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Extracellular Sugar-Based Biopolymers Matrices Ephraim Cohen 2019-07-02 The extracellular matrix (ECM) is an acellular three-dimensional network composed of proteins, glycoproteins, proteoglycans and exopolysaccharides. It primarily serves as a structural component in the tissues and organs of plants and animals, or forms biofilms in which bacterial cells are embedded. ECMs are highly dynamic structures that undergo continuous remodeling, and disruptions are frequently the result of pathological processes associated with severe diseases such as arteriosclerosis, neurodegenerative illness or cancer. In turn, bacterial biofilms are a source of concern for human health, as they are associated with resistance to antibiotics. Although exopolysaccharides are crucial for ECM formation and function, they have received considerably little attention to date. The respective chapters of this book comprehensively address such issues, and provide reviews on the structural, biochemical, molecular and biophysical properties of exopolysaccharides. These components are abundantly produced by virtually all taxa including bacteria, algae, plants, fungi, invertebrates and vertebrates. They include long unbranched homopolymers (cellulose, chitin/chitosan), linear copolymers (alginate, agarose), peptoglycans such as murein, heteropolymers like a variety of glycosaminoglycans (hyaluronan, dermatan, keratin, heparin, Pel), and branched heteropolymers such as pectin and hemicellulose. A separate chapter is dedicated to modern industrial and biomedical applications of exopolysaccharides and polysaccharide-based biocomposites. Their unique chemical, physical and mechanical properties have attracted considerable interest, inspired basic and applied research, and have already been harnessed to form structural biocomposite hybrids for tailor-made applications in regenerative medicine, bioengineering and biosensor design. Given its scope, this book provides a substantial source of basic and applied information for a wide range of scientists, as well as valuable textbook for graduate and advanced undergraduate students.
Cumulated Index Medicus 1992
Polymer Nanocomposites Xingyi Huang 2016-05-06 This book focuses on the fundamental principles and recent progress in the field of electrical and thermal properties of polymer nanocomposites. The physical and chemical natures determining the electrical and thermal properties of polymer nanocomposites are discussed in detail. The authors describe the range of traditional and emerging polymer nanocomposites from nanoparticle and polymer composites to novel nanostructure based polymer nanocomposites. They include novel properties and potential applications, such as high-k, low-k, high thermal conductivity, antistatic, high voltage insulation, electric stress control, and thermal energy conversion among others.
Supramolecular Assembly Via Hydrogen Bonds II David M.P. Mingos 2004-02-20
Food Biosynthesis Alexandru Mihai Grumezescu 2017-06-19 Food Biosynthesis, Volume One in the Handbook of Food Bioengineering series, describes the main aspects related to the biological production of synthetic ingredients and natural foods, highlighting the impact of bacteria and plants in the biosynthesis of key food components. Biosynthesis methods could help solve issues like food shortages, providing consumers with preferred ‘natural’ food options. This book represents how biologically synthesized ingredients, such as vanilla flavoring, soy, milk and egg substitutes can be utilized as a desired option future foods. It is ideal for scientists and researchers who want to improve their knowledge on the field of food biosynthesis. Presents practical approaches of biosynthesis and the impact of biological origin on the field of food engineering Offers alternative applications to produce natural foods Includes processes and techniques to produce health promoting foods Discusses the positive effects of biosynthesis on microbial production to enhance food safety Offers a variety of perspectives on biosynthesis and its benefits for food ingredient production
Handbook on Spray Drying Applications for Food Industries M. Selvamuthukumaran 2019-07-12 Spray drying is a mechanical process by which materials in liquid form can be converted into solid form such as powders. It is a rapid, continuous, cost-effective, reproducible and scalable process for producing dry powders from a fluid material by atomization through an atomizer into a hot drying gas medium, usually air. The Handbook on Spray Drying Applications for Food Industries deals with recent techniques adopted in spray drying systems for drying a vast array of food products, novel and emerging tools used for spray drying of antioxidant rich products, optimized conditions used for extraction and production of herbal powders by using spray drying techniques, and problems encountered during spray drying of acid and sugar rich foods and also various herbal powders. The book discusses the encapsulation of flavors by using the spray drying process providing a comparison with other encapsulation techniques. It reviews the retention of bioactive compounds and the effect of different parameters on bioactive compounds during spray drying of juice. Moreover, the book explains the effect of novel approaches of spray drying on nutrients. The book addresses strategies adopted for retention of nutrients and survival of probiotic bacteria during spray drying processing. It also identifies packaging material needed for enhanced product stability. The safety and quality aspects of manufacturing spray dried food products are discussed. Key Features: Describes the design of high performance spray drying systems Highlights the strategy adopted for maximizing the yield potential of various spray dried food products Discusses strategies adopted for retention of nutrients and survival of probiotic bacteria during spray drying process Contains charts, procedure flow sheets, tables, figures, photos, and a list of spray drying equipment suppliers This book will benefit entrepreneurs, food scientists, academicians and students by providing in-depth knowledge about spray drying of foods for quality retention and also for efficient consumer acceptability of finished products.
Chromatography James M. Miller 2005-12-16 The first edition of Chromatography: Concepts and Contrasts,published in 1988, was one of the first books to discuss all thedifferent types of chromatography under one cover. The secondedition continues with these principles but has been updated toinclude new chapters on sampling and sample preparation, capillaryelectrophoresis and capillary electrochromatography (CEC),chromatography with mass spec detection, and industrial andgovernmental practices in regulated industries. Covers extraction, solid phase extraction (SPE), and solidphase microextraction (SPME), and introduces mass spectrometry Updated with the latest techniques in chromatography Discusses both liquid chromatography (LC)and gaschromatography(GC)
Nanomaterials for Sustainable Energy Quan Li 2016-05-12 This book presents the unique mechanical, electrical, and optical properties of nanomaterials, which play an important role in the recent advances of energy-related applications. Different nanomaterials have been employed in energy saving, generation, harvest, conversion, storage, and transport processes very effectively and efficiently. Recent progress in the preparation, characterization and usage of 1D, 2D nanomaterials and hybrid architectures for energy-related applications and relevant technologies and devices, such as solar cells, thermoelectronics, piezoelectronics, solar water splitting, hydrogen production/storage, fuel cells, batteries, and supercapacitors is covered. Moreover, the book also highlights novel approaches in nanomaterials design and synthesis and evaluating materials sustainability issues. Contributions from active and leading experts regarding important aspects like the synthesis, assembly, and properties of nanomaterials for energy-related applications are compiled into a reference book. As evident from the diverse topics, the book will be very valuable to researchers working in the intersection of physics, chemistry, biology, materials science and engineering. It may set the standard and stimulates future developments in this rapidly emerging fertile frontier of nanomaterials for energy.
Functional Foods and Dietary Supplements Athapol Noomhorm 2014-03-11 Functional foods are foods which contain bioactive components, either from plant or animal sources, which can have health benefits for the consumer over and above their nutritional value. Foods which have antioxidant or cancer-

combating components are in high demand from health conscious consumers: much has been made of the health-giving qualities of fruits and vegetables in particular. Conversely, foods which have been processed are suffering an image crisis, with many consumers indiscriminately assuming that any kind of processing robs food of its “natural goodness”. To date, there has been little examination of the actual effects – whether positive or negative – of various types of food processing upon functional foods. This book highlights the effects of food processing on the active ingredients of a wide range of functional food materials, with a particular focus on foods of Asian origin. Asian foods, particularly herbs, are becoming increasingly accepted and demanded globally, with many Western consumers starting to recognize and seek out their health-giving properties. This book focuses on the extraction of ingredients which from materials which in the West are seen as “alternative” - such as flour from soybeans instead of wheat, or bran and starch from rice – but which have long histories in Asian cultures. It also highlight the incorporation of those bioactive compounds in foods and the enhancement of their bioavailability. Functional Foods and Dietary Supplements: Processing Effects and Health Benefits will be required reading for those working in companies, research institutions and universities that are active in the areas of food processing and agri-food environment. Food scientists and engineers will value the new data and research findings contained in the book, while environmentalists, food regulatory agencies and other food industry personnel involved in functional food production or development will find it a very useful source of information.

Nanostructures for Antimicrobial and Antibiofilm Applications Ram Prasad 2021-05-13 In the pursuit of technological advancement in the field of biotechnology and pharmaceutical industries to counteract health issues, bacterial infections remain a major cause of morbidity and mortality. The ability of bacterial pathogens to form biofilms further agglomerates the situation by showing resistance to conventional antibiotics. To overcome this serious issue, bioactive metabolites and other natural products were exploited to combat bacterial infections and biofilm-related health consequences. Natural products exhibited promising results in vitro, however; their efficacy in in vivo conditions remain obscured due to their low-solubility, bioavailability, and biocompatibility issues. In this scenario, nanotechnological interventions provide a multifaceted platform for targeted delivery of bioactive compounds by slow and sustained release of drug-like compounds. The unique physico-chemical properties, biocompatibility and eco-friendly nature of bioinspired nanostructures has revolutionized the field of biology to eradicate microbial infections and biofilm-related complications. The green-nanotechnology based metal and metal oxide nanoparticles and polymeric nanoparticles have been regularly employed for antimicrobial and antibiofilm applications without causing damage to host tissues. The implications of these nanoparticles toward achieving sustainability in agriculture by providing systemic resistance against a variety of phytopathogens therefore plays crucial role in growth and crop productivity. Also the advent of smart and hybrid nanomaterials such as metal-based polymer nanocomposites, lipid-based nanomaterials and liposomes have the inherent potential to eradicate bacterial biofilm-related infections in an efficient manner. The recent development of carbon-based nanomaterials such as carbon nanotubes (CNTs) and silica based nanomaterials such as mesoporous silica nanoparticles (MSNs) also exploit a target of dreadful healthcare conditions such as cancer, immunomodulatory diseases, and microbial infections, as well as biofilm-related issues owing to their stability profile, biocompatibility, and unique physio-chemical properties. Recently novel physical approaches such as photothermal therapy (PTT) and antimicrobial photodynamic therapy (aPDT) also revolutionized conventional strategies and are engaged in eradicating microbial biofilm-related infections and related health consequences. These promising advancements in the development of novel strategies to treat microbial infections and biofilm-related multidrug resistance (MDR) phenomenon may provide new avenues and aid to conventional antimicrobial therapeutics.

Proceedings of the 2012 International Conference on Applied Biotechnology (ICAB 2012) Tong-Cun Zhang 2013-11-29 The 2012 International Conference on Applied Biotechnology (ICAB 2012) was held in Tianjin, China on October 18-19, 2012. It provides not only a platform for domestic and foreign researchers to exchange their ideas and experiences with the application-oriented research of biotechnology, but also an opportunity to promote the development and prosperity of the biotechnology industry. The proceedings of ICAB 2012 mainly focus on the world's latest scientific research and techniques in applied biotechnology, including Industrial Microbial Technology, Food Biotechnology, Pharmaceutical Biotechnology, Environmental Biotechnology, Marine Biotechnology, Agricultural Biotechnology, Biological Materials and Bio-energy Technology, Advances in Biotechnology, and Future Trends in Biotechnology. These proceedings are intended for scientists and researchers engaging in applied biotechnology. Professor Pingkai Ouyang is the President of the Nanjing University of Technology, China. Professor Tongcun Zhang is the Director of the Key Laboratory of Industrial Fermentation Microbiology of the Ministry of Education at the College of Bioengineering, Tianjin University of Science and Technology, China. Dr. Samuel Kaplan is a Professor at the Department of Microbiology & Molecular Genetics at the University of Texas at Houston Medical School, Houston, Texas, USA. Dr. Bill Skarnes is a Professor at Wellcome Trust Sanger Institute, United Kingdom.

Food Processing: Strategies for Quality Assessment Abdul Malik 2014-11-05 The aim of the food processing is to ensure microbiological and chemical safety of foods, adequate nutrient content and bioavailability and acceptability to the consumer with regard to sensory properties and ease of preparation. Processing may have either beneficial or harmful effects on these properties, so each of these factors must be taken into account in the design and preparation of foods. This book offers a unique dealing with the subject and provides not only an update of state-of-the art techniques in many critical areas of food processing and quality assessment, but also the development of value added products from food waste, safety and nanotechnology in the food and agriculture industry and looks into the future by defining current obstacles and future research goals. This book is not intended to serve as an encyclopedic review of the subject. However, the various chapters incorporate both theoretical and practical aspects and may serve as baseline information for future research through which significant development is possible.

Chemistry for a Clean and Healthy Planet Ponnadurai Ramasami 2019-09-03 These proceedings gather carefully selected, peer-reviewed contributions from the International Conference on Pure and Applied Chemistry (ICPAC 2018). The event, the latest installment in a biennial conference series, was held in July 2018 in Mauritius. The respective chapters in this unique collection reflect a wide range of fundamental and applied research in the chemical sciences and various interdisciplinary subjects. In addition to reviews, they highlight cutting-edge advances.

'Essentials of Cancer Genomic, Computational Approaches and Precision Medicine Nosheen Masood 2020-03-20 This book concisely describes the role of omics in precision medicine for cancer therapies. It outlines our current understanding of cancer genomics, shares insights into the process of oncogenesis, and discusses emerging technologies and clinical applications of cancer genomics in prognosis and precision-medicine treatment strategies. It then elaborates on recent advances concerning transcriptomics and translational genomics in cancer diagnosis, clinical applications, and personalized medicine in oncology. Importantly, it also explains the importance of high-performance analytics, predictive modeling, and system biology in cancer research. Lastly, the book discusses current and potential future applications of pharmacogenomics in clinical cancer therapy and cancer drug development.

Bio-Based Plant Oil Polymers and Composites Samy Madbouly 2015-08-27 Bio-based Plant Oil Polymers and Composites provides engineers and materials scientists a useful framework to help take advantage of the latest research conducted in this rapidly advancing field—enabling them to develop and commercialize their own products quickly and more successfully. Plant oil is one of the most attractive options as a substitute for non-renewable resources in polymers and composites, and is producing materials with very promising thermomechanical properties relative to traditional, petroleum-based polymers. In addition to critical processing and characterization information, the book assists engineers in deciding whether or not they should use a plant oil-based polymer over a petroleum-based polymer, discussing sustainability concerns, biodegradability, associated costs, and recommended applications. The book details the advancements in the development of polymeric materials and composites from plant oils, and provides a critical review of current applications in various fields, including packaging, biomedical, and automotive applications. Also includes the latest progress in developing multifunctional biobased polymers—by increasing thermal conductivity or adding antibacterial properties, for example. Essential coverage of processing, characterization, and the latest research into polymeric materials and composites derived from plant oils (thermoplastics, thermosets, nanocomposites, and fiber reinforced composites) Critically reviews the potential applications of plant oil-based polymers, including sensors, structural parts, medical devices, and automotive interiors Includes the latest developments in multifunctional bio-based polymer composites

The Patient History: Evidence-Based Approach Mark Henderson 2012-06-13 The definitive evidence-based introduction to patient history-taking NOW IN FULL COLOR For medical students and other health professions students, an accurate differential diagnosis starts with The Patient History. The ideal companion to major textbooks on the physical examination, this trusted guide is widely acclaimed for its skill-building, and evidence based approach to the medical history. Now in full color, The Patient History defines best practices for the patient interview, explaining how to effectively elicit information from the patient in order to generate an accurate differential diagnosis. The second edition features all-new chapters, case scenarios, and a wealth of diagnostic algorithms. Introductory chapters articulate the fundamental principles of medical interviewing. The book employs a rigorous evidenced-based approach, reviewing and highlighting relevant citations from the literature throughout each chapter. Features NEW! Case scenarios introduce each chapter and place

history-taking principles in clinical context NEW! Self-assessment multiple choice Q&A conclude each chapter—an ideal review for students seeking to assess their retention of chapter material NEW! Full-color presentation Essential chapter on red eye, pruritus, and hair loss Symptom-based chapters covering 59 common symptoms and clinical presentations Diagnostic approach section after each chapter featuring color algorithms and several multiple-choice questions Hundreds of practical, high-yield questions to guide the history, ranging from basic queries to those appropriate for more experienced clinicians

Ewing's Analytical Instrumentation Handbook, Fourth Edition Nelu Grinberg 2019-02-21 This handbook is a guide for workers in analytical chemistry who need a starting place for information about a specific instrumental technique. It gives a basic introduction to the techniques and provides leading references on the theory and methodology for an instrumental technique. This edition thoroughly expands and updates the chapters to include concepts, applications, and key references from recent literature. It also contains a new chapter on process analytical technology.

Stem Cell Research and Therapeutics Yanhong Shi 2008-07-15 This book is an updated reference for one of the most exciting field of biomedical researches- Stem Cell Research and its therapeutic applications. Stem cell research holds great promise for the treatment of many human diseases that currently lack effective therapies. The set of chapters in this book provide insights into both basic stem cell biology and clinical applications of stem cell-based cell replacement therapies for a variety of human diseases, including cardiovascular diseases, neurological disorders, and li ver degeneration. It also covers novel technologies for the culture and differentiation of both human embryonic stem cells and adult tissue stem cells. This book summarizes our current state of knowledge in stem cell research and integrates basic stem cell biology with regenerative medicine in an overall context. It is an essential reference for students, postdoctoral fellows, academic and industrial scientists, and clinicians. v Acknowledgements The editors would like to thank Ms. Jill Brantley, Rose Chavarin, Alina Haas, and Emily Sun for their administrative assistance and proof-reading of this book. We would also like to thank all the authors for their contributions. vii The editors wish to dedicate this book to our mentors Ron Evans, Fred Gage, and, in memory of Daniel E. Koshland, Jr. Contents Preface . . . . . v Acknowledgements . . . . . vii Contributors . . . . . xi 1 Retinal Pigment Epithelial Cells: Development In Vivo and Derivation from Human Embryonic Stem Cells In Vitro for Treatment of Age-Related Macular Degeneration . . . . . 1 Dennis O. Clegg, David Buchholz, Sherry Hikita, Teisha Rowland, Qirui Hu, and Lincoln V.

Composite Materials Kamal K. Kar 2016-10-14 Composite materials are used as substitutions of metals/traditional materials in aerospace, automotive, civil, mechanical and other industries. The present book collects the current knowledge and recent developments in the characterization and application of composite materials. To this purpose the volume describes the outstanding properties of this class of advanced material which recommend it for various industrial applications.

8th European Medical and Biological Engineering Conference Tomaz Jarm 2020-11-29 This book aims at informing on new trends, challenges and solutions, in the multidisciplinary field of biomedical engineering. It covers traditional biomedical engineering topics, as well as innovative applications such as artificial intelligence in health care, tissue engineering , neurotechnology and wearable devices. Further topics include mobile health and electroporation-based technologies, as well as new treatments in medicine. Gathering the proceedings of the 8th European Medical and Biological Engineering Conference (EMBEC 2020), held on November 29 - December 3, 2020, in Portorož, Slovenia, this book bridges fundamental and clinically-oriented research, emphasizing the role of education, translational research and commercialization of new ideas in biomedical engineering. It aims at inspiring and fostering communication and collaboration between engineers, physicists, biologists, physicians and other professionals dealing with cutting-edge themes in and advanced technologies serving the broad field of biomedical engineering.

Pollutants from Energy Sources Rashmi Avinash Agarwal 2019 This book discusses different aspects of energy consumption and environmental pollution, describing in detail the various pollutants resulting from the utilization of natural resources and their control techniques. It discusses diagnostic techniques in a simple and easy-to-understand manner. It will be useful for engineers, agriculturists, environmentalists, ecologists and policy makers involved in area of pollutants from energy, environmental safety, and health sectors.

Polymeric and Natural Composites Md Saquib Hasnain 2021-07-14 This book provides understanding of raw materials, manufacturing and biomedical applications of different polymeric and natural composites such as drug delivery, growth factor delivery, orthopedics, dentistry and wound dressing.

A New Generation Material Graphene: Applications in Water Technology Mu. Naushad 2018-06-20 This book presents a unique collection of up-to-date applications of graphene for water science. Because water is an invaluable resource and the intelligent use and maintenance of water supplies is one of the most important and crucial challenges that stand before mankind, new technologies are constantly being sought to lower the cost and footprint of processes that make use of water resources as potable water as well as water for agriculture and industry, which are always in desperate demand. Much research is focused on graphene for different water treatment uses. Graphene, whose discovery won the 2010 Nobel Prize in physics, has been a shining star in the material science in the past few years. Owing to its interesting electrical, optical, mechanical and chemical properties, graphene has found potential applications in a wide range of areas, including water purification technology. A new type of graphene-based filter could be the key to managing the global water crisis. According to the World Economic Forum's Global Risks Report, lack of access to safe, clean water is the biggest risk to society over the coming decade. Yet some of these risks could be mitigated by the development of this filter, which is so strong and stable that it can be used for extended periods in the harshest corrosive environments, and with less maintenance than other filters on the market. The graphene-based filter could be used to filter chemicals, viruses, or bacteria from a range of liquids. It could be used to purify water, dairy products or wine, or in the production of pharmaceuticals. This book provides practical information to all those who are involved in this field.

Recent Advances in Natural Products Analysis Seyed Mohammad Nabavi 2020-03-07 Recent Advances in Natural Products Analysis is a thorough guide to the latest analytical methods used for identifying and studying bioactive phytochemicals and other natural products. Chemical compounds, such as flavonoids, alkaloids, carotenoids and saponins are examined, highlighting the many techniques for studying their properties. Each chapter is devoted to a compound category, beginning with the underlying chemical properties of the main components followed by techniques of extraction, purification and fractionation, and then techniques of identification and quantification. Biological activities, possible interactions, levels found in plants, the effects of processing, and current and potential industrial applications are also included. Focuses on the latest analytical techniques used for studying phytochemical and other biological compounds Authored and edited by the top worldwide experts in their field Discusses the current and potential applications and predicts future trends of each compound group

The International Jute Commodity System Chhabilendra Roul 2009 The jute commodity system as prevalent in the Indian subcontinent is a conglomeration of paradoxes. Jute was once called the golden fibre on account of its contribution to means of livelihood to millions of farmers, traders, manufacturers in the unorganized sector, mill workers in the organized sector as well scores of people employed in the service sector relating to trading, manufacturing and exports of jute and jute goods. Jute industry along with textile manufacturing provided the foundation of modern manufacturing industry in India. Simultaneously, this industry was also the fountain head of the growth of private entrepreneurship and capital in India. Most of the traditional Industrial Houses in India grew out of trading and manufacturing of jute and jute goods, coal and tea. On the other hand most of the farmers involved in cultivation of natural fibres like jute are small and marginal farmers. Without alternative avenues of gainful employment elsewhere, these millions in South Asia would be deprived of a part of their livelihood. The entire commodity chain of natural fibres is characterized by low productivity, low value addition, high volumes and low returns. The advent and discovery of mineral oil helped exploit cheap HDPE and PP polyethylene sacks, which started replacing the natural fibre based packaging materials. As a result, the jute industry got wiped out from Europe, America and the Far East. Today, it is survived in the Indian subcontinent and to a lesser extent in Brazil. The unique feature of the volume is that it focuses on the first hand experience of the policy-makers and other stakeholders in the jute commodity system, who are confronted with a dilemma of reviving a declining economic subsector. At this juncture, when there is need for a Commodity Development Strategy suitable to the ethos of a commodity like the jute fibre, the present, volumes attempts to devise such a strategy thorough analysis of the system based on authentic and up-to-date information. The Book furnishes an erudite analysis and stock-taking of the jute commodity system. This analysis points out to the fact that there is a need for a holistic, systemic approach to the problems being faced by this sector focusing on the economic exploitation of the whole jute plant; holistic research for addressing productivity and processing efficiency in the entire commodity chain of jute; and creating a network of organisations for advocacy for jute and allied fibres, which would focus on repositioning the golden fibre as sustainable and eco-friendly commodity with the help of green and sustainable development advocacy groups. The Commodity Development Strategy

highlights the need for greater effort for significant degree of product diversification which would entail significant consumption of the fibre or fabric in volume terms. The volume ends with an optimistic note with ideas of inclusive development under the Millennium Development Goals and Carbon Credits Sustainable Development under the United Nations Framework Convention on Climate Change the welcome paradigm shifts in the approach to the jute sector. The effort by Sh Roul is a timely one on the eve of the observance of 2009 as International Year for Natural Fibres by the United Nations. The book is quite comprehensive with its focus on a wide range of issues pertaining to the jute agri-commodity system addressed against a historical background and from macro-economic analytical perspective. The volume offers stimulating reading for those interested in the dynamics of agricultural commodity systems like jute and allied fibres. The book is expected to help sensitise national governments, international organizations and nongovernmental organizations towards the eco-sustainability of jute as a natural fibre. The book can serve as an excellent reference book for post-graduate students in economics, jute and textiles management, development studies, regional development and agriculture and agro-marketing.

Cardiac Tissue Engineering Emil Ruvinov 2012 Cardiac tissue engineering aims at repairing damaged heart muscle and producing human cardiac tissues for application in drug toxicity studies. This book offers a comprehensive overview of the cardiac tissue engineering strategies, including presenting and discussing the various concepts in use, research directions and applications. Essential basic information on the major components in cardiac tissue engineering, namely cell sources and biomaterials, is firstly presented to the readers, followed by a detailed description of their implementation in different strategies, broadly divided to cellular and acellular ones. In cellular approaches, the biomaterials are used to increase cell retention after implantation or as scaffolds when bioengineering the cardiac patch, in vitro. In acellular approaches, the biomaterials are used as ECM replacement for damaged cardiac ECM after MI, or, in combination with growth factors, the biomaterials assume an additional function as a depot for prolonged factor activity for the effective recruitment of repairing cells. The book also presents technological innovations aimed to improve the quality of the cardiac patches, such as bioreactor applications, stimulation patterns and prevascularization. This book could be of interest not only from an educational perspective (i.e. for graduate students), but also for researchers and medical professionals, to offer them fresh views on novel and powerful treatment strategies. We hope that the reader will find a broad spectrum of ideas and possibilities described in this book both interesting and convincing. Table of Contents: Introduction / The Heart---Structure, Cardiovascular Diseases, and Regeneration / Cell Sources for Cardiac Tissue Engineering / Biomaterials -- Polymers, Scaffolds, and Basic Design Criteria / Biomaterials as Vehicles for Stem Cell Delivery and Retention in the Infarct / Bioengineering of Cardiac Patches, \textit {In Vitro / Perfusion Bioreactors and Stimulation Patterns in Cardiac Tissue Engineering / Vascularization of Cardiac Patches / Acellular Biomaterials for Cardiac Repair / Biomaterial-based Controlled Delivery of Bioactive Molecules for Myocardial Regeneration

Nanomaterials Charles Lutz 2009-01-16 Many potential questions regarding the risks associated with the development and use of wide-ranging technologies enabled through engineered nanomaterials. For example, with over 600 consumer products available globally, what information exists that describes their risk to human health and the environment? What en- neering or use controls can be deployed to minimize the potential environmental health and safety impacts of nanomaterials throughout the manufacturing and product lifecycles? How can the potential environmental and health benefits of nanotechnology be realized and maximized? The idea for this book was conceived at the NATO Advanced Research Workshop (ARW) on “Nanomaterials: Environmental Risks and Benefits and Emerging Consumer Products. ” This meeting – held in Algarve, Portugal, in April 2008 – started with building a foundation to harmonize risks and benefits associated with nanomaterials to develop risk management approaches and policies. More than 70 experts, from 19 countries, in the fields of risk assessment, decision-analysis, and security discussed the current state-of-knowledge with regard to nanomaterial risk and benefits. The discussion focused on the adequacy of available risk assessment tools to guide nanomaterial applications in industry and risk governance. The workshop had five primary purposes: Describe the potential benefits of nanotechnology enabled commercial products. Identify and describe what is known about environmental and human health risks of nanomaterials and approaches to assess their safety. Assess the suitability of multicriteria decision analysis for reconciling the benefits and risks of nanotechnology.

Proceedings of the 2nd International Conference on Computational and Bio Engineering S. Jyothi 2021-09-27 This book presents the peer-reviewed proceedings of the 2nd International Conference on Computational and Bioengineering (CBE 2020) jointly organized in virtual mode by the Department of Computer Science and the Department of BioScience & Sericulture, Sri Padmavati Mahila Visvavidyalayam (Women's University), Tirupati, Andhra Pradesh, India, during 4–5 December 2020. The book includes the latest research on advanced computational methodologies such as artificial intelligence, data mining and data warehousing, cloud computing, computational intelligence, soft computing, image processing, Internet of things, cognitive computing, wireless networks, social networks, big data analytics, machine learning, network security, computer networks and communications, bioinformatics, biocomputing/biometrics, computational biology, biomaterials, bioengineering, and medical and biomedical informatics.

Green Separation Processes Carlos A. M. Afonso 2006-05-12 This timely book is the first to provide a comprehensive overview of all important aspects of this modern technology with the focus on the "green aspect". The expert authors present everything from reactions without solvents to nanostructures for separation methods, from combinatorial chemistry on solid phase to dendrimers. The result is a ready reference packed full of valuable facts on the latest developments in the field - high-quality information otherwise widely spread throughout articles and reviews. From the contents: * Green chemistry for sustainable development * New synthetic methodologies and the demand for adequate separation processes * New developments in separation processes * Future trends and needs It is a "must-have" for every researcher in the field.

Nanobiotechnology Applications in Plant Protection Kamel A. Abd-Elsalam 2019-10-04 Nanobiotechnology Applications in Plant Protection: Volume 2 continues the important and timely discussion of nanotechnology applications in plant protection and pathology, filling a gap in the literature for nano applications in crop protection. Nanobiopesticides and nanobioformulations are examined in detail and presented as powerful alternatives for eco-friendly management of plant pathogens and nematodes. Leading scholars discuss the applications of nanobiomaterials as antimicrobials, plant growth enhancers and plant nutrition management, as well as nanodiagnostic tools in phytopathology and magnetic and supramagnetic nanostructure applications for plant protection. This second volume includes exciting new content on the roles of biologically synthesized nanoparticles in seed germination and zinc-based nanostructures in protecting against toxigenic fungi. Also included is new research in phytotoxicity, nano-scale fertilizers and nanomaterial applications in nematology and discussions on Botyris grey mold and nanobiocontrol. This book also explores the potential effects on the environment, ecosystems and consumers and addresses the implications of intellectual property for nanobiopesticides. Further discussed are nanotoxicity effects on the plant ecosystem and nano-applications for the detection, degradation and removal of pesticides.

Progress and Prospects in the Management of Oxyanion Polluted Aqua Systems Nurudeen A. Oladoja 2021-07-01 This book is a compendium of research efforts and findings on the sources, occurrences, hydrochemistry, and several operating variables that influence the presence of oxyanions in aqua system. The content of this book has been designed to provide an insightful account of an array of innovative technologies for the management of the impacts of oxyanions in water, the progress and drawbacks of these technologies and those that have been effectively deployed to transform oxyanions in water to beneficial species. This book further x-rays global laws and economic policies targeted at effectively curtailing the presence of harmful oxyanions in water, challenges facing these policies, and future perspectives on how best to reduce the level of these harmful oxyanions in water to safe limit. The book is relevant to water professionals, policy makers, academics, and research students.

Prominin-1 (CD133): New Insights on Stem & Cancer Stem Cell Biology Denis Corbeil 2012-11-19 ???????Prominin-1 or otherwise known as CD133 is a glycoprotein that is present in humans and mice. Since the first description of prominin in 1997, in mouse neuroepithelial cells and in human hematopoietic stem cells as AC133 antigen, this molecule has aroused a large interest especially, as a stem cell marker, that gave rise to an ever growing body of publications and more recently its expression in cancer stem cells. Controversies as to its role as a cancer stem and its detection in different models, as well as its use as a prognostic marker have emerged. Yet, beyond its use as a stem cell and cancer stem cell marker, prominin-1/CD133 displays unique biological features and appears of importance in other processes like for example in retinal biogenesis. Indeed, this five-transmembrane plasma membrane glycoprotein, which marks membrane protrusions is associated with several essential processes like cell polarity, asymmetric cell division and membrane remodeling. We propose to review current knowledge about this intriguing molecule and present pertinent information to determine the biological role of prominins and assess their importance in medicine and cancer research. The primary audience for this book is geared towards scientists and researchers with interest in cancer stem cells, stem cells, cell biology, neurobiology, and regenerative medicine.

Green Electrospinning Nesrin Horzum 2019-07-22 The last two decades have seen electrospinning of nanofibers performed mainly from solutions of toxic organic solvents. The increase in demand for scaling up electrospinning in recent years therefore requires an environmentally friendly process free of organic solvents. This book addresses techniques for clean and safe electrospinning in the fabrication of green nanofibers and their potential applications.

Symmetric and Asymmetric Data in Solution Models Jurgita Antucheviciene 2021-10-26 This book is a Printed Edition of the Special Issue that covers

research on symmetric and asymmetric data that occur in real-life problems. We invited authors to submit their theoretical or experimental research to present engineering and economic problem solution models that deal with symmetry or asymmetry of different data types. The Special Issue gained interest in the research community and received many submissions. After rigorous scientific evaluation by editors and reviewers, seventeen papers were accepted and published. The authors proposed different solution models, mainly covering uncertain data in multicriteria decision-making (MCDM) problems as complex tools to balance the symmetry between goals, risks, and constraints to cope with the complicated problems in engineering or management. Therefore, we invite researchers interested in the topics to read the papers provided in the book.

Composites in Biomedical Applications S. M. Sapuan 2020-09-27 Composites in Biomedical Applications presents a comprehensive overview on recent developments in composites and their use in biomedical applications. It features cutting-edge developments to encourage further advances in the field of composite research. Highlights a completely new research theme in polymer-based composite materials Outlines a broad range of different research fields, including polymer and natural fiber reinforcement used in the development of composites for biomedical applications Discusses advanced techniques for the development of composites and biopolymer-based composites Covers fatigue behavior, conceptual design in ergonomics design application, tissue regeneration or replacement, and skeletal bone repair of polymer composites Details the latest developments in synthesis, preparation, characterization, material evaluation, and future challenges of composite applications in the biomedical field This book is a comprehensive resource for advanced students and scientists pursuing research in the broad fields of composite materials, polymers, organic or inorganic hybrid materials, and nano-assembly.

Bio-Based Polymers and Composites Richard Wool 2011-08-30 Bio-Based Polymers and Composites is the first book systematically describing the green engineering, chemistry and manufacture of biobased polymers and composites derived from plants. This book gives a thorough introduction to bio-based material resources, availability, sustainability, biobased polymer formation, extraction and refining technologies, and the need for integrated research and multi-disciplinary working teams. It provides an in-depth description of adhesives, resins, plastics, and composites derived from plant oils, proteins, starches, and natural fibers in terms of structures, properties, manufacturing, and product performance. This is an excellent book for scientists, engineers, graduate students and industrial researchers in the field of bio-based materials. * First book describing the utilization of crops to make high performance plastics, adhesives, and composites * Interdisciplinary approach to the subject, integrating genetic engineering, plant science, food science, chemistry, physics, nano-technology, and composite manufacturing. * Explains how to make green materials at low cost from soyoil, proteins, starch, natural fibers, recycled newspapers, chicken feathers and waste agricultural by-products.

Functional Biopolymers Vijay Kumar Thakur 2017-10-25 This book presents the synthesis, processing and application of selected functional biopolymers as new advanced materials. It reviews theoretical advances as well as experimental results, opening new avenues for researchers in the field of polymers and sustainable materials. The book covers various aspects, including the structural analysis of functional biopolymers based materials; functional biopolymer blends; films, fibers, foams, composites and different advanced applications. A special emphasis is on cellulose-based functional polymers, but other types of functional biopolymers (e.g. from chitosan, starch, or plant oils) are also described.

Advances in Technical Nonwovens George Kellie 2016-05-17 Advances in Technical Nonwovens presents the latest information on the nonwovens industry, a dynamic and fast-growing industry with recent technological innovations that are leading to the development of novel end-use applications. The book reviews key developments in technical nonwoven manufacturing, specialist materials, and applications, with Part One covering important developments in materials and manufacturing technologies, including chapters devoted to fibers for technical nonwovens, the use of green recycled and biopolymer materials, and the application of nanofibres. The testing of nonwoven properties and the specialist area of composite nonwovens are also reviewed, with Part Two offering a detailed and wide-ranging overview of the many applications of technical nonwovens that includes chapters on automotive textiles, filtration, energy applications, geo- and agrotextiles, construction, furnishing, packaging and medical and hygiene products. Provides systematic coverage of trends, developments, and new technology in the field of technical nonwovens Focuses on the needs of the nonwovens industry with a clear emphasis on applied technology Contains contributions from an international team of authors edited by an expert in the field Offers a detailed and wide-ranging overview of the many applications of technical nonwovens that includes chapters on automotive textiles, filtration, energy applications, geo- and agrotextiles, and more

Spray Drying Handbook Keith Masters 1985 "This edition reflects the changes which have occurred in spray drying technology and plant design since the publication of the fourth edition. The author argues that spray drying will remain the most important dehydration technique available to convert pumpable fluid feedstocks into powders. Topics covered include the drying principles, a survey of auxiliary equipment and the applications of spray drying in industry. There is a new chpater on spray drying in environmental control and there is a list of spray drying patents issued within the last five years. This edition also contains more data and tables that cover operation and design information for a wide range of products."--Provided by the publisher.

Evaluation Technologies for Food Quality Jian Zhong 2019-04-16 Evaluation Technologies for Food Quality summarizes food quality evaluation technologies, which include sensory evaluation techniques and chemical and physical analysis. In particular, the book introduces many novel micro and nano evaluation techniques, such as atomic force microscopy, scanning electron microscopy, and other nanomaterial-based methods. All topics cover basic principles, procedures, advantages, limitations, recent technology development, and application progress in different types of foods. This book is a valuable resource for scientists in the field of food science, engineering, and professionals in the food industry, as well as for undergraduate and postgraduate students studying food quality evaluation technology. Explains basic principles, procedures, advantages, limitations, and current applications of recent food quality technologies Provides guidance on the understanding and application of food quality evaluation technology in the field of food research and food industry Introduces many novel micro/nano evaluation techniques, such as atomic force and scanning electron microscopies and other nanomaterial-based methods

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