

November 2012 Chemistry HL Paper

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Managing Indoor Climate Risks in Museums John Wiley & Sons

Volume 9: Historical Perspectives, Part B: Notable People in Mass Spectrometry of The Encyclopedia of Mass Spectrometry briefly reviews the lives and works of many of the major people who carried out this development, providing insights into the history of mass spectrometry applications through the personal stories of pioneers and innovators in the field. The book presents biographies of notable contributors, including Nobel Prize winners J. J. Thomson, Francis W. Aston, Wolfgang Paul, John B. Fenn, and Koichi Tanaka, along with other luminaries in the field, including Franz Hillenkamp, Catherine Clarke Fenselau, Alfred O. C. Nier, and many more, discussing not only the instruments and their uses, but also providing interesting information on the careers, characters, and life stories of the people who did the work. Highlights over 120 innovators in mass spectrometry, including several Nobel Prize winners Discusses instrumentation and their uses, also providing interesting information on the careers, characters, and life stories of the people who did the work Offers unique insight into the careers and personalities of luminaries in the field Coordinates with Volume 9: Historical Perspectives, Part A: The Development of Mass Spectrometry, an overview of mass spectrometry development and progress Ideal reference for those interested in a wide variety of topics, including analytical chemistry and chemical analysis, amongst others Encyclopedia of Agriculture and Food Systems Springer

Biotechnology harnesses cellular and biochemical systems to advance knowledge of the molecular cause of disease and to provide new diagnostic tools and more precisely targeted drugs. Within a decade, global investment in medical biotechnology has increased more than ten-fold, resulting in therapies for previously untreatable conditions. But what exactly is biotechnology and what are its origins? What further benefits to human health could it offer in the future? Written in an accessible style, contributors to this book explore the history behind different biotechnology tools, how they are used, and how they are reshaping the future of diagnostics, therapeutics and vaccines. Among the technologies examined are genetic engineering, DNA sequencing, monoclonal antibodies, stem cells, gene therapy, cancer immunotherapy and the most recent newcomer - synthetic biology. Applying new biotechnologies in medicine is not without great challenges. As medicines shift from small organic molecules to large, complex structures, such as therapeutic proteins, drugs become difficult to make, administer and regulate. This book will intrigue anyone interested in medicine and how we have been, and may continue to, engineer better health for ourselves. Such changes have major implications for how and where drugs are manufactured, the cost of medicine and the ethics of how far society is prepared to go to combat disease.

How Biotechnology Changed Medicine John Wiley & Sons

This latest Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) will again form the standard reference for all those concerned with climate change and its consequences, including students, researchers and policy makers in environmental science, meteorology, climatology, biology, ecology, atmospheric chemistry and environmental policy.

Ecological Sustainability National Academies Press

This book presents detailed information on the production and properties of carbon fibers derived from lignin precursors. Focusing on future directions in the carbon fiber industry, it also introduces a novel process for obtaining high-purity lignin, a key aspect in the manufacture of high-quality carbon fiber. Carbon fiber is currently the most preferred lightweight manufacturing material and is rapidly becoming the material of choice for manufacturers around the world. Although more than 80% of commercial carbon fiber is estimated to use PAN (polyacrylonitrile) as a precursor, carbon fiber manufactured from PAN is expensive and therefore its application is limited to high-performance structural materials. Lignin is the second most abundant biopolymer in nature after cellulose and offers a carbon-rich, renewable resource. As a byproduct of the pulp and paper industry and the production of cellulosic ethanol, lignin is also available at low cost, making it an economically attractive alternative to PAN for the production of carbon fibers, as highlighted in this book. The information presented will be of interest to all those involved in the investigation of carbon fiber materials, carbon fiber manufacturers and carbon fiber users.

STEM Education World Scientific

Introduction to Chemicals from Biomass, Second Edition presents an overview of the use of biorenewable resources in the 21st century for the manufacture of chemical products, materials and energy. The book demonstrates that biomass is essentially a rich mixture of chemicals and materials and, as such, has a tremendous potential as feedstock for making a wide range of chemicals and materials with applications in industries from pharmaceuticals to furniture. Completely revised and updated to reflect recent developments, this new edition begins with an introduction to the biorefinery concept, followed by chapters addressing the various types of available biomass feedstocks, including waste, and the different pre-treatment and processing technologies being developed to turn these feedstocks into platform chemicals, polymers, materials and energy. The book concludes with a discussion on the policies and strategies being put in place for delivering the so-called Bioeconomy. Introduction to Chemicals from Biomass is a valuable resource for academics, industrial scientists and policy-makers working in the areas of industrial biotechnology, biorenewables, chemical engineering, fine and bulk chemical production, agriculture technologies, plant science, and energy and power generation. We need to reduce our dependence on fossil resources and increasingly derive all the chemicals we take for granted and use in our daily life from biomass – and we must make sure that we do this using green chemistry and sustainable technologies! For more information on the Wiley Series in Renewable Resources, visit www.wiley.com/go/rrs Topics covered include: • The biorefinery concept • Biomass feedstocks • Pre-treatment technologies • Platform molecules from renewable resources • Polymers from bio-based monomers • Biomaterials • Bio-based energy production Praise for the 1st edition: “ Drawing on the expertise of the authors the book involves a degree of plant biology and chemical engineering, which illustrates the multidisciplinary nature of the topic beautifully ” - Chemistry World

Carbon Fibre from Lignin IGI Global

This concise guide provides the content needed for the Chemistry IB diploma at both Standard and Higher Level. It follows the structure of the IB Programme exactly and includes all the options. Each topic is presented on its own page for clarity, Higher Level material is clearly indicated, and there are plenty of practice questions. The text is written with an awareness that English might not be the reader's first language

Solid-Phase Extraction The World Scientific Handbook Of Energy

Since the industrial revolution, chlorine remains an iconic molecule even though its production by the electrolysis of sodium chloride is extremely energy intensive. The rationale behind this book is to present useful and industrially relevant examples for alternatives to chlorine in synthesis. This multi-authored volume presents numerous contributions from an international spectrum of authors that demonstrate how to facilitate the development of industrially relevant and implementable breakthrough technologies. This volume will interest individuals working in organic synthesis in industry and academia who are working in Green Chemistry and Sustainable Technologies.

Concepts, Methodologies, Tools, and Applications Royal Society of Chemistry

Cutting-edge techniques have always been utilized in petroleum exploration and production to reduce costs and improve efficiencies.

The demand for petroleum in the form of oil and gas is expected to increase for electricity production, transport and chemical production, largely driven by an increase in energy consumption in the developing world. Innovations in analytical methods will continue to play a key role in the industry moving forwards as society shifts towards lower carbon energy systems and more advantaged oil and gas resources are targeted. This volume brings together new analytical approaches and describes how they can be applied to the study of petroleum systems. The papers within this volume cover a wide range of topics and case studies, in the fields of fluid and isotope geochemistry, organic geochemistry, imaging and sediment provenance. The work illustrates how the current, state-of-the-art technology can be effectively utilised to address ongoing challenges in petroleum geoscience.

Climate Change 2014 – Impacts, Adaptation and Vulnerability: Regional Aspects Cambridge University Press

Interest in cereals and other healthy grains has increased considerably in recent years, driving the cereal processing industry to develop new processing technologies that meet consumer demands for sustainable and nutritious cereal products. Innovative Processing Technologies for Healthy Grains is the first dedicated reference to focus on advances in cereal processing and bio-refinery of cereals and pseudocereals, presenting a broad overview of all aspects of both conventional and novel processing techniques and methods. Featuring contributions from leading researchers and academics, this unique volume examines the selection and characteristics of raw ingredients, new and emerging processing technologies, novel cereal-based products, and global trends in cereal and pseudocereal use, processing and consumption. The text offers balanced coverage of advances in both the development and processing of cereal and pseudocereal products, exploring topics including gluten-free products, cereal-based animal feed, health and wellness trends in healthy grain consumption, bioaccessibility and bioavailability of nutritional compounds, gluten-free products, and the environmental impact of processed healthy grains. This timely and comprehensive volume: Focuses on innovative cereal processing and bio-refinery of cereals and pseudocereals Provides informed perspectives on the current global trends in cereal and pseudocereal use, processing and consumption Describes the characteristics of healthy grains and their production, nutritional value, and utilization Explains the origin, production, processing, and functional ingredients of pseudocereals Reviews healthy grain products such as cereal-based beverages, fortified grain-based products, and cereal-based products with bioactive benefits Part of Wiley's IFST Advances in Food Science series Innovative Processing Technologies for Healthy Grains is an essential resource for food scientists, technologists, researchers, and other professionals working in the grain indus

Science Education Research and Practices in Taiwan CRC Press

"The 50 years since the publication of 'Fabric of Geology,' edited by C.C. Albritton Jr., have seen immense changes in both geology and philosophy of science. 'Rethinking the Fabric of Geology' explores a number of philosophical issues in geology, ranging from its nature as a historical science to implications for geological education"--Provided by publisher.

Challenges and Opportunities Royal Society of Chemistry

The second edition of this classic reference work has been completely revised and updated, as well as being enlarged by 20% to reflect the latest developments in synthetic organic fluorine chemistry, taking into account new applications in materials science and medicinal chemistry. The new developments in transition-metal-catalyzed methods for the introduction of fluorine and fluorinated groups are discussed. In addition, new chapters have been added on such important applications as organic electronics (OLEDs) and fluorinated dyes. Appendices containing synthetic procedures and conversions round off this comprehensive work. This work is a valuable reference for fluorine chemists that also provides nonspecialists with an introduction to the field. From reviews of the first edition: "... a well-produced book with attractive graphics, photos and schemes. Throughout the book, coloured electrostatic maps of small organofluorine compounds are used to illustrate charge distributions. These are effective as well as attractive. I would point any organic chemist to this book who wants to learn about and do some fluorine chemistry. It provides uncluttered descriptions and a clear orientation to the literature in this important area of the organic chemistry." CHEMBIOCHEM - A European Journal of Chemical

Biology

Quantities, Units and Symbols in Physical Chemistry Springer Nature

Encyclopedia of Agriculture and Food Systems, Second Edition addresses important issues by examining topics of global agriculture and food systems that are key to understanding the challenges we face. Questions it addresses include: Will we be able to produce enough food to meet the increasing dietary needs and wants of the additional two billion people expected to inhabit our planet by 2050? Will we be able to meet the need for so much more food while simultaneously reducing adverse environmental effects of today's agriculture practices? Will we be able to produce the additional food using less land and water than we use now? These are among the most important challenges that face our planet in the coming decades. The broad themes of food systems and people, agriculture and the environment, the science of agriculture, agricultural products, and agricultural production systems are covered in more than 200 separate chapters of this work. The book provides information that serves as the foundation for discussion of the food and environment challenges of the world. An international group of highly respected authors addresses these issues from a global perspective and provides the background, references, and linkages for further exploration of each of topics of this comprehensive work. Addresses important challenges of sustainability and efficiency from a global perspective. Takes a detailed look at the important issues affecting the agricultural and food industries today. Full colour throughout.

A National Strategy for Advancing Climate Modeling Elsevier

Even in today's electronic information age, traditional paper is a multi-purpose product that continues to be indispensable to people's daily work and lives. While paper is a valued product, the paper industry contributes to environmental pollution and consumption of natural resources, and the organic substances out of which traditional paper is made render it highly flammable and easy to burn. This book introduces a new technology to develop environmentally friendly fire-resistant paper using highly flexible ultralong hydroxyapatite nanowires and discusses applications and potential for commercialization. Discusses characterization, properties, and synthesis of ultralong hydroxyapatite nanowires and compares them with cellulose fibers Describes steps to design and create fire-resistant paper Covers a variety of function-based fire-resistant paper, including antibacterial, magnetic, photoluminescent, among others Examines a host of applications, such as paper for anti-counterfeiting, encryption and decryption, environmental, energy, and biomedical uses Considers commercialization potential and future prospects This book is aimed at materials scientists, chemical engineers, industrial chemists, and other researchers from across the scientific and engineering disciplines interested in the development of this exciting alternative to traditional paper.

Mobile Technologies and Augmented Reality in Open Education CRC Press

Natural plant fibers are being increasingly used in manufacturing industrial products because of their renewable and biodegradable natures. Kenaf is an annual bast fibre crop that can provide fibres for several industrial applications (composites, insulation mats, absorbents, bedding material, etc.) as well as raw material for energy exploitation (solid biofuels). Kenaf: A Multi-Purpose Crop for Several Industrial Applications introduces the physiology and field management of kenaf, agronomy, productivity, harvesting as well as its the industrial and energy uses of this promising non-food crop. Including recent research collected by the BIOKENAF project, Kenaf: A Multi-Purpose Crop for Several Industrial Applications provides a global picture of state of the art research and developments with Kenaf from Asia, USA and Australia. This thorough introduction if followed up with an assessment of the crops economic viability as well as an the environmental impact assessment of kenaf. Although not a new crop, Kenaf: A Multi-Purpose Crop for Several Industrial Applications provides a comprehensive introduction to this crop and its developing applications for energy engineers, industry managers, politicians and managers working to develop sustainable energy sources and bio-economies.

Application of Analytical Techniques to Petroleum Systems CRC Press

This latest Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) will again form the standard reference for all those concerned with climate change and its consequences, including students, researchers and policy makers in environmental science, meteorology, climatology, biology, ecology, atmospheric chemistry and environmental policy.

Chemistry for the IB Diploma Elsevier

Amino Alcohols—Advances in Research and Application: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Sphingosine. The editors have built Amino Alcohols—Advances in Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Sphingosine in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Amino Alcohols—Advances in Research and Application: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Introduction to Fluoropolymers Oxford University Press, USA

This book highlights the development and outcomes of research on and practical experience in science education in Taiwan. As the outcomes of the scholarship on science education in Taiwan have garnered attention in science education communities around the world, this book gathers the most relevant research on Taiwan, presenting it in a cohesive overview that will move science education forward in terms of policy, research and practice.

Springer Science & Business Media

"This reference brings together an impressive array of research on the development of Science, Technology, Engineering, and Mathematics curricula at all educational levels"--Provided by publisher.

New insights from the Biokenaf Project Geological Society of America

Biopharmaceutical Processing: Development, Design, and Implementation of Manufacturing Processes covers bioprocessing from cell line development to bulk drug substances. The methods and strategies described are essential learning for every scientist, engineer or manager in the biopharmaceutical and vaccines industry. The integrity of the bioprocess ultimately determines the quality of the product in the biotherapeutics arena, and this book covers every stage including all technologies related to downstream purification and upstream processing

fields. Economic considerations are included throughout, with recommendations for lowering costs and improving efficiencies. Designed for quick reference and easy accessibility of facts, calculations and guidelines, this book is an essential tool for industrial scientists and managers in the biopharmaceutical industry. Offers a comprehensive, go-to reference for daily work decisions Covers both upstream and downstream processes Includes case studies that emphasize financial outcomes Presents summaries, decision grids, graphs and overviews for quick reference Development, Design, and Implementation of Manufacturing Processes Royal Society of Chemistry Solid Phase Extraction thoroughly presents both new and historic techniques for dealing with solid phase extraction. It provides all information laboratory scientists need for choosing and utilizing suitable sample preparation procedures for any kind of sample. In addition, the book showcases the contemporary uses of sample preparation techniques in the most important industrial and academic project environments, including solid-phase Microextraction, molecularly imprinted polymers, magnetic nanoparticles, and more. Written by recognized experts in their respective fields, this one-stop reference is ideal for those who need to know which technique to choose for solid phase extraction. Used in conjunction with a similar release, Liquid Phase Extraction, this book allows users to master this crucial aspect of sample preparation. Defines the current state-of-the-art in extraction techniques and the methods and procedures for implementing them in laboratory practice Includes extensive referencing that facilitates the identification of key information Aimed at both entry-level scientists and those who want to explore new techniques and methods