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Fast Pyrolysis of Biomass - A. V. Bridgwater 1999

This edited and updated version of the final report of the IEA Bioenergy Pyrolysis Task, is useful both to newcomers to the subject area and those already involved in research, development, and implementation.

Fuel Flexible Energy Generation - John Oakey 2015-12-08

Fuel Flexible Energy Generation: Solid, Liquid and Gaseous Fuels provides updated information on flexible fuel energy generation, the process by which one or more fuels can be combusted in the same boiler or turbine to generate power. By adapting or building boilers and turbines to accept multiple fuel sources, they can be co-fired with biomass and waste derived fuels, allowing a reduction in carbon output, thus providing cleaner energy. Fuel flexibility is becoming more important in a world of diminishing fossil fuel stocks. Many countries are investing in the development of more efficient fuel flexible boilers and turbines, and their use is becoming more prevalent in industry as well. This book provides comprehensive coverage of flexible fuel energy generation across all potential fuel types, and was written by a selection of experts in the field who discuss the types of fuels which can be used in fuel flexible energy generation, from solid fuels to biomass fuels, the preparation of fuels to be used in fuel flexible operations, that includes their handling and transport, and combustion and conversion technologies with chapters ranging from large-scale coal gasification to technology options and plant design issues. Focuses on fuel flexibility across all potential fuel types Includes thorough treatment of the technology being developed to allow for fuel flexibility Written by leading experts in the field Provides an essential text for R&D managers in firms which produce boilers or turbines, those who work in the fuel industry, and academics working in engineering departments on energy generation

Plastics to Energy - Sultan Al-Salem 2018-11-05

Plastics to Energy: Fuel, Chemicals, and Sustainability Implications covers important trends in the science and technology of polymer recovery, such as the thermo-chemical treatment of plastics, the impact of environmental degradation on mechanical recycling, incineration and thermal unit design, and new options in biodegradable plastics. The book also introduces product development opportunities from waste materials and discusses the main processes and pathways of the conversion of polymeric materials to energy, fuel and chemicals. A particular focus is placed on industrial case studies and academic reviews, providing a practical emphasis that enables plastics practitioners involved in end-of-life aspects to employ these processes. Final sections examine lifecycle and cost analysis of different plastic waste management processes, exploring the potential of various techniques in modelling, optimization and simulation of waste management options. Introduces new pathways for the end-of-life treatment of plastics and polymers, including conversion to energy, fuel and other chemicals Compares different options to assist materials scientists, engineers and waste management practitioners to choose the most effective and sustainable option Covers the latest trends in the science and technology of polymer energy recovery

POWER PLANT ENGINEERING - MANOJ KUMAR GUPTA 2012-06-12

This textbook has been designed for a one-semester course on Power Plant Engineering studied by both degree and diploma students of mechanical and electrical engineering. It effectively exposes the students to the basics of power generation involved in several energy conversion systems so that they gain comprehensive knowledge of the operation of various types of power plants in use today. After a brief introduction to energy fundamentals including the environmental impacts of power generation, the book acquaints the students with the working principles, design and operation of five conventional power plant systems, namely

thermal, nuclear, hydroelectric, diesel and gas turbine. The economic factors of power generation with regard to estimation and prediction of load, plant design, plant operation, tariffs and so on, are discussed and illustrated with the help of several solved numerical problems. The generation of electric power using renewable energy sources such as solar, wind, biomass, geothermal, tidal, fuel cells, magneto hydrodynamic, thermoelectric and thermionic systems, is discussed elaborately. The book is interspersed with solved problems for a sound understanding of the various aspects of power plant engineering. The chapter-end questions are intended to provide the students with a thorough reinforcement of the concepts discussed.

Biomass Feedstocks for Biopower - Kelsi Bracmort 2011-01

This is a print on demand edition of a hard to find publication. Biopower -- a form of renewable energy -- is the generation of electric power from biomass feedstocks. Biopower, which comprised about 1% of electricity generation in 2008, may reduce greenhouse gas emissions, provide energy security, and promote economic development. A large range of feedstocks can be used, from woody and herbaceous biomass to agricultural residues. Each feedstock has technical and economic advantages and challenges compared to fossil fuels. Contents of this report: Intro.; What Kind of Biomass is Available for Biopower?; From Biomass to Biopower; Carbon Balance; Implications for Legislation; Conclusion; Appendices: Biomass Feedstock Characteristics for Biopower Generation; Biopower R&D Authorizations. Illustrations.

Resource Recovery and Waste Reduction - United States. Office of Solid Waste 1977

Resource Recovery and Source Reduction - United States. Office of Solid Waste Management Programs 1977

Sustainable Food Waste-to-Energy Systems - Thomas Trabold 2018-09-05

Sustainable Food Waste-to-Energy Systems assesses the utilization of food waste in sustainable energy conversion systems. It explores all sources of waste generated in the food supply chain (downstream from agriculture), with coverage of industrial, commercial, institutional and residential sources. It provides a detailed analysis of the conventional pathways for food waste disposal and utilization, including composting, incineration, landfilling and wastewater treatment. Next, users will find valuable sections on the chemical, biochemical and thermochemical waste-to-energy conversion processes applicable for food waste and an assessment of commercially available sustainable food waste-to-energy conversion technologies. Sustainability aspects, including consideration of environmental, economic and social impacts are also explored. The book concludes with an analysis of how deploying waste-to-energy systems is dependent on cross-cutting research methods, including geographical information systems and big data. It is a useful resource for professionals working in waste-to-energy technologies, as well as those in the food industry and food waste management sector planning and implementing these systems, but is also ideal for researchers, graduate students, energy policymakers and energy analysts interested in the most recent advances in the field. Provides guidance on how specific food waste characteristics drive possible waste-to-energy conversion processes Presents methodologies for selecting among different waste-to-energy options, based on waste volumes, distribution and properties, local energy demand (electrical/thermal/steam), opportunities for industrial symbiosis, regulations and incentives and social acceptance, etc. Contains tools to assess potential environmental and economic performance of deployed systems Links to publicly available resources on food waste data for energy conversion

Energy and Fuel Systems Integration - Yatish T. Shah 2015-10-15
Energy and Fuel Systems Integration explains how growing energy and fuel demands, paired with the need for environmental preservation, require different sources of energy and fuel to cooperate and integrate with each other rather than simply compete. Providing numerous examples of energy and fuel systems integration success stories, this book:Discu

Sustainable Production of Biofuels Using Intensified Processes - Juan Gabriel Segovia-Hernández 2022-09-28

This book describes for first time the synthesis and intensified process design in the production of top biofuels. The production of biofuels is not new. In 2019, global biofuel production levels reached 1,841 thousand barrels of oil equivalent per day, in stark comparison to the 187 thousand barrels of oil equivalent per day that was produced in 2000. Growth has largely been driven by policies that encourage the use and production of biofuels due to the perception that it could provide energy security and reduce greenhouse gas emissions in relevant sectors. From a technical point of view, almost all fuels from fossil resources could be substituted by their bio-based counterparts. However, the cost of bio-based production in many cases exceeds the cost of petrochemical production. Also, biofuels must be proven to perform at least as good as the petrochemical equivalent they are substituting and to have a lower environmental impact. The low price of crude oil acted as a barrier to biofuels production and producers focussed on the specific attributes of biofuels such as their complex structure to justify production costs. Also, the consumer demand for environmentally friendly products, population growth and limited supplies of non-renewable resources has now opened new windows of opportunity for biofuels. The industry is increasingly viewing chemical production from renewable resources as an attractive area for investment. This book uniquely introduces the application of new process intensification techniques that will allow the generation of clean, efficient and economical processes for biofuels in a competitive way in the market.

Symposium on Environment and Energy Conservation, November 1975, Denver, Colorado - 1976

ERDA Energy Research Abstracts - United States. Energy Research and Development Administration 1976

Biotechnology, Agriculture, Environment and Energy - Fangli Zheng 2014-11-18

The 2014 International Conference on Biotechnology, Agriculture, Environment and Energy (ICBAEE 2014) was held May 22-23, 2014 in Beijing, China. The objective of ICBAEE 2014 was to provide a platform for researchers, engineers, academics as well as industry professionals from all over the world to present their research results and development activities in Biotechnology, Agriculture, Environment and Energy. This conference provided opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration. The program consisted of invited sessions and technical workshops and discussions with eminent speakers, and contributions to this proceedings volume cover a wide range of topics in Biotechnology, Agriculture, Environment and Energy.

Renewable Energy Sources: Engineering, Technology, Innovation - Marek Wróbel 2019-07-16

This book presents peer-reviewed papers based on the oral and poster presentations during the 5th International Conference on Renewable Energy Sources, which was held from June 20 to 22, 2018 in Krynica, Poland. The scope of the conference included a wide range of topics in renewable energy technology, with a major focus on biomass, solar energy and geothermal energy, but also extending to heat pumps, fuel cells, wind energy, energy storage, and the modelling and optimization of renewable energy systems. This edition of the conference had a special focus on the role of renewable energy in the reduction of air pollution in the Eastern European region. Traditionally this conference is a unique occasion for gathering Polish and international researchers' perspectives on renewable energy sources, and furthermore of balancing them against governmental policy considerations. Accordingly, the conference offered also panels to discuss best practices and solutions with local entrepreneurs and federal government bodies. The meeting attracts not only scientist but also industry representatives as well as local and federal government personnel. In 2018, the conference was organized by the University of Agriculture in Krakow in cooperation with AGH University of Science and Technology (Krakow), University of Žilina, Silesian University

of Technology, International Commission of Agricultural and Biosystems Engineering (CIGR) and Polish Society of Agricultural Engineering. Honorary auspices were given by the Ministry of Science and Higher Education Republic of Poland, Rector of the University of Agriculture in Krakow and Rector of the AGH University of Science and Technology. An experiment in zero-base budget analysis, fiscal 1978 - United States. Environmental Protection Agency. Office of Energy, Minerals, and Industry 1977

Biomass-Derived Materials for Environmental Applications - Ioannis Anastopoulos 2022-05-20

Biomass-Derived Materials for Environmental Applications presents state-of-the-art coverage of bio-based materials that can be applied to address the growing global concern of pollutant discharge in the environment. The book examines the production, characterization and application of bio-based materials for remediation. Organized clearly by type of material, the book includes details on lignocellulosic materials, natural clays, carbonaceous materials, composites and advanced materials from natural origins. Readers will find an interdisciplinary and practical examination of these materials and their use in environmental remediation that will be valuable to environmental scientists, materials scientists, environmental chemists, and environmental engineers alike. Highlights a wide range of synthetic methodologies, as well as physicochemical and engineered features of bio-based materials for environmental purposes Provides in-depth examination of bio-based materials and their characteristics and advantages in environmental remediation Covers a range of specific materials, including background information, key results, critical discussions, conclusions and future perspectives

Current Developments in Biotechnology and Bioengineering - Rupam Kataki 2020-07-08

Current Developments in Biotechnology and Bioengineering: Sustainable Bioresources for the Emerging Bioeconomy outlines recent advances in bioenergy, biorefinery and the bioeconomy, an essential element for a 21st century bio-based society. The book provides information on biomass and various conversion technologies with different parameters that affect the conversion process. Sections cover different bioproducts, biorefinery systems, energy and greenhouse gas emission balances of bioenergy and biorefinery, and environmental and economic footprints of bioeconomy. Finally, different strategies adopted by developed and developing countries for the promotion and implementation of a bioeconomy concept for a bio-based society are systematically covered. The book provides comprehensive information starting from early progress to the latest trends on bioenergy, biorefinery and bioeconomy with special reference to the developed and the developing countries and the linkage between bioeconomy and climate change mitigation in simple scientific language to appeal to a wider audience. Includes the fundamentals and concepts of biomass and bioenergy Outlines recent technology development for biomass conversion Provides concept for different bioproducts Covers global strategies and policies on the development of bioeconomies

Chemical Energy from Natural and Synthetic Gas - Yatish T. Shah 2017-03-16

Commercial development of energy from renewables and nuclear is critical to long-term industry and environmental goals. However, it will take time for them to economically compete with existing fossil fuel energy resources and their infrastructures. Gas fuels play an important role during and beyond this transition away from fossil fuel dominance to a balanced approach to fossil, nuclear, and renewable energies. Chemical Energy from Natural and Synthetic Gas illustrates this point by examining the many roles of natural and synthetic gas in the energy and fuel industry, addressing it as both a "transition" and "end game" fuel. The book describes various types of gaseous fuels and how they are recovered, purified, and converted to liquid fuels and electricity generation and used for other static and mobile applications. It emphasizes methane, syngas, and hydrogen as fuels, although other volatile hydrocarbons are considered. It also covers storage and transportation infrastructure for natural gas and hydrogen and methods and processes for cleaning and reforming synthetic gas. The book also deals applications, such as the use of natural gas in power production in power plants, engines, turbines, and vehicle needs. Presents a unified and collective look at gas in the energy and fuel industry, addressing it as both a "transition" and "end game" fuel. Emphasizes methane, syngas, and hydrogen as fuels. Covers gas storage and transport infrastructure. Discusses thermal gasification, gas reforming, processing, purification and upgrading. Describes biogas and bio-hydrogen production. Deals with the use of natural gas in power production in power plants, engines, turbines,

and vehicle needs.

Liquid Biofuels - Krushna Prasad Shadangi 2021-06-29

Compiled by a well-known expert in the field, Liquid Biofuels provides a profound knowledge to researchers about biofuel technologies, selection of raw materials, conversion of various biomass to biofuel pathways, selection of suitable methods of conversion, design of equipment, selection of operating parameters, determination of chemical kinetics, reaction mechanism, preparation of bio-catalyst: its application in bio-fuel industry and characterization techniques, use of nanotechnology in the production of biofuels from the root level to its application and many other exclusive topics for conducting research in this area. Written with the objective of offering both theoretical concepts and practical applications of those concepts, Liquid Biofuels can be both a first-time learning experience for the student facing these issues in a classroom and a valuable reference work for the veteran engineer or scientist. The description of the detailed characterization methodologies along with the precautions required during analysis are extremely important, as are the detailed description about the ultrasound assisted biodiesel production techniques, aviation biofuels and its characterization techniques, advance in algal biofuel techniques, pre-treatment of biomass for biofuel production, preparation and characterization of bio-catalyst, and various methods of optimization. The book offers a comparative study between the various liquid biofuels obtained from different methods of production and its engine performance and emission analysis so that one can get the utmost idea to find the better biofuel as an alternative fuel. Since the book covers almost all the field of liquid biofuel production techniques, it will provide advanced knowledge to the researcher for practical applications across the energy sector. A valuable reference for engineers, scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library.

Current Abstracts - 1996-11

Biochar and its Application in Bioremediation - Riti Thapar Kapoor
2022-01-03

Biochar prepared from agricultural biomass has received considerable attention because of the huge availability of agro-waste at zero cost, flexibility, high efficiency, renewability, faster contaminant removal rate, ability to treat concentrated effluent and reduction of sludge production after the treatment. This book on biochar is a comprehensive account of preparation of biochar from agricultural waste. It provides a roadmap in development of future strategy for pollution abatement and sustainable waste management. This book contains up-to-date information on biochar and its role in environment protection. The book covers useful information and applications of biochar to research scholars, academicians, agronomists, scientists and environmentalist working in the field of environment protection, bioremediation, waste management and climate change mitigation.

Handbook of Gasification Technology - James G. Speight 2020-04-14

Gasification is one of the most important advancements that has ever occurred in energy production. Using this technology, for example, coal can be gasified into a product that has roughly half the carbon footprint of coal. On a large scale, gasification could be considered a revolutionary development, not only prolonging the life of carbon-based fuels, but making them "greener" and cleaner. As long as much of the world still depends on fossil fuels, gasification will be an environmentally friendlier choice for energy production. But gasification is not just used for fossil fuels. Waste products that would normally be dumped into landfills or otherwise disposed of can be converted into energy through the process of gasification. The same is true of biofeedstocks and other types of feedstocks, thus making another argument for the widespread use of gasification. The Handbook of Gasification Technology covers all aspects of the gasification, in a "one-stop shop," from the basic science of gasification and why it is needed to the energy sources, processes, chemicals, materials, and machinery used in the technology. Whether a veteran engineer or scientist using it as a reference or a professor using it as a textbook, this outstanding new volume is a must-have for any library.

Proceedings of National Conference on Health, Environmental Effects, and Control Technology of Energy Use, February 9-11, 1976, Washington, D.C. - 1976

Coal and Coal-Related Compounds - Toshiaki Kabe 2004-11-18

Coal is more abundant than petroleum and natural gas. Further, coal is not localized but can be used by many more countries than petroleum. Therefore, if we can establish coal utilization technology, coal will bring

about a great contribution to human life and society. On the other hand, shortage of petroleum and natural gas are anticipated in the second half of the 21st century. To compensate, the use of coal is expected to gradually increase during the 21st century. In the future, the development of the coal utilization technology will become more and more important to insure the supply of liquid fuels for transportation and carbon sources for the manufacture of chemicals and plastic materials. In order to develop such technologies, the elucidation of the structure of coal is a fundamental area of study. Further, more efficient coal utilization technology must be established to meet environmental legislation. One of the key technologies for this purpose is catalysis. This volume provides detail of the basic and practical aspects of the science and technology of coal utilization with and without catalysts. The actual structure of coal, the chemistry included in the reactivity of coal, the methods to elucidate the structure of coal and re-action mechanisms of coal conversion, the most important catalyst for converting coal to liquid and gas, the role of the catalysts in coal conversion, the problems in the process engineering, and how to meet environmental regulations are discussed in detail. The recent progress in studies on the structure and reactivity of coal made over the last century is summarized and reviewed with emphasis on both fundamental and applied aspects of the science and technology for coal processing in the presence and absence of catalysts. * This book highlights the issues faced in trying to discover more efficient coal utilization technology. * Provides detailed discussion on how to meet environmental regulations and legislation. * Fills the gap between both the scientific and practical sides of coal utilization with and without catalysts.

Energy: a Continuing Bibliography with Indexes - 1981

Gasification - Valter Silva 2021-09-29

Gasification is the thermochemical process of converting carbonaceous material in the presence of an oxidant less than stoichiometric to form a gaseous product, known as synthesis gas or syngas, at high temperatures. The gas produced can have different uses depending on its quality. Among these uses are to drive internal combustion engines and gas turbines, direct burning, and synthesis of chemical components. This book provides a comprehensive overview of the various techniques and applications of syngas developed thus far to contribute to a better understanding of this important process of obtaining a renewable fuel, which is essential for the development of a sustainable economy.

Environmental Management in India: Waste to Wealth - Shalini Yadav
2022-04-01

This book presents unique connectivity between waste management within the agenda 2030 of India. This book is the first publication presenting up-to-date work and knowledge about waste management and waste technologies to transfer waste to wealth in India. Besides, this book also presents the role of waste management and its contribution to achieving a sustainable development program in India, with vast implication worldwide. The main focuses of the book include waste and wealth and the associated technologies, recycling of solid waste, utilization of hazardous waste, use of nanoparticle in waste management, urban solid waste, generation of energy from organic waste, clean technologies, and use of waste in agriculture. The book is a unique source of information on the transformation of waste to wealth in India. This book is of interest to research communities in the field of waste management in India, and in similar socioeconomic countries, but also, due to the planetary implications, has global interest.

Technologies for Converting Biomass to Useful Energy - Erik Dahlquist
2013-04-16

Officially, the use of biomass for energy meets only 10-13% of the total global energy demand of 140 000 TWh per year. Still, thirty years ago the official figure was zero, as only traded biomass was included. While the actual production of biomass is in the range of 270 000 TWh per year, most of this is not used for energy purposes, and mostly it

Coal-Fired Power Generation Handbook - James G. Speight 2021-02-17

Coal accounts for approximately one quarter of world energy consumption and of the coal produced worldwide approximately 65% is shipped to electricity producers and 33% to industrial consumers, with most of the remainder going to consumers in the residential and commercial sectors. The total share of total world energy consumption by coal is expected to increase to almost 30% in 2035. This book describes the challenges and steps by which electricity is produced from coal and deals with the challenges for removing the environmental objections to the use of coal in future power plants. New technologies are described that could virtually eliminate the sulfur, nitrogen, and mercury pollutants that are released

when coal is burned for electricity generation. In addition, technologies for the capture greenhouse gases emitted from coal-fired power plants are described and the means of preventing such emissions from contributing to global warming concerns. Written by one of the world's leading energy experts, this volume is a must-have for any engineer, scientist, or student working in this field, providing a valuable reference and guide in a quickly changing field.

Engineered Biochar - Sudipta Ramola 2022-09-10

This book systematically covers the fundamentals and applications of modified biochar. The 19 chapters are divided into 3 sections that provide a holistic overview for researchers from all related fields. Section 1 and 2 present the pyrolysis process, including the advantages and limitations of the physical, chemical, and biological modification methods and characterization of modified biochar. Section 3 highlights the wide spectrum of applications of modified biochar in fuel cells and batteries, remediation of organic and inorganic contaminants from soil and water and soil fertilization. Given its scope, the book appeals to a broad readership in various fields of chemical engineering, materials science, and environmental science.

The Science and Technology of Coal and Coal Utilization - Bernard Cooper 2013-11-11

Filling the need for new and improved energy sources is an area where societal effects of science and technology will surely increase. The editors and authors have attempted in this volume to present the most current work on the science and technology of coal and coal utilization. Serious disagreement exists on several key issues such as carbon dioxide release and acid rain. At the same time, however, coal is the world's most abundant fossil fuel and will have to be used to supply the world's energy needs for the next several decades. The 1979 National Research Council Report, "Energy in Transition: 1985-2010," has estimated that the United States alone may go from a 1979 coal consumption of 14 QUADS per annum (approximately 750 million tons per year) to approximately 40-50 QUADS per annum (approximately 2 billion tons per year) by the year 2010. If this scale of coal utilization is to become a reality, a significant level of research and development will be necessary to establish advanced process technologies and to improve related areas such as materials and instrumentation. The editors hope that this volume will allow a technically educated person to become aware of the several aspects of coal utilization, from characterization of coal itself to the processes of coal utilization. B. R. Cooper and W. A. Ellingson March, 1983 vii Contents 1. THE SCIENCE AND TECHNOLOGY OF COAL AND COAL UTILIZATION 1 Bernard R. Cooper and William A. Ellingson 2. COAL CHARACTERIZATION.

Soil Chemical Methods - G. E. Rayment 2011

Describes over 200 laboratory and field chemical tests relevant to Australasia and beyond.

Fuel Processing and Energy Utilization - Sonil Nanda 2019-02-22

This book provides different aspects on fuel processing and refinery for energy generation. Most updated research findings along with case studies, real scenario examples, and extensive analyses of original research work and literature reviews is included in this book.

Coal and Biomass Gasification - Santanu De 2017-12-13

This book addresses the science and technology of the gasification process and the production of electricity, synthetic fuels and other useful chemicals. Pursuing a holistic approach, it covers the fundamentals of gasification and its various applications. In addition to discussing recent advances and outlining future directions, it covers advanced topics such as underground coal gasification and chemical looping combustion, and describes the state-of-the-art experimental techniques, modeling and numerical simulations, environmentally friendly approaches, and technological challenges involved. Written in an easy-to-understand format with a comprehensive glossary and bibliography, the book offers an ideal reference guide to coal and biomass gasification for beginners, engineers and researchers involved in designing or operating gasification plants.

Production of Biofuels and Chemicals with Pyrolysis - Zhen Fang 2020-10-27

This book presents a collection of studies on state-of-art techniques for converting biomass to chemical products by means of pyrolysis, which are widely applicable to the valorization of biomass. In addition to discussing

the fundamentals and mechanisms for producing bio-oils, chemicals, gases and biochar using pyrolysis, it outlines key reaction parameters and reactor configurations for various types of biomass. Written by leading experts and providing a broad range of perspectives on cutting-edge applications, the book is a comprehensive reference guide for academic researchers and industrial engineers in the fields of natural renewable materials, biorefinery of lignocellulose, biofuels, and environmental engineering, and a valuable resource for university students in the fields of chemical engineering, material science and environmental engineering. *ERDA Energy Research Abstracts* - United States. Energy Research and Development Administration. Technical Information Center 1977

Biorefineries - Krzysztof Biernat 2022-04-28

This book presents selected processes that can be applied in contemporary and future biorefinery systems. It discusses the indicators characterizing the level of sustainable development for these systems as well as the methods of segregation and purification of biorefinery products, the use of enzymes, the possibility of obtaining bioplastics, ethyl alcohol, and co-pyrolysis of coal and biomass. This book is a valuable resource for research teams working on the development of biorefinery technologies as well as teachers and students of biotechnology faculties.

Biofuels and Bioenergy - Sunggyu Lee 2012-08-30

The newest addition to the Green Chemistry and Chemical Engineering series from CRC Press, *Biofuels and Bioenergy: Processes and Technologies* provides a succinct but in-depth introduction to methods of development and use of biofuels and bioenergy. The book illustrates their great appeal as tools for solving the economic and environmental challenge

Clean Energy and Resources Recovery - Vinay Kumar Tyagi 2021-08-06

Clean Energy and Resources Recovery: Biomass Waste Based Biorefineries, Volume One presents the technological options for energy and resources recovery from all types of organic wastes. The book addresses municipal and industrial sludges, municipal solid waste, agro-residue, animal wastes, industrial waste, forestry residue, and algal biomass, and provides a global overview of biomass waste production, waste handling issues and related GHG emissions and climate change, legislative waste management guidelines, biomass composition, and conventional methods for biomass waste treatment. For each biomass waste, chapters cover energy and bio-based products recovery, pre-treatment methods, process microbiology, community dynamics, co-digestion, reactor design and configuration, and techno-economic evaluation. Case studies on upscaling technology and pilot and industry scale implementation are included, alongside step-by-step calculations that integrate practical field data and regulatory requirements into the environmental design process. Finally, future trends and developments in advanced biotechnological concepts for biomass waste processing and management are also discussed. Provides innovative strategies to increase the efficiency of anaerobic digestion, including during pre- and post-treatment Includes industry case studies that demonstrate successful implementation processes and strategies Addresses municipal and industrial sludges, municipal solid waste, agro-residue, animal wastes, industrial waste, forestry residue, and algal biomass, and provides a global overview of biomass waste production

Solid Fuels and Heavy Hydrocarbon Liquids: Thermal Characterization and Analysis - Rafael Kandiyoti 2006-04-06

The first strand involves a critical overview of the design of experimental methods used for examining the thermal behaviour of solid fuels [pyrolysis, liquefaction and gasification], while the second will emphasise chemical structures and molecular mass distributions of coal derived tars, extracts and pitches, petroleum-derived asphaltene, and biomass derived heavy hydrocarbon liquids. Two major, interdependent strands in the study of fossil and renewable fuel utilisation are focused on within this text: (i) Thermal characterisation of solid fuels including various ranks of coals, biomass and waste, and, (ii) The analytical characterisation of heavy hydrocarbon liquids, covering coal, petroleum and biomass derived heavy fractions. Two major, interdependent strands in the study of fossil and renewable fuel utilisation are focused on within this text: (i) Thermal characterisation of solid fuels including various ranks of coals, biomass and waste, and, (ii) The analytical characterisation of heavy hydrocarbon liquids, covering coal, petroleum and biomass derived heavy fractions.