

Steam Explosion Techniques Fundamentals And Industrial Applications

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International Workshop on Steam Explosion Technique 1910

Biomass Now Miodrag Darko Matovic 2013-04-30 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.

[The Cumulative Book Index](#) 1992 A world list of books in the English language.

Handbook of Polymer Nanocomposites. Processing, Performance and Application

Jitendra K. Pandey 2014-12-01 Volume C forms one volume of a Handbook about Polymer Nanocomposites. Volume C deals with Polymer nano-composites of cellulose nano-particles. The preparation, architecture, characterisation, properties and application of

polymer nanocomposites are discussed within some 27 chapters. Each chapter has been authored by experts in the respective field.

Bionanotechnology to Save the Environment

Pierfrancesco Morganti 2019-02-19 Nanotechnology is the science of manipulating atoms and molecules in the nanoscale thousand times smaller than the width of a human hair. The world market for products that contain nanomaterials is expected to increase enormously in the future. The use of nanotechnology has stretched across various streams of science, from electronics to medicine and has also found applications in the field of cosmetics. How will this revolution impact our lifestyle and our planet? Very often the progresses of science, human knowledge and evolution of our lifestyle has been associated with devastating effects on our forests, oceans and more in general on our planet. The real challenge in the years to come is the sustainability of human evolution. The reader of this interesting book will discover how nanotechnology, and in particular nanomaterials derived from plant biomass and fishery's waste, can improve the quality of our environment by reducing carbon emissions, improving the recycling of materials and even, in the long run, became a profitable business. Green nanotechnologies can be applied to a huge

number of products ranging from intelligent textiles to smart drugs or functional polymers which can have a big impact on our daily lives, but nevertheless help us in saving our biodiversity and our planet. However, to fully achieve all these benefits, companies and scientists should be supported by National and International Agencies and Institutions in order to facilitate and support scientific development in this field allowing from one side the protection of intellectual property, but on the other giving accessibility of these technologies to emerging countries for improving the quality of life and the environment all over the world equally.

Handbook of Bioplastics and Biocomposites Engineering Applications

Srikanth Pilla 2011-09-15 In today's world, bioplastics are becoming increasingly prominent owing mainly to scarcity of oil, increase in the cost of petroleum-based commodities, and growing environmental concerns with the dumping of non-biodegradable plastics in landfills. This book summarizes the field of bioplastics by illustrating how they form a unique class of research area that integrates pure and applied sciences such as chemistry, engineering and materials science, to initiate solutions. Compelling science demystifies this complex and often ambiguous branch of study for benefit of all those concerned with bioplastics.

Cellulose and Cellulose Derivatives Kenji Kamide 2005-08-31 Many highly acclaimed and authoritative books on polymer science tend to focus on synthetic polymers. Cellulose and Cellulose Derivatives is the first authoritative book on the subject. It examines recent developments, with particular reference to cellulose (in aqueous alkali) and cellulose acetate. Packed with examples, the author takes an in-depth look at the topic, using the most reliable experimental data available. A comprehensive approach to the fundamental principles of cellulose and its derivatives in solution makes Cellulose and Cellulose Derivatives ideal reading for novices as well as experienced cellulose scientists. * Outlines the theoretical fundamentals of cellulose and cellulose derivatives * Presents comprehensive and reliable experimental results in figures and tables * Highly illustrated and easy to read

Biomass for Biofuels Katarzyna Bulkowska 2016-12-08 Biomass is a

widely available resource, that can be characterized by its high production potential. Enabling the production of different types of biofuels, biomass can be used in both spark-ignition and compression-ignition engines. There is extensive knowledge of the biofuel production process, and technologies enabling the production of biofuels with high caloric value and better physicochemical properties are developed. The biggest barrier in the development of a biofuels market is not the lack of know-how, but economic and political aspects. Biomass for Biofuels presents technological aspects of biomass conversion into advanced biofuels. Also discussed are the influence of growing biofuels markets on the natural environment and social relations as well as economic aspects of acquisition of biomass and its processing into biofuels. In addition biomass characteristics are presented. A definition is provided, and its chemical composition and properties detailed. The focus is on lignocellulosic biomass, whose complex structure is a limiting factor for biofuels production via biological processes. For that reason, mechanical, chemical and physicochemical methods that enable an increased availability for the microorganisms used for biomass conversion to biofuels are discussed.

Pretreatment of Biomass Ashok Pandey 2014-09-18 Pretreatment of Biomass provides general information, basic data, and knowledge on one of the most promising renewable energy sources—biomass for their pretreatment—which is one of the most essential and critical aspects of biomass-based processes development. The quest to make the environment greener, less polluted, and less hazardous has led to the concept of biorefineries for developing bio-based processes and products using biomass as a feedstock. Each kind of biomass requires some kind of pretreatment to make it suitable for bioprocess. This book provides state-of-art information on the methods currently available for this. This book provides data-based scientific information on the most advanced and innovative pretreatment of lignocellulosic and algal biomass for further processing. Pretreatment of biomass is considered one of the most expensive steps in the overall processing in a biomass-to-biofuel program. With the strong advancement in developing lignocellulose

biomass- and algal biomass-based biorefineries, global focus has been on developing pretreatment methods and technologies that are technically and economically feasible. This book provides a comprehensive overview of the latest developments in methods used for the pretreatment of biomass. An entire section is devoted to the methods and technologies of algal biomass due to the increasing global attention of its use. Provides information on the most advanced and innovative pretreatment processes and technologies for biomass Covers information on lignocellulosic and algal biomass to work on the principles of biorefinery Useful for researchers intending to study scale-up Provides information on integration of processes and technologies for the pretreatment of biomass

Lignocellulosic Biorefineries Jean-Luc Wertz 2013-06-27 Written with a diverse audience in mind, this book describes the current status, development, and future prospects for the critical technology of second-generation biorefineries, specifically with a focus on lignocellulosic materials as feedstock. It provides an overview of the issues behind this technological transition, and it provides, in depth, the science and technology related to cellulose for production of bioethanol and other biofuels. The book also highlights the main emerging routes that will serve as the source of important bio-generated products in the future.

Sustainable Degradation of Lignocellulosic Biomass Anuj Chandel 2013-05-15 This book provides important aspects of sustainable degradation of lignocellulosic biomass which has a pivotal role for the economic production of several value-added products and biofuels with safe environment. Different pretreatment techniques and enzymatic hydrolysis process along with the characterization of cell wall components have been discussed broadly. The following features of this book attribute its distinctiveness: This book comprehensively covers the improvement in methodologies for the biomass pretreatment, hemicellulose and cellulose breakdown into fermentable sugars, the analytical methods for biomass characterization, and bioconversion of cellulose into biofuels. In addition, mechanistic analysis of biomass pretreatment and enzymatic hydrolysis have been discussed in details,

highlighting key factors influencing these processes at industrial scale. **Wood Composites** J. Paulo Davim 2017-09-11 Wood composites as part of wood engineering materials has been reaching a constant developing trend, being used on a wide range of applications and becoming worldwide as a very promising alternate material face to traditional building materials such as concrete, metal and plastics. In this part of the series are treated aspects among which advances functionalities in laminates, the activation of natural fibres, the natural matrix, and others industrials manufacturing research advances for wood material as composite.

Paper and Composites from Agro-Based Resources Roger M. Rowell 1996-10-15 Sustainable development is an important concept underlying many of today's renewable resource policies. Agro-based resources, such as wood, make up a significant portion of modern renewable resources. While probably the most familiar example, wood is only one type of agromass in the vast world of photosynthetic resources. Paper and Composites from Agro-Based Resources explores the great number of options available for producing paper and composites. Using sound ecosystem management principles, the book discusses strategies for obtaining fiber from plant-based resources including agricultural crops and residues, grasses, and recycled agro-based resources, in addition to wood.

Lignin Swati Sharma 2020-04-13 This book presents a comprehensive overview on origin, structure, properties, modification strategies and applications of the biopolymer lignin. It is organized into four themed parts. The first part focuses on the analysis and characterization of the second most abundant biopolymer. The following part is devoted to the biological aspects of lignin such as biosynthesis and degradation. In the third part, chemical modification strategies and the preparation of composites as well as nano- and microparticles are discussed. The final part addresses the industrial application of lignin and its derivatives, as well as lignin materials. The usage for synthesis of biofuels, fine chemicals and in agriculture and food industry is covered. This book is a comprehensive source for researchers, scientists and engineers working

in the field of biopolymers as well as renewable materials and sources. **Microbial Pentose Utilization** A. Singh 1995-10-30 Microbial utilization of the inexhaustible lignocellulosic biomass for the production of industrial chemicals, liquid fuels, protein-rich feed and food, and preparation of cellulose polymers, is an attractive approach to help meet energy and food demands. Whilst biomass has served as substrate in microbial processes for the production of alcoholic beverages for a long time, it is only recently that broader applications of this material have been envisaged. Hemicellulose-derived sugars have many potential uses in the production of industrial chemicals and solvents. Considerable developments have been made, not only in the improvement of yeast and recombinant bacterial strains, but also in the bioprocessing of these organisms during the last two decades. Although the volume of information available on microbial pentose utilization is increasing, the available literature is mostly scattered. A comprehensive account of recent advances in pentose based bioprocesses is provided along with suggestions for future research. An indispensable volume for graduate students of microbiology, biochemistry, biotechnology and biochemical engineering. The needs of industrial microbiologists, environmental scientists and researchers in the area of carbohydrate utilization and metabolism are also catered for. Industrial organizations involved in developing processes for ethanol and other products from non-conventional sources will also find this volume beneficial.

International (non-U.S.) Industrial Pollution Prevention 1994 The objectives of this report are to incorporate pollution prevention into the industrial effluent guidelines process and to extend information to industries and to the consuming public to better establish and spread the pollution prevention ethic.

Hydrothermal Processing in Biorefineries Héctor A. Ruiz 2017-05-22 The biorefinery, integration of processes and technologies for biomass conversion, demands efficient utilization of all components. Hydrothermal processing is a potential clean technology to convert raw materials such as lignocellulosic and aquatic biomass into bioenergy and high added-value compounds. This book aims to show fundamental

concepts and key technological developments that enabled industrial application of hydrothermal processing. The scope of this book is primarily for scientists working in the biorefinery field as well as engineers from industry and potential investors in biofuels. Therefore, the information in this book will provide an overview of this technology applied to lignocellulosic materials and aquatic biomass, and especially new knowledge. Critically, this book brings together experts in the application of hydrothermal processes on lignocellulosic and aquatic biomass.

Polysaccharides Severian Dumitriu 1998-05-12 Offers comprehensive coverage of the structural characterization of polysaccharides- emphasizing commercially available and potential exopolysaccharides as well as new applications. Presents the major chemical and physical properties of polysaccharides and derivatives.

D-Xylitol Silvio Silvério da Silva 2012-10-02 Commercially, D-xylitol is produced by chemical reactions that are tailored to the requirements of various sectors. However, due to the rising interest in sustainable development and ecologically benign practices, microbial transformation processes are generally preferred over the conventional chemical conversion process. The former have multiple advantages, including less chemical load on the environment, higher efficiency, and the ability to dilute multiple downstream transformation attempts while maintaining product yield and recovery. This book aims to disseminate the most current advances in the biotechnological production of D-xylitol and its applications in medical and health care. It is a unique collection of 15 book chapters split into 5 sections and written by experts in their respective fields, who present critical insights into several topics, review current research, and discuss future progress in this area. This book also provides essential information on hemicellulose hydrolysis to recover D-xylitol, detoxification of hemicellulose hydrolysates, and improved fermentation methods for increased D-xylitol production. The highlights of strain improvement to increase the D-xylitol titers and downstream recovery of D-xylitol are also discussed in several sections. The current applications of D-xylitol in medical and health care have been used to

justify the cost incurred for setting up the demonstration plant for D-xylitol production in the market. Apart from researchers and post-graduate students in the field of microbial biotechnology, this book will assist those in the business community who deal with the economic analysis of bio-based products and their marketing.

Advances in Thermochemical Biomass Conversion A.V. Bridgwater 2013-04-17 This book provides an account of the state-of-the-art in thermochemical biomass conversion and arises from the third conference in a series sponsored by the International Energy Agency's Bioenergy Agreement. Fundamental and applied research topics are included, reflecting recent advances as well as demonstration and commercial innovation.

Biofuels in Brazil Silvio Silvério da Silva 2014-04-02 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.

Brazilian Journal of Medical and Biological Research 1989

Bio-based Polymers and Nanocomposites Muhammed Lamin Sanyang 2019-02-05 This book highlights the various types of polymer and nanocomposites that can be derived from biorenewable resources. It

covers various aspects of biobased polymers and nanocomposites, including preparation, processing, properties, and performance, and the latest advances in these materials. It also includes recent findings from leading researchers in academia and industry, government, and private research laboratories around the globe, providing the latest information on biobased polymers and nanocomposites. Offering an overview of the entire production process, it guides readers through all stages, from the raw source materials, processing and property characterization to application performance. This book is suitable for professionals and researchers seeking in-depth practical information as well as the fundamental science behind this. It also serves as a point of reference for undergraduate and graduate students, as well as postdoctoral researchers working in the area of polymer and composites with a special emphasis on biobased materials.

Recent Trends in Product Design and Intelligent Manufacturing Systems

B.B.V.L. Deepak 2022-10-05 This book presents select proceedings of the 3rd Innovative Product Design and Intelligent Manufacturing System (IPDIMS 2020), held at National Institute of Technology (NIT) Rourkela, 30-31 December 2021. This volume covers the latest research topics in design and manufacturing fields of engineering. Some of the themes covered include Industry 4.0, smart manufacturing, advanced robotics and CAD/CAM/CIM. This book will be useful for students, researchers and professionals in the disciplines of mechatronics, mechanical, manufacturing, production and industrial engineering, especially those working on improvements in manufacturing technologies and development of resilient infrastructure in industry.

Lignin and Lignans as Renewable Raw Materials Francisco G. Calvo-Flores 2015-08-11 As naturally occurring and abundant sources of non-fossil carbon, lignin and lignans offer exciting possibilities as a source of commercially valuable products, moving away from petrochemical-based feedstocks in favour of renewable raw materials. Lignin can be used directly in fields such as agriculture, livestock, soil rehabilitation, bioremediation and the polymer industry, or it can be chemically modified for the fabrication of specialty and high-value chemicals such as

resins, adhesives, fuels and greases. Lignin and Lignans as Renewable Raw Materials presents a multidisciplinary overview of the state-of-the-art and future prospects of lignin and lignans. The book discusses the origin, structure, function and applications of both types of compounds, describing the main resources and values of these products as carbon raw materials. Topics covered include: • Structure and physicochemical properties • Lignin detection methods • Biosynthesis of lignin • Isolation methods • Characterization and modification of lignins • Applications of modified and unmodified lignins • Lignans: structure, chemical and biological properties • Future perspectives This book is a comprehensive resource for researchers, scientists and engineers in academia and industry working on new possibilities for the application of renewable raw materials. For more information on the Wiley Series in Renewable Resources, visit www.wiley.com/go/rrs

Microbial Resources for Sustainable Energy Basanta Kumara Behera 2016-06-15 This book sheds new light on how microbes can be used as effective and sustainable resources to produce green energy in the form of biogas, algal diesel, ethanol, hydrogen and direct electricity. It discusses topics such as microbial energy conversion technologies, including ethanol production by microbial catalytic reaction, biomethanization, biodiesel from microalgae, microbial fuel cells, and the microbiological production of hydrogen. The book will inspire scientists to find new approaches to meet local energy demands with the help of sustainable microbial resources available in and around a given location.

From Biomass to Advanced Bio-Based Chemicals & Materials: A Multidisciplinary Perspective Gabriel Paës 2020-04-01 Lignocellulose is the only renewable carbon source that can help replace oil-based chemicals and materials, in the process fighting global warming. However, because of its chemical and structural complexity, lignocellulose transformation into advanced products requires a better understanding of its composition and of its architecture at different scales, as well as a combination of physical, biological, and chemical processes, in order to render this transformation efficient and economically competitive. Tremendous efforts continue to be made

toward the production of ethanol as a biofuel from various lignocellulosic feedstocks. Furthermore, recent successes have been achieved in extracting fibers to prepare composite materials that can compete with plastic fabrics. Importantly, lignocellulose chemistry can bring to the market original and complex chemicals that can lead to new applications, in particular when exploiting aromatic molecules or oligosaccharides from lignocellulose to produce solvents, surfactants, plasticizers, functional additives for food/feed/cosmetics, drugs, monomers, and polymers. In addition to this broad range of molecular products, fibers and particles fractionated from the lignocellulosic biomass are increasingly used to elaborate bio-based composite materials.

Hemicelluloses and Lignin in Biorefineries Jean-Luc Wertz 2017-10-16 Hemicelluloses and Lignin in Biorefineries provides an understanding of lignocellulosic biomass, which is mainly composed of cellulose, hemicelluloses, and lignin. It promotes the valorization of these molecules in the context of the bioeconomy and presents hemicelluloses and lignin, which are generated in lignocellulosic biorefineries, as the molecules of the future. The viability of these molecules lies in their renewability and potential. This book covers all aspects of hemicelluloses and lignin including structure, biosynthesis, extraction, biodegradation, and conversion. The book also looks ahead to the socioeconomic and environmental value of biobased industry and emphasizes an understanding of the potential of lignocellulosic biomass.

Sustainable Bioconversion of Waste to Value Added Products Inamuddin 2021-04-20 This edited book discusses various processes of feedstocks bioconversion such as bioconversion of food waste, human manure, industrial waste, beverage waste, kitchen waste, organic waste, fruit and vegetable, poultry waste, solid waste, agro-industrial waste, cow dung, steroid, lignocellulosic residue, biomass, natural gas etc. Nowadays, the industrial revolution and urbanization have made human life comfortable. However, this requires excess usage of natural resources starting from food and food products, to energy resources, materials as well as chemicals. The excess use of natural resources for human comfort is expected to high fuel prices, decline natural resources

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

1st World Conference on Biomass for Energy and Industry Spyros Kyritsis 2001 The 1st World Conference and Technology Exhibition on Biomass for Energy and Industry, held in Sevilla in June 2000, brought together for the first time the traditional European Conference on Biomass for Energy and Industry and the Biomass Conference of the Americas, thus creating the largest and most outstanding event in the worldwide biomass sector. The conference elaborated innovative global strategies, projects and efficient practice rules for energy and the environment at a key stage in the industry's development. New concepts and projects were highlighted to increase the social and political awareness for a change in worldwide resource consumption and to promote economically, socially and environmentally sustainable development for the next millennium. In 2 volumes, the Proceedings include some 470 papers essential to an understanding of current thinking, practice, research and global developments in the biomass sector - a vital reference source for researchers, manufacturers, and policy makers involved or interested in the use of biomass for energy and industry.

Biocatalysis and Bioenergy C. T. Hou 2008-09-02 An up-to-date overview

of diverse findings and accomplishments in biocatalysis and bioenergy With the high price of petroleum and researchers worldwide seeking new means of producing energy, this comprehensive book on biocatalysis for bioenergy and biofuel applications is very timely. It combines information on state-of-the-art advances and in-depth reviews of the latest achievements in biocatalysis and bioenergy, emphasizing biodiesel, bioethanol, and industrial products. The advantages of biocatalysis include high specificity, efficiency, energy conservation, and pollution reduction. Biocatalysis and Bioenergy details advances in the field, with:

- * Three primary sections, covering biodiesel research, bioethanol, and industrial products
- * Information on enzyme catalysis, biotransformation, bioconversion, fermentation, genetic engineering, and product recovery
- * Contributions from leading experts worldwide who share their research and findings

The prospect of using biocatalysis for the production of energy has great potential due to its cost-effectiveness, the fact that it does not require a limited resource such as oil, and its potential universality of application and use globally. This is the definitive reference for biochemists and biochemical engineers, bioprocess and bioenergy scientists, physical and oil chemists (oleochemists), microbiologists, industrial microbiologists, molecular biologists, metabolic engineers working in biocatalysis, bioethanol, and biodiesel fuels, DOE scientists working on renewable energy, and other professionals in related fields.

Food Polysaccharides and Their Applications Alistair M. Stephen 2016-04-19 Comprehensive in scope, *Food Polysaccharides and Their Applications*, Second Edition explains the production aspects and the chemical and physical properties of the main classes of polysaccharides consumed as food, highlighting their nutritional value and their technological characteristics. Chapters in this new edition detail the source, biosynthesis, molecular structures, and physical properties of polysaccharides. They also explore production and uses in food formulations; the effects of cooking and interactions with proteins, lipids, sugars, and metal ions; analytical methods, including identification and quantitative determination; and nutritional and ecological considerations

with emphasis on genetic engineering of food crops. The editors carefully balance coverage of fundamental aspects and practical implications for the food industry. What's New in the Second Edition: Explains the preparation of new starch esters and improved techniques for the production of acid-converted and oxidized starches Details new information on the natural functions of cell wall polysaccharides of seeds in relation to their molecular structures, biosynthesis and enzymatic hydrolysis Presents additional references that include those relating to IR and NMR spectrometric methods of analysis

Advances in Applied Microbiology 1993-09-20 Advances in Applied Microbiology

Biomass for Energy, Industry and Environment G. Grassi 2003-09-02 Proceedings of the International Conference on Biomass for Energy, Industry and Environment held in Athens, Greece, 22-26 April 1991.

Date Palm Fiber Composites Mohamad Midani 2020-11-11 This book covers the recent research advances on the utilization of date palm fibers as a new source of cellulosic fibers that can be used in the reinforcement of polymer composites. It discusses the competitive mechanical, physical, and chemical properties which make date palm fibers stand out as an alternative to other fibers currently used in the natural fiber composites market. This volume will be useful to researchers working on natural fiber composites and fiber reinforced composites looking to develop green, biodegradable and sustainable components for application in automotive, marine, aerospace, construction, wind energy and consumer goods sectors.

Handbook of Textile Fibre Structure Stephen Eichhorn 2009-10-26 Due to their complexity and diversity, understanding the structure of textile fibres is of key importance. This authoritative two-volume collection provides a comprehensive review of the structure of an extensive range of textile fibres. Volume 2 begins by reviewing natural fibres such as cellulosic, cotton, protein, wool and silk fibres. Part two considers regenerated cellulosic, protein, alginate, chitin and chitosan fibres. The final part of the book discusses inorganic fibres such as glass, carbon and ceramic fibres as well as specialist fibres such as thermally

and chemically-resistant fibres, optical and hollow fibres. Chapters review how fibre structure contributes to key mechanical properties. A companion volume reviews the structure of manufactured polymer fibres. Edited by leading authorities on the subject and with a team of international authors, the two volumes of the Handbook of textile fibre structure is an essential reference for textile technologists, fibre scientists, textile engineers and those in academia. Discusses how fibre structure contributes to key mechanical properties Reviews natural fibres such as cellulosic, cotton and silk fibres and considers various regenerated fibres Examines inorganic fibres including glass and carbon as well as specialist fibres such as chemically-resistant and optical fibres

Pulp and Paper Industry Pratima Bajpai 2016-09-27 Pulp and Paper Industry: Nanotechnology in Forest Industry covers the latest scientific and technical advances in the area of nanotechnology in forest sector providing information on recent developments, structure and properties, raw materials and methods for the production of nanocellulose along with their characterization and application in various industries with an analysis of both challenges and opportunities with respect to environmentally sound technologies and consumer concerns such as health effects. Also identifies the key barriers to innovation, and the breakthroughs required to make nanocellulosic materials viable alternatives in the important sectors. Thorough review of the evolution and development of different types of nanocelluloses In-depth coverage of preparation and characterization of nanocellulose Use of nanocellulose materials in a wide range of applications Commercial and precommercial developments Challenges and opportunities of nanocellulose market Identifies the key barriers to innovation, and the breakthroughs required to make nanocellulosic materials viable alternatives in the important sectors

Environmentally Friendly Technologies for the Pulp and Paper Industry Raymond A. Young 1997-11-19 Solving the pulp and paper industries' environmental problems is essential to maintaining the forest industry and accommodating the changing economic needs of forest communities. This book explores the construction of new mills--operating on new

technology that does not produce pollutants--which are vital to the pulp and paper industry.

Introduction to Renewable Biomaterials Ali S. Ayoub 2017-09-08
Covers the entire evolutionary spectrum of biomass, from its genetic modification and harvesting, to conversion technologies, life cycle analysis, and its value to the current global economy This original textbook introduces readers to biomass—a renewable resource derived from forest, agriculture, and organic-based materials—which has attracted significant attention as a sustainable alternative to petrochemicals for large-scale production of fuels, materials, and chemicals. The current renaissance in the manipulation and uses of biomass has been so abrupt and focused, that very few educational textbooks actually cover these topics to any great extent. That’s why this interdisciplinary text is a welcome resource for those seeking a better understanding of this new discipline. It combines the underpinning science of biomass with technology applications and sustainability considerations to provide a broad focus to its readers. Introduction to Renewable Biomaterials: First Principles and Concepts consists of eight chapters on the following topics: fundamental biochemical & biotechnological principles; principles and methodologies controlling plant growth and silviculture; fundamental science and engineering considerations; critical considerations and strategies for harvesting; first principles of pretreatment; conversion technologies; characterization methods and techniques; and life cycle analysis. Each chapter includes a glossary of terms, two to three problem sets, and boxes to highlight novel discoveries and instruments. Chapters also offer questions for further consideration and suggestions for further reading. Developed from a successful USDA funded course, run by a partnership of three US universities: BioSUCCEED - BioProducts Sustainability, a University Cooperative Center for Excellence in Education Covers the entire evolutionary spectrum of biomass, from genetic modification to life cycle analysis Presents the key chemistry, biology, technology, and sustainability aspects of biomaterials Edited by a highly regarded academic team, with extensive research and teaching experience in the

field Introduction to Renewable Biomaterials: First Principles and Concepts is an ideal text for advanced academics and industry professionals involved with biomass and renewable resources, bioenergy, biorefining, biotechnology, materials science, sustainable chemistry, chemical engineering, crop science and technology, agriculture.

Steam Explosion Techniques Bonaventura Focher 1991 Steam explosion is a rapidly developing technique for the fractionation and modification of lignocellulosics and for the extraction of industrial polysaccharides. This book is a primary integrated presentation of the fundamental and technological aspects of this process, and provides an exhaustive discussion of its prospects for the future. The main topics concern the kinetic and engineering aspects as well as the structure modifications of the substrates, induced by the steam explosion process. Applications in the pulping and textile industries, in the bioconversion of wood and agricultural biomass, and in polysaccharide extraction are widely discussed. Potential developments of this technique in the activation of lignocellulosics for dissolving and the production of new textile fibers and films are also considered.

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