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STEPHANIE BERRY

Technical, Economic and Policy Assessment John Wiley & Sons

This book offers a broad understanding of bioethanol production from sugarcane, although a few other substrates, except corn, will also be mentioned. The 10 chapters are grouped in five sections. The Fuel Ethanol Production from Sugarcane in Brazil section consists of two chapters dealing with the first-generation ethanol Brazilian industrial process. The Strategies for Sugarcane Bagasse Pretreatment section deals with emerging physicochemical methods for biomass pretreatment, and the non-conventional biomass source for lignocellulosic ethanol production addresses the potential of weed biomass as alternative feedstock. In the Recent Approaches for Increasing Fermentation Efficiency of Lignocellulosic Ethanol section,

potential and research progress using thermophile bacteria and yeasts is presented, taking advantage of microorganisms involved in consolidating or simultaneous hydrolysis and fermentation processes. Finally, the Recent Advances in Ethanol Fermentation section presents the use of cold plasma and hydrostatic pressure to increase ethanol production efficiency. Also in this section the use of metabolic-engineered autotrophic cyanobacteria to produce ethanol from carbon dioxide is mentioned.

Sustainable Biotechnology- Enzymatic Resources of Renewable Energy John Wiley & Sons

This book focuses on the basic science recently produced in Brazil for the improvement of sugarcane as a bioenergy crop and as a raw material for 2nd generation bioethanol production. It reports achievements that have been advancing the science of cell walls, enzymes, genetics, and sustainability related to sugarcane technologies and give continuity to the research

reported in the "Routes to Cellulosic Ethanol", from Springer. The Introduction (Chapter I) explains how the National Institute of Science and Technology of Bioethanol, founded in 2008 in Brazil, became part of the main international initiatives that started to search for forms to use biomass for bioethanol production in Brazil, US and Europe. Part I reports the advances in plant cell wall composition, structure and architecture, and physical characteristics of sugarcane biomass. These discoveries are opening the way to increased efficiency of pretreatments and hydrolysis, being therefore important information for 2nd generation processes as well as for biorefinery initiatives. Part II focuses on the discovery and characterization of hydrolases from microorganisms that could be used in industrial processes. Recent advances in the search for hydrolases using metagenomics is reported. A great number of genes and enzymes from microorganisms have been discovered, affording improvement of enzyme cocktails better adapted to sugarcane biomass. Part III reports two key issues in the process of 2G ethanol, pentose fermentation and sugarcane genetics. These are the discoveries of new yeast species capable of producing ethanol more efficiently from xylose and the advances made on the sugarcane genetics, a key issue to design varieties adapted to 2G ethanol production. Part IV approaches sustainability through two chapters, one discussing the sustainability of the sugarcane agricultural and environmental system and another discussing how national and mainly international policies of Brazil regarding 2G ethanol production affected the country's strategies to establish itself as an international player in renewable energy area.

Surface Properties of Non-conventional Cellulose Fibres
Woodhead Publishing

Until recently, much of the development of building materials has predominantly focused on producing cheaper, stronger and more durable construction materials. More recently attention has been given to the environmental issues in manufacturing, using, disposing and recycling of construction materials. Sustainability of construction materials brings together a wealth of recent research on the subject. The first part of the book gives a comprehensive and detailed analysis of the sustainability of the following building materials: aggregates; timber, wood and bamboo; vegetable fibres; masonry; cement, concrete and cement replacement materials; metals and alloys; glass; and engineered wood products. A final group of chapters cover the use of waste tyre rubber in civil engineering works, the durability of sustainable construction materials and nanotechnologies for sustainable construction. With its distinguished editor and international team of contributors, Sustainability of construction materials is a standard reference for anyone involved in the construction and civil engineering industries with an interest in the highly important topic of sustainability. Provides a comprehensive and detailed analysis of the sustainability of a variety of construction materials ranging from wood and bamboo to cement and concrete Assesses the durability of sustainable construction materials including the utilisation of waste tyre rubber and vegetable fibres Collates a wealth of recent research including relevant case studies as well as an investigation into future trends

Sugar and Sugar Derivatives: Changing Consumer Preferences
Springer Nature

This book discusses the commercialization of biofuels and the Brazilian government policies for the promotion of renewable energy program in Brazil, which could be a learning module for several countries for implementing biofuels policy to improve their socioeconomic status and make them energy independent. Researchers in academia and industries, policy makers, and

economic analysts will be assisted by important source of information in their ongoing research and future perspectives. This book will benefit graduate and postgraduate students of chemical and biochemical engineering, forestry, microbiology, biochemistry, biotechnology, applied chemistry, environmental science, sustainable energy, and biotech business disciplines by signifying the applied aspects of bioenergy production from various natural sources and their implications. Graduate and postgraduate students as well as postdoctoral researchers will find clear concepts of feedstock analysis, feedstock degradation, microbial fermentation, genetic engineering, renewable energy generation and storage, climate changes, and techno-economic analysis of biofuels production technologies.

Biomass Now BoD - Books on Demand

Sugarcane exhibits all the major characteristics of a promising bioenergy crop including high biomass yield, C4 photosynthetic system, perennial nature, and ratooning ability. Being the largest agricultural commodity of the world with respect to total production, sugarcane biomass is abundantly available. Brazil has already become a sugarcane biofuels centered economy while Thailand, Colombia, and South Africa are also significantly exploiting this energy source. Other major cane producers include India, China, Pakistan, Mexico, Australia, Indonesia, and the United States. It has been projected that sugarcane biofuels will be playing extremely important role in world's energy matrix in recent future. This book analyzes the significance, applications, achievements, and future avenues of biofuels and bioenergy production from sugarcane, in top cane growing countries around the globe. Moreover, we also evaluate the barriers and areas of improvement for targeting efficient, sustainable, and cost-effective biofuels from sugarcane to meet the world's energy needs and combat the climate change.

Advances in Oil-Water Separation Elsevier

Computer aided process engineering (CAPE) plays a key design and operations role in the process industries. This conference features presentations by CAPE specialists and addresses strategic planning, supply chain issues and the increasingly important area of sustainability audits. Experts collectively highlight the need for CAPE practitioners to embrace the three components of sustainable development: environmental, social and economic progress and the role of systematic and sophisticated CAPE tools in delivering these goals.

Sustainable Biofuels Elsevier

Sugarcane-based Biofuels and Bioproducts John Wiley & Sons
Characterisation, Properties and Applications Springer Nature
Characterization, design, specific properties and applications of thermoset composites are reported. These composites are presently in high demand because they can be shaped into many-sided segments and structures, and can have a great variety of densities and special physical and mechanical properties. The research reported includes: Energy absorption of fiber reinforced composites; automotive crashworthiness; lignocellulosic composites; hybrid bast fiber reinforced composites; nano-carbon/polymer composites; electromagnetic shielding; structural mechanical applications; electromagnetic field emission applications, conductive composites; epoxy composites for structural purposes; tribological performance of polymeric composites.

Report to U.S. Agency for International Development, Technical Assistance Bureau, Office of Science and Technology Elsevier

This two-volume book on biomass is a reflection of the increase in biomass related research and applications, driven by overall higher interest in sustainable energy and food sources, by increased awareness of potentials and pitfalls of using biomass

for energy, by the concerns for food supply and by multitude of potential biomass uses as a source material in organic chemistry, bringing in the concept of bio-refinery. It reflects the trend in broadening of biomass related research and an increased focus on second-generation bio-fuels. Its total of 40 chapters spans over diverse areas of biomass research, grouped into 9 themes. *A Manual for Cane Sugar Manufacturers and Their Chemists* Springer

Natural fiber-reinforced composites have the potential to replace synthetic composites, leading to less expensive, stronger and more environmentally-friendly materials. This book provides a detailed review on how a broad range of biofibers can be used as reinforcements in composites and assesses their overall performance. The book is divided into five major parts according to the origins of the different biofibers. Part I contains chapters on bast fibers, Part II; leaf fibers, Part III; seed fibers, Part IV; grass, reed and cane fibers, and finally Part V covers wood, cellulosic and other fibers including cellulosic nanofibers. Each chapter reviews a specific type of biofiber providing detailed information on the sources of each fiber, their cultivation, how to process and prepare them, and how to integrate them into composite materials. The chapters outline current and potential applications for each fiber and discuss their main strengths and weaknesses. The book is divided into five major parts according to the origins of the different biofibers - bast, leaf, seed; grass, reed and cane fibers, and finally wood, cellulosic and other fibers including cellulosic nanofibers. This book provides a detailed review on how a broad range of biofibers can be used as reinforcements in composites and assesses their overall performance. The chapters outline current and potential applications for each fiber and discuss their main strengths and weaknesses

Fundamental Aspects, Recent Developments, and Future Perspectives Academic Press

With oil resources approaching their limits, biofuels have become increasingly attractive. This book provides a detailed description of the ecological implications of second and third generation biofuel feedstock production systems, beginning with an introduction to the importance of ecological sustainability alongside economic viability. The book is divided into sections describing theoretical foundation and benefits of various biofuel cropping systems, and providing a description of practical ecological limitations to achieve those fundamental benefits. The book covers such critical issues as greenhouse gas emissions, carbon balance, water cycle components, other biogeochemical and socioeconomic interactions alongside life cycle analysis principals for achieving sustainability. These are some of the most important sustainability, environmental and economic issues which biofuel industry and scientific community is seeking answers to.

Biomass and Bioenergy BoD - Books on Demand

This book brings together the most recent advances from leading experts in the burgeoning field of environmental biotechnology. The contributing chapters adopt a multidisciplinary approach related to environmental aspects of agriculture, industry, pharmaceutical sciences and drug developments from plant and microbial sources, biochemical chemical techniques/methods/protocols involved in different areas of environmental biotechnology. Book also highlights recent advancements, newly emerging technologies, and thought provoking approaches from different parts of the world. It also discusses potential future prospects associated with some frontier development of biotechnological research related to the environment. This book will be of interest to teachers, researchers, biotechnologists, capacity builders and policymakers, and will serve as additional reading material for

undergraduate and graduate students of biotechnology, microbiology and environmental sciences.

Technology and Research Walter de Gruyter GmbH & Co KG

Most leaders of developed nations recognize the importance of following policies and strategies to achieve a low-carbon economy based on new and innovative technologies that are able to reduce greenhouse gas emissions and create new employment and growth. In the broad spectrum of the feasible decarbonisation pathways, the challenge for political and economic decision-makers is to weigh uncertain impact from different technologies and to build a comprehensive evidence-based framework for research, business, investment and policy decision-making. This book aims to provide the reader with a comprehensive overview of the current state-of-the-art technology in the Low Carbon Technology and Economy field, discussing a set of new technology approaches and environmental and economic implications.

Proceedings of the International Conference on Stabilisation/Solidification Treatment and Remediation, 12-13 April 2005, Cambridge, UK Elsevier

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

An Ecological Assessment of the Future Energy Springer Nature

Sugarcane (*Saccharum officinarum* L.) is considered one of the major bioenergy crops grown globally. Thus, sugarcane research to improve sustainable production worldwide is a vital task of the scientific community, to address the increasing demands and needs for their products, especially biofuels. In this context, this book covers the most recent research areas related to sugarcane production and its applications. It is composed of 14 chapters, divided into 5 sections that highlight fundamental insights into the current research and technology on this crop. *Sugarcane: Technology and Research* intends to provide the reader with a comprehensive overview in technology, production, and applied and basic research of this bioenergy species, approaching the latest developments on varied topics related to this crop.

Select Proceedings of 7th ICRAGEE 2020 William Andrew

The authors describe how sustainable textile fibers from crops such as quinoa, grass, hops, corn and wheat stems, etc. have recently begun to generate great interest. The structure-property relationships of such non-conventional cellulose fibers are studied in this brief, as are their sorption and surface properties which are of primary importance. A systematic review of each fiber's properties is given, the emphasis is placed on the water sorption capacity, the fiber's surface potential, and fibrillation properties.

Processing and Properties BoD – Books on Demand
 Sustainable and Nonconventional Construction Materials Using Inorganic Bonded Fiber Composites presents a concise overview of non-conventional construction materials with a strong focus on alternative inorganic bonded fiber composites and their applications as construction components. It outlines the processing and characterization of non-conventional cementitious composites, which will be of great benefit to both academic and industrial professionals interested in research, development, and innovation on inorganic bonded fiber composites. The book gives a comprehensive review of the innovative research associated with building components based on inorganic bonded composites. Exploring both natural fibers as reinforcing elements and alternative inorganic binders based on agricultural and industrial wastes, this book also considers the performance and applications of fibrous composites as construction materials and components. Dedicated to analyzing recent developments in inorganic fiber composites research Discusses the broader subjects of processing, characterization, performance, and applications of non-conventional construction materials

Solar Energy Update BoD – Books on Demand

Stabilisation/Solidification Treatment and Remediation - Advances in S/S for Waste and Contaminated Land contains 39 papers, summaries of the four keynote lectures and the seven State of Practice reports presented at the International Conference organized by the EPSRC-funded network STARNET (Stabilisation/solidification treatment and remediation).

Preparation, Properties and Applications Elsevier

This title includes a number of Open Access chapters. As the world's energy hunger grows ever larger, fossil fuel reserves are diminishing—and concerns about climate change remind us that our love affair with fossil fuels cannot continue much longer. This has inspired intense research into sustainable energy sources. Biofuels seemed initially promising, but the world soon realized that food-based biofuel has its own dangers. Second-generation biofuels, however, use biomass from crops' inedible parts—such as the stalks and leaves of sugarcane—offering a far more

practical, sustainable, and commercially viable solution. In this book, researchers from around the world review some of the most important and timely topics related to using sugarcane feedstock for biofuel. After a basic overview, topics such as these are included: Pretreatment methods The use of various microbial technologies, including bacteria and yeast, to enhance biofuel production Environmental impacts Economic feasibility The viability of electricity being produced side by side with biofuel Essential reading for graduate students and research scientists investigating second-generation biofuels, this book is also recommended for environmentalists, environmental engineers, and microbiologists.

Thermoset Composites Springer Nature

Nature offers abundant renewable resources that can be used to partially replace fossil fuels and commodity chemicals but issues of cost, technology readiness levels, and compatibility with existing distribution networks remain huge challenges. Cellulosic ethanol and biodiesel are the most immediately obvious target fuels, with hydrogen, methane and butanol as other potentially viable products. This book continues to bridge the technology gap and focus on critical aspects of lignocellulosic biomolecules and the respective mechanisms regulating their bioconversion to liquid fuels into energy and value-added products of industrial significance. This book is a collection of reviews elucidating several broad-ranging areas of progress and challenges in the utilization of sustainable resources of renewable energy, especially in biofuels. This book comes just at a time when government and industries are accelerating their efforts in the exploration of alternative energy resources, with expectations of the establishment of long-term sustainable alternatives to petroleum-based liquid fuels. Apart from liquid fuel this book also emphasizes the use of sustainable resources for value-added products, which may help in revitalizing the biotechnology industry at a broader scale. This book also provides a comprehensive review of basic literature and advance research methodologies to graduate students studying environmental microbiology, chemical engineering, bio-economy and microbial biotechnology.

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