel-feedstocks systems. The report analysis clearly distinguish feedstock efficiency (in terms of biofuel yields per unit of land) from sustainability, especially under limiting resource (irrigated water) or sensitive areas (carbon stocks). Also, long run economic viability depend on the future policy support, technical innovations in biofuel systems, economics of biofuel supply and demand and trade-offs between food and energy uses as well as feedstock productivity gains. Biofuels can present both advantages and risks for environmental sustainability; the latter being often difficult to measure or monitor and may conflict with economic sustainability unless great strides in productivity gains are achieved. Social sustainability is the weakest link in current biofuel certification schemes owing to intrinsic local factors and as efforts target more few negative social impacts; much less focus is placed on inclusive processes that strengthen marginal stockholders participation and benefits. Biofuel certification schemes need to be more smallholder inclusive, perhaps through policy initiatives. Finally, poor developing countries, especially with abundant

land and biomass production potential, need to prioritise food security and poverty reduction. In many cases, biofuel models that encourage small scale integrated bioenergy systems may offer higher rural development impacts. FDI-induced larger-scale biofuel projects, on the other hand, may be suitable in those situations where countries have sufficient industrial capacity, besides land and biomass potential, and when these biofuel projects can be fully integrated into domestic energy strategies that do not conflict with food production potential and food security.

Kick the Habit - Alex Kirby 2008

This publication is written by experts from many disciplines and various countries, with leading research organizations involved in preparing and reviewing the publication. It presents solutions for individuals, businesses, cities and countries plus other groups that have similar characteristics such as NGO and intergovernmental organizations. The book contains case studies, illustrations, maps and graphics and serves also as reference publication.--Publisher's description.

The Biodiesel Handbook - Gerhard Knothe 2015-08-13

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

Biofuels, Land Grabbing and Food Security in Africa - Atakilte Beyene 2011-06-09

The issue of biofuels has already been much debated, but the focus to date has largely been on Latin America and deforestation - this highly original work breaks fresh ground in looking at the African perspective. Most African governments see biofuels as having the potential to increase agricultural productivity and export incomes and thus strengthen their national economies, improving energy balances and rural employment. At the same time climate change may be addressed through reduction of green house gas emissions. There are, however, a number of uncertainties mounting that challenge this scenario. Using cutting-edge empirical case studies, this knowledge gap is addressed in a variety of chapters examining the effects of large-scale biofuel production on African agriculture. In particular, 'land grabbing' and food security issues are scrutinised, both of which have become vital topics in regard to the environmental and developmental governance of African countries. A revealing book for anyone wishing to understand the startling impact of biofuels and land grabbing on Africa.

The Biomass Assessment Handbook - Frank Rosillo-Calle 2012-04-27

The increasing importance of biomass as a renewable energy source has led to an acute need for reliable and detailed information on its assessment, consumption and supply. Responding to this need, and overcoming the lack of standardized measurement and accounting procedures, this handbook provides the reader with the skills to understand the biomass resource base, the tools to assess the resource, and explores the pros and cons of exploitation. Topics covered include assessment methods for woody and herbaceous biomass, biomass supply and consumption, remote sensing techniques as well as vital policy issues. International case studies, ranging from techniques for measuring tree volume to transporting biomass, help to illustrate step-by-step methods and are based on field work experience. Technical appendices offer a glossary of terms, energy units and other valuable resource data.

Food Processing Waste and Utilization - Sanju Bala Dhull 2022-10-27

Because of its high Chemical Oxygen Demand (COD) and sheer volume, waste from food processing has significant potential to pollute land, water, and air. Both environmentally and economically, it is important to properly treat food processing wastes including the recovery of valuable products. Food Processing Waste and Utilization: Tackling Pollution and Enhancing

Product Recovery discusses possible solutions to tackle food waste generation and its further utilization. It addresses process engineering economics, microbiology of waste recycling, biochemical and nutritional aspects of food waste processing. The book includes detailed guidance and case studies about utilization/valorization of food waste. Key Features Covers modern as well as conventional methods of food industry waste utilization Discusses possible solutions to tackle food waste generation and its further utilization Addresses socioeconomic considerations, environmental concerns and discusses regulations related to food processing waste Authors of this book are well-recognized researchers in their specific fields who have made important contributions to the knowledge of utilization of different food industry wastes at different levels. This book covers a wide range of breakthroughs in waste management, and is of value for students, research scholars, postdoctoral fellows and faculties pursuing careers in fields such as Bioprocess Technology, Food Technology, Food Science and Technology, Food Biotechnology, and Fermentation and Bioengineering.

Bioeconomy - Iris Lewandowski 2017-12-11

This book is open access under a CC BY 4.0 license. This book defines the new field of "Bioeconomy" as the sustainable and innovative use of biomass and biological knowledge to provide food, feed, industrial products, bioenergy and ecological services. The chapters highlight the importance of bioeconomy-related concepts in public, scientific, and political discourse. Using an interdisciplinary approach, the authors outline the dimensions of the bioeconomy as a means of achieving sustainability. The authors are ideally situated to elaborate on the diverse aspects of the bioeconomy. They have acquired in-depth experience of interdisciplinary research through the university's focus on "Bioeconomy", its contribution to the Bioeconomy Research Program of the federal state of Baden-Württemberg, and its participation in the German Bioeconomy Council. With the number of bioeconomy-related projects at European universities rising, this book will provide graduate students and researchers with background information on the bioeconomy. It will familiarize scientific readers with bioeconomy-related terms and give scientific background for economists, agronomists and natural scientists alike.

Biofuels. Sequential valorization of waste coffee grounds to Biodiesel, Bioethanol, and solid fuel - Mebrahtu Haile 2014-06-02

Master's Thesis from the year 2014 in the subject Energy Sciences, , course: Biofuels, language: English, abstract: In this study, the utilization of waste coffee residue for biodiesel production, its solid byproduct after oil extraction for bioethanol production, as well as the second byproduct after bioethanol production for solid fuel and compost production was investigated. For the study, waste coffee residue sample was collected from TOMOCA PLC, Addis Ababa, Ethiopia. The oil was then extracted using n-hexane and resulted in oil yield of 19.73 %w/w. The biodiesel was obtained by a two-step process, i.e. acid catalyzed esterification followed by base catalyzed transesterification using catalysts sulfuric acid and sodium hydroxide respectively. The conversion, after esterification of waste coffee residue oil in to biodiesel, was about 80.4%. Various parameters that are essential for biodiesel quality were evaluated using the American Standard for Testing Material (ASTM D 6751- 09). The results obtained for kinematic viscosity (5.3 mm²/s), carbon residue (0.033%), flash point (222°C), ash content (0.0123%), water and sediment (

Biofuels from Food Waste - Antoine Prandota Trzcinski 2017-08-21

According to the UN's Food & Agricultural Organization (FAO), one third of food produced globally for human consumption (nearly 1.3 billion tons) is lost annually. Food waste has often been incinerated with other combustible municipal wastes for possible recovery of heat or other forms of energy, however, incineration is not cost-effective, and can cause air pollution. Due to its organics- and nutrient-rich nature, food waste could be viewed as a useful resource for production of high-value platform chemicals through fermentation. This book examines the bioconversion of food wastes to energy and the recent developments in ethanol, hydrogen, methane, and biodiesel production from food wastes.

Biodiesel - Ayhan Demirbas 2007-12-20

Biodiesel: A Realistic Fuel Alternative for Diesel Engines describes the production and characterization of biodiesel. The book also presents current experimental research work in the field, including techniques to reduce biodiesel's high viscosity. Researchers in renewable energy, as well as fuel engineers, will discover a myriad of new ideas and promising possibilities.

Chemistry and Applications of Green Tea - Takehiko Yamamoto 1997-07-31

Green tea (*Thea sinensis*), a time-honored drink in Japan for more than 1,000 years, is used medicinally and as refreshment after meals. Recent studies suggest a correlation between the natural antioxidants found in green tea and overall good health. This exciting new text explores the many useful properties of green tea that have been scientifically investigated. These include:

Opportunities and Challenges in Climate-Friendly Clean Water and Energy

Technologies - Basha, J. Sathik 2023-04-24

Demand for energy and water is increasing as a result of rapid economic, population, and industrial growth. By 2050, it is expected that global energy consumption will nearly double in tandem with world water demand. Because of competing demands for finite resources, existing water and energy systems are limited in their ability to satisfy these expanding needs.

Furthermore, rapid population and industrial development inevitably result in the generation of a significant amount of wastewater laden with toxins, persistent inorganic and organic pollutants, and other toxic emissions emitted from different sources. *Opportunities and Challenges in Climate-Friendly Clean Water and Energy Technologies* presents the most recent technological advancements that are relevant to environmentally friendly methods of producing clean water and a sustainable supply of energy. In order to protect against climate change, it also highlights the most recent empirical research findings in the field of cutting-edge industrial and transportation emission reduction measures. Covering key topics such as renewable energy, wastewater treatment, and biomaterials, this reference work is ideal for environmental scientists, industry professionals, researchers, practitioners, academicians, instructors, and students.

Byproducts, Waste Biomass and Products to form Green Diesel and Biocrude Oils - Brajendra K. Sharma 2020-12-11

This book provides a collection of research and review articles useful for researchers, engineers, students and industry experts in the bioenergy field. The practical and valuable information can be utilized for developing and implementing renewable energy projects, selecting different waste feedstocks, technologies, and products. A detailed insight into advanced technologies such as hydrothermal liquefaction, torrefaction, and supercritical CO₂ extraction for making sustainable biofuels and chemicals is provided. A case study on food waste-to-energy valorization processes in Latin America provides experts' insights to promote a circular economy.

Prospects of Renewable Bioprocessing in Future Energy Systems - Ali Asghar Rastegari 2019-04-03

This book discusses various renewable energy resources and technologies. Topics covered include recent advances in photobioreactor design; microalgal biomass harvesting, drying, and processing; and technological advances and optimised production systems as prerequisites for achieving a positive energy balance. It highlights alternative resources that can be used to replace fossil fuels, such as algal biofuels, biodiesel, bioethanol, and biohydrogen. Further, it reviews microbial technologies, discusses an immobilization method, and highlights the efficiency of enzymes as a key factor in biofuel production. In closing, the book outlines future research directions to increase oil yields in microalgae, which could create new opportunities for lipid-based biofuels, and provides an outlook on the future of global biofuel production. Given its scope, the book will appeal to all researchers and engineers working in the renewable energy sector.

Urban Metabolism and Climate Change - Rahul Bhadouria 2023-05-23

This book provides a basic understanding and state-of-the-art of urban metabolism. Urban

centres are increasingly challenged by population increase and the resultant environmental concerns including the urban sprawl and climate change. Different patterns of urbanization contribute to the changing climate via differences in their urban metabolism represented by energy and matter. Urban metabolic studies in terms of energy and material inflows, outflows, and stocks can be associated with traditional evaluation techniques to help assess the magnitude and potential effects of variety of environmental challenges the world is facing today. Urban centres are critical real time observatories that indicate the impact anthropogenic activities have on global biogeochemical cycles. Urban processes have significant and lasting impacts on the global carbon budget. The technological and infrastructural advancements have fuelled an increase in urban inputs and outputs of material and energy. Therefore, more sustainable approaches need to be adopted in changing scenarios for urban planning, particularly for sustainable resource utilization and better waste management practices. The book emphasises on the sustainability in urban metabolism, sustainable urban planning, ecosystem services, and disaster resilience to provide an interdisciplinary understanding of urban metabolism. The book also identifies an urgent need to develop new methodological approaches for real time and reliable evaluation of urban metabolism.

Handbook of Bioenergy Crops - Nasir El Bassam 2010

This completely revised second edition includes new information on biomass in relation to climate change, new coverage of vital issues including the "food versus fuel" debate, and essential new information on "second generation" fuels and advances in conversion techniques. The book begins with a guide to biomass accumulation, harvesting, transportation and storage, as well as conversion technologies for biofuels. This is followed by an examination of the environmental impact and economic and social dimensions, including prospects for renewable energy. The book then goes on to cover all the main potential energy crops.

Energy and Resource Valorisation of Biomass and Waste Towards Sustainable Environment via Thermochemical and Biological Application - Su Shiung Lam 2021-02-26

Biofuel Energy: spent coffee grounds biodiesel, bioethanol and solid fuel - Mebrahtu Haile 2014-08-08

In this study, the use of waste coffee grounds for biodiesel production, its solid by-product after oil extraction for bioethanol generation, and the second by-product after bioethanol generation for solid fuel generation is explored. For the study, waste coffee grounds samples were gathered from TOMOCA PLC, Addis Ababa, Ethiopia. The oil was then concentrated utilizing n-hexane and brought about an oil yield of 19.73 %w/w. The biodiesel was acquired by a two-stage process, i.e. acid catalyzed esterification followed by base catalyzed transesterification utilizing catalysts sulfuric acid and sodium hydroxide respectively. The change, after esterification of waste coffee grounds oil into biodiesel, was about 80.4%w/w. Different parameters that are fundamental for biodiesel quality were assessed utilizing the American Standard for Testing Material (ASTM D 6751- 09) and revealed that all quality parameters are inside the extent pointed out aside from acid value. Also, the strong waste staying after oil extraction was researched for conceivable use as a feedstock for the generation of bioethanol and brought about a bioethanol yield of 8.3 %v/v. Moreover, the solid waste staying after bioethanol generation was assessed for solid fuel (20.8 MJ/Kg) applications.

Sustainable and Economic Waste Management - Hossain Md Anawar 2019-11-25

This book compiles research findings directly related to sustainable and economic waste management and resource recovery. Mining wastes and municipal, urban, domestic, industrial and agricultural wastes and effluents—which contain persistent organic contaminants, nanoparticle organic chemicals, nutrients, energy, organic materials, heavy metal, rare earth elements, iron, steel, bauxite, coal and other valuable materials—are significantly responsible for environmental contamination. These low-tenor raw materials, if recycled, can significantly address the demand-supply chain mismatch and process sustainability as a whole while

simultaneously decreasing their impacts on human life and biodiversity. This book summarises the large volume of current research in the realm of waste management and resource recovery, which has led to innovation and commercialisation of sustainable and economic waste management for improved environmental safety and improved economics. Key Features: Reviews the key research findings related to sustainable and economic resource recovery and waste management techniques Discusses minimizing waste materials and environmental contaminants with a focus on recovering valuable resources from wastes Examines the potential uses of mining waste in the re-extraction of metals, provision of fuel for power plants, and as a supply of other valuable materials for utilisation/processing Presents research on recycling of municipal, urban, domestic, industrial and agricultural wastes and wastewater in the production and recovery of energy, biogas, fertilizers, organic materials and nutrients Outlines topical research interests resulting in patents and inventions for sustainable and economic waste management techniques and environmental safety

Solid Waste Management in Rural Areas - Florin-Constantin Mihai 2017-09-06

The book points out that rural regions need proper attention at the global level concerning solid waste management sector where bad practices and public health threats could be avoided through traditional and integrated waste management routes. Solid waste management in rural areas is a key issue in developing and transitioning countries due to the lack of proper waste management facilities and services. The book further examines, on the one hand, the main challenges in the development of reliable waste management practices across rural regions and, on the other hand, the concrete solutions and the new opportunities across the world in dealing with municipal and agricultural wastes. The book provides useful information for academics, various professionals, the members of civil society, and national and local authorities.

Co-composting of solid waste and fecal sludge for nutrient and organic matter recovery - Cofie, Olufunke 2016-12-05

Biological treatment, composting, in particular, is a relatively simple, durable and inexpensive alternative for stabilizing and reducing biodegradable waste. Co-composting of different waste sources allows to enhance the compost nutrient value. In particular, integration of 'biosolids' from the sanitation sector as potential input material for co-composting would provide a solution for the much needed treatment of fecal sludge from on-site sanitation systems, and make use of its high nutrient content. This research paper elaborates in detail the main parameters that govern the co-composting process as well as factors that control the production of a safe and valuable quality compost. It further explains technological options to tailor the final product to crop and farmer needs.

Waste and Biodiesel - Bhaskar Singh 2022-03-18

Waste and Biodiesel: Feedstocks and Precursors for Catalysts is a comprehensive reference on waste material utilization at various stages of the biodiesel production process. The book discusses the technologies for converting cooking oil and waste animal fats to biodiesel, along with the efficacy of municipal waste derived lipids in biodiesel production. The use of wastewater-grown microalgae feedstock, oleaginous fungi, bacteria and yeast produced using waste substrate are also discussed. The use of various catalysts is addressed, including CaO derived from waste shell materials, fish and animal waste, inorganic waste materials like red mud and cement waste, and whole cell enzymes using waste substrate. Each chapter addresses the challenges of high production costs at a pilot and industrial scale, offering methods of cost reduction and waste remediation. This book is a valuable resource for researchers and industry professionals in environmental science, energy and renewable energy. Provides a comprehensive assessment of waste for biodiesel production, including novel feedstocks such as waste cooking oil, animal fats and municipal waste Discusses the synthesis of cost-effective catalysts from various waste materials such as animal bones, fish scales, shells, red mud and cement waste Presents multiple methods of cost reduction in biodiesel production, e.g., by utilizing waste as a nutrient source for oleaginous algae and fungi

Biofuels and Food Security - Tatsuji Koizumi 2014-05-03

Examining the relationship between biofuels and food security, this book presents an economic analysis of the competition between biofuels and food. It covers the historical and current situation of biofuels and food security in Brazil, China, Japan, USA, EU, Thailand, India, Indonesia, Malaysia, Philippines and other countries. Furthermore it demonstrates that not only feedstock of agricultural product-based biofuels, but also cellulose-based biofuels can compete with food-related demand and agricultural resources. The issue of whether this competition is good or bad for food security is explored, and this topic is examined at global, national, sub-national and household levels. In order to deal with energy security, to reduce greenhouse gas emissions, and to strengthen agricultural/rural development, biofuel production and utilization is increasing all over the world. One of the most crucial problems is the competition for resources between biofuel and food. This biofuel and food security discussion is expected to continue into the future, and this book proposes the action that is needed to deal with this issue on various levels. Biofuel and Food Security provides a valuable resource to undergraduates and researchers of economics, agricultural economics and renewable science, and also policy makers involved in government or international organizations. It will additionally be of interest to those employed in renewable energy and agriculture in an industrial capacity.

The Handbook of Polyhydroxyalkanoates, Three Volume Set - Martin Koller 2020-11-06

The Handbook of Polyhydroxyalkanoates (PHA) focusses on and addresses varying facets of PHA biosynthesis and processing, spread across three volumes. The first volume discusses feedstock aspects, enzymology, metabolism and genetic engineering of PHA biosynthesis. It addresses better understanding the mechanisms of PHA biosynthesis in scientific terms and profiting from this understanding in order to enhance PHA biosynthesis in bio-technological terms and in terms of PHA microstructure. It further discusses making PHA competitive for outperforming established petrol-based plastics on industrial scale and obstacles for market penetration of PHA. This second volume focusses on thermodynamic and mathematical considerations of PHA biosynthesis, bioengineering aspects regarding bioreactor design and downstream processing for PHA recovery from microbial biomass. It covers microbial mixed culture processes and includes a strong industry-focused section with chapters on the economics of PHA production, industrial-scale PHA production from sucrose, next generation industrial biotechnology approaches for PHA production based on novel robust production strains, and holistic techno-economic and sustainability considerations on PHA manufacturing. Third volume is on the production of functionalized PHA bio-polyesters, the post-synthetic modification of PHA, processing and additive manufacturing of PHA, development and properties of PHA-based (bio)composites and blends, the market potential of PHA and follow-up materials, different bulk- and niche applications of PHA, and the fate and use of spent PHA items. Divided into fourteen chapters, it describes functionalized PHA and PHA modification, processing and their application including degradation of spent PHA-based products and fate of these bio-polyesters during compositing and other disposal strategies. Aimed at professionals and graduate students in Polymer (plastic) industry, wastewater treatment plants, food industry, biodiesel industry, this set: Presents comprehensive and holistic consideration of these microbial bioplastics in the volumes. Enables reader to learn about microbiological, enzymatic, genetic, synthetic biology, and metabolic aspects of PHA biosynthesis based on the latest scientific discoveries. Discusses design and operate a PHA production plant. Strong focus on post-synthetic modification, preparation of functional PHA and follow-up products, and PHA processing. Covers all related engineering considerations

Coffee Pulp - José Edgar Braham 1979

Efficient Logistics - Luis C. Blancas 2014-01-02

Vietnam needs to strengthen economic resiliency and reinvent its drivers of growth. More efficient logistics in export, import and domestic supply chains can drive future economic growth

by increasing productivity. This report assesses performance chokepoints in Vietnam's supply chains and proposes public sector interventions to address them.

Biomass Gasification and Pyrolysis - Prabir Basu 2010-07-19

This book offers comprehensive coverage of the design, analysis, and operational aspects of biomass gasification, the key technology enabling the production of biofuels from all viable sources--some examples being sugar cane and switchgrass. This versatile resource not only explains the basic principles of energy conversion systems, but also provides valuable insight into the design of biomass gasifiers. The author provides many worked out design problems, step-by-step design procedures and real data on commercially operating systems. After fossil fuels, biomass is the most widely used fuel in the world. Biomass resources show a considerable potential in the long term if residues are properly handled and dedicated energy crops are grown. Includes step-by-step design procedures and case studies for Biomass Gasification Provides worked process flow diagrams for gasifier design. Covers integration with other technologies (e.g. gas turbine, engine, fuel cells)

Handbook of Coffee Processing By-Products - Charis Michel Galanakis 2017-05-05

Handbook of Coffee Processing By-Products: Sustainable Applications presents alternative and sustainable solutions for coffee processing by-products and specifies their industrial potential, both as a source for the recovery of bioactive compounds and their reutilization in the pharmaceutical, biotechnological, food, biotechnology, and cosmetic industries, also covering environmental and agronomic applications. This book addresses key topics specific to sustainable management in the coffee industry, placing an emphasis on integrated solutions for the valorization and upgrade of coffee processing by-products, biorefinery, and different techniques for the separation, extraction, recovery and formulation of polyphenols. Specifies potential for the use of by-products as a source for the recovery of bioactive compounds and their reutilization in the pharmaceutical, biotechnological, food, biotechnology and cosmetic industries Places emphasis on integrated solutions for the valorization and upgrade of coffee processing by-products, biorefinery, and different techniques for the separation, extraction,

recovery and formulation of polyphenols

Small and Micro Combined Heat and Power (CHP) Systems - R Beith 2011-04-30

Small and micro combined heat and power (CHP) systems are a form of cogeneration technology suitable for domestic and community buildings, commercial establishments and industrial facilities, as well as local heat networks. One of the benefits of using cogeneration plant is a vastly improved energy efficiency: in some cases achieving up to 80-90% systems efficiency, whereas small-scale electricity production is typically at well below 40% efficiency, using the same amount of fuel. This higher efficiency affords users greater energy security and increased long-term sustainability of energy resources, while lower overall emissions levels also contribute to an improved environmental performance. Small and micro combined heat and power (CHP) systems provides a systematic and comprehensive review of the technological and practical developments of small and micro CHP systems. Part one opens with reviews of small and micro CHP systems and their techno-economic and performance assessment, as well as their integration into distributed energy systems and their increasing utilisation of biomass fuels. Part two focuses on the development of different types of CHP technology, including internal combustion and reciprocating engines, gas turbines and microturbines, Stirling engines, organic Rankine cycle process and fuel cell systems. Heat-activated cooling (i.e. trigeneration) technologies and energy storage systems, of importance to the regional/seasonal viability of this technology round out this section. Finally, part three covers the range of applications of small and micro CHP systems, from residential buildings and district heating, to commercial buildings and industrial applications, as well as reviewing the market deployment of this important technology. With its distinguished editor and international team of expert contributors, Small and micro combined heat and power (CHP) systems is an essential reference work for anyone involved or interested in the design, development, installation and optimisation of small and micro CHP systems. Reviews small- and micro-CHP systems and their techno-economic and performance assessment Explores integration into distributed energy systems and their increasing utilisation of biomass fuels Focuses on the development of different types of CHP technology, including internal combustion and reciprocating engines