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KEY=NOVEMBER - SANCHEZ LAUREL

AMINO ALCOHOLS—ADVANCES IN RESEARCH AND APPLICATION: 2013 EDITION

ScholarlyEditions 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/>.

OFFICIAL GAZETTE OF THE UNITED STATES PATENT OFFICE

HISTORY OF NATTO AND ITS RELATIVES (1405-2012)

Soyinfo Center

HISTORY OF SOY SAUCE (160 CE TO 2012)

Soyinfo Center

PUBLICATIONS, JULY 1960 THROUGH JUNE 1966

WITH SUBJECT AND AUTHOR INDEXES)

MODERN CHEMICAL TECHNOLOGY AND EMISSION CONTROL

Springer Science & Business Media This text of applied chemistry considers the interface between chemistry and chemical engineering, using examples of some of the important process in dustries. Integrated with this is detailed consideration of measures which may be taken for avoidance or control of potential emissions. This new emphasis in applied chemistry has been developed through eight years of experience gained from working in industry in research, development and environmental control fields, plus twelve years of teaching here using this approach. It is aimed primarily towards science and engineering students as well as to environmentalists and practising professionals with responsibilities or an interest in this interface. By providing the appropriate process information back to back with emis sions and control data, the potential for process fine-tuning is improved for both raw material efficiency and emission control objectives. This approach also emphasizes integral process changes rather than add-on units for emission control. Add-on units have their place, when rapid action on an urgent emission problem is required, or when control simply is not feasible by pro cess integral changes alone. Obviously fundamental process changes for emission containment are best conceived at the design stage. However, at whatever stage process modifications are installed, this approach to control should appeal to the industrialist in particular, in that something more sub stantial than decreased emissions may be gained.

CARBON FIBRE FROM LIGNIN

Springer 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.

PRODUCTION CHEMICALS FOR THE OIL AND GAS INDUSTRY, SECOND EDITION

CRC Press Production chemistry issues result from changes in well stream fluids, both liquid and gaseous, during processing. Since crude oil production is characterized by variable production rates and unpredictable changes to the nature of the produced fluids, it is essential for production chemists to have a range of chemical additives available for rectifying issues that would not otherwise be fully resolved. Modern production methods, the need to upgrade crude oils of variable quality, and environmental constraints demand chemical solutions. Thus, oilfield production chemicals are necessary to overcome or minimize the effects of the production chemistry problems. *Production Chemicals for the Oil and Gas Industry, Second Edition* discusses a wide variety of production chemicals used by the oil and gas industry for down-hole and topside applications both onshore and offshore. Incorporating the large amount of research and applications since the first edition, this new edition reviews all past and present classes of production chemicals, providing numerous difficult-to-obtain references, especially SPE papers and patents. Unlike other texts that focus on how products perform in the field, this book focuses on the specific structures of chemicals that are known to deliver the required or desired performance—information that is very useful for research and development. Each updated chapter begins by introducing a problem, such as scale or corrosion, for which there is a production chemical. The author then briefly discusses all chemical and nonchemical methods to treat the problem and provides in-depth descriptions of the structural classes of relevant production chemicals. He also mentions, when available, the environmental properties of chemicals and whether the chemical or technique has been successfully used in the field. This edition includes two new chapters and nearly 50 percent more references.

CHEMICAL STRUCTURES 2

THE INTERNATIONAL LANGUAGE OF CHEMISTRY PROCEEDINGS OF THE SECOND INTERNATIONAL CONFERENCE, LEEUWENHORST CONGRESS CENTER, NOORDWIJKERHOUT, THE NETHERLANDS, 3RD JUNE TO 7TH JUNE 1990

Springer Science & Business Media This book constitutes the Proceedings of the second conference in the series 'Chemical Structures: The International Language of Chemistry' which was held at Leeuwenhorst Congress Centre, Noordwijkerhout, in the Netherlands, between June 3 and June 7, 1990. The conference was jointly sponsored by the Chemical Structure Association; the American Chemical Society Division of Chemical Information; the Royal Netherlands Chemical Society; and the Chemical Information Groups of the Royal Society of Chemistry and the German Chemical Society. The purpose of the conference was to bring together experts and an international professional audience to discuss and to further basic and applied research and development in the processing, storage, retrieval, and use of chemical structures; to focus international attention on the importance of chemical information and the vital research being carried out in chemical information science; and to foster co operation among major chemical information organisations throughout the world. Subjects covered included structure-property correlations, spectral database systems, chemical nomenclature, generic structures, stereochemistry, substructure search systems, connection table formats, ring perception, information integration, three-dimensional substructure searching, similarity searching, and systems for handling chemical reaction information. All the papers were peer-reviewed or given by invited speakers. Many internationally recognised teams in the field of chemical structure handling are represented in the chapters of this book.

THE VITAMIN A STORY

LIFTING THE SHADOW OF DEATH

Karger Medical and Scientific Publishers Intriguing reading for specialists and the interested public alike This book shows how vitamin A deficiency -- before the vitamin was known to scientists -- affected millions of people throughout history. It is a story of sailors and soldiers, penniless mothers, orphaned infants, and young children left susceptible to blindness and fatal infections. We also glimpse the fortunate ones who, with ample vitamin A-rich food, escaped this elusive stalker. Why were people going blind and dying? To unravel this puzzle, scientists around the world competed over the course of a century. Their persistent efforts led to the identification of vitamin A and its essential role in health. As a primary focus of today's international public health efforts, vitamin A has saved hundreds of thousands of lives. But, we discover, they could save many more were it not for obstacles erected by political and ideological zealots who lack a historical perspective of the problem. Although exhaustively researched and documented, this book is written for intellectually curious lay readers as well as for specialists. Public health professionals, nutritionists, and historians of science and medicine have much to learn from this book about the cultural and scientific origins of their disciplines. Likewise, readers interested in military and cultural history will learn about the interaction of health, society, science, and politics. The author's presentation of vitamin A deficiency is likely to become a classic case study of health disparities in the past as well as the present.

IUTAM LAMINAR-TURBULENT TRANSITION

9TH IUTAM SYMPOSIUM, LONDON, UK, SEPTEMBER 2-6, 2019

Springer Nature This volume comprises the carefully revised papers of the 9th IUTAM Symposium on Laminar-Turbulent Transition, held at the Imperial College, London, UK, in September 2019. The papers focus on the leading research in understanding transition to turbulence, which is a challenging topic of fluid mechanics and arises in many modern technologies as well as in nature. The proceedings are of interest for researchers in fluid mechanics and industry who have to handle these types of problems, such as in the aeronautical sector.

APPLICATION OF ANALYTICAL TECHNIQUES TO PETROLEUM SYSTEMS

Geological Society of London 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.

QUANTITIES, UNITS AND SYMBOLS IN PHYSICAL CHEMISTRY

Royal Society of Chemistry Quantities, Units and Symbols in Physical Chemistry Third Edition The first IUPAC Manual of Symbols and Terminology for Physicochemical Quantities and Units (the "Green Book") of which this is a successor, was published in 1969, with the objective of 'securing clarity and precision, and wider agreement in the use of symbols, by chemists in different countries, among physicists, chemists and engineers, and by editors of scientific journals'. Subsequent revisions have taken account of many developments in the field, culminating in the major extension and revision represented by the 1988 edition under the title Quantities, Units and Symbols in Physical Chemistry. This third edition (2007) is a further revision of the material which reflects the experience of the contributors and users with the previous editions. The book has been systematically brought up to date and new sections have been added. It strives to improve the exchange of scientific information between different disciplines in the international pursuit of scientific research. In a rapidly expanding scientific literature where each discipline has a tendency to retreat into its own jargon, this book attempts to provide a compilation of widely used terms and symbols from many sources together with brief understandable definitions and explanations of best practice. Tables of important fundamental constants and conversion factors are included. Precise scientific language encoded by appropriate definitions of quantities, units and symbols is crucial for the international exchange in science and technology, with important consequences for modern industrial economy. This is the definitive guide for scientists, science publishers and organizations working across a multitude of disciplines requiring internationally approved nomenclature in the area of Physical Chemistry.

CHEMICAL ENGINEERING DESIGN

PRINCIPLES, PRACTICE AND ECONOMICS OF PLANT AND PROCESS DESIGN

Elsevier Chemical Engineering Design, Second Edition, deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, this edition has been specifically developed for the U.S. market. It provides the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards. It contains new discussions of conceptual plant design, flowsheet development, and revamp design; extended coverage of capital cost estimation, process costing, and economics; and new chapters on equipment selection, reactor design, and solids handling processes. A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data, and Excel spreadsheet calculations, plus over 150 Patent References for downloading from the companion website. Extensive instructor resources, including 1170 lecture slides and a fully worked solutions manual are available to adopting instructors. This text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken, plus graduates) and lecturers/tutors, and professionals in industry (chemical process, biochemical, pharmaceutical, petrochemical sectors). New to this edition: Revised organization into Part I: Process Design, and Part II: Plant Design. The broad themes of Part I are flowsheet development, economic analysis, safety and environmental impact and optimization. Part II contains chapters on equipment design and selection that can be used as supplements to a lecture course or as essential references for students or practicing engineers working on design projects. New discussion of conceptual plant design, flowsheet development and revamp design Significantly increased coverage of capital cost estimation, process costing and economics New chapters on equipment selection, reactor design and solids handling processes New sections on fermentation, adsorption, membrane separations, ion exchange and chromatography Increased coverage of batch processing, food, pharmaceutical and biological processes All equipment chapters in Part II revised and updated with current information Updated throughout for latest US codes and standards, including API, ASME and ISA design codes and ANSI standards Additional worked examples and homework problems The most complete and up to date coverage of equipment selection 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data and Excel spreadsheet calculations plus over 150 Patent References, for downloading from the companion website Extensive instructor resources: 1170 lecture slides plus fully worked solutions manual available to adopting instructors

ABSTRACTS OF PAPERS

THIRD CHEMICAL CONGRESS OF NORTH AMERICA, TORONTO, CANADA, JUNE 5-10, 1988

BULLETIN OF THE INSTITUTE OF PAPER CHEMISTRY

CURIOUS TALES FROM CHEMISTRY

THE LAST ALCHEMIST IN PARIS AND OTHER EPISODES

OUP Oxford This is a book about discovery and disaster, exploitation and invention, warfare and science - and the relationship between human beings and the chemical elements that make up our planet. Lars Ohrstrom introduces us to a variety of elements from S to Pb through tales of ordinary and extraordinary people from around the globe. We meet African dictators controlling vital supplies of uranium; eighteenth-century explorers searching out sources of precious metals; industrial spies stealing the secrets of

steel-making. We find out why the Hindenburg airship was tragically filled with hydrogen, not helium; why nail-varnish remover played a key part in World War I; and the real story behind the legend of tin buttons and the downfall of Napoleon. In each chapter, we find out about the distinctive properties of each element and the concepts and principles that have enabled scientists to put it to practical use. These are the fascinating (and sometimes terrifying) stories of chemistry in action.

MINE WASTES AND WATER, ECOLOGICAL ENGINEERING AND METALS EXTRACTION

SUSTAINABILITY AND CIRCULAR ECONOMY

Springer Nature The book reviews past and present mine waste management processes. It estimates global water consumption by major mining resources per annum. This consumption will lead land use resources (agriculture and water) to collide with mining interests expected in the near future. With the application of novel metal extraction processes and the adoption of ecological engineering as an approach to waste and water management, a reduction in water and land consumption can be achieved. Using these methodologies would make mining more sustainable. Together with ore and metal recycling, mining methods can be brought into the 21st century. The book describes natural weathering processes and the microbiology of extreme environments, also known as mine sites. The role of microbes in weathering and remediation is emphasized, along with case studies of the enhancement of various ecological processes which curtail weathering and transform pollutants, creating ore bodies of the future. This book has been written as an extension to a contribution to the Oxford Research Encyclopedia. It adds depth and many examples from 40 years of multidisciplinary work with experts from geology, hydrogeology, geomicrobiology and algal physiology and chemistry, items too extensive for the Encyclopedia.

PULP AND PAPER INDUSTRY

NANOTECHNOLOGY IN FOREST INDUSTRY

Elsevier 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

WASTE AS A RESOURCE

Royal Society of Chemistry The volume of waste produced by human activity continues to grow, but steps are being taken to mitigate this problem by viewing waste as a resource. Recovering a proportion of waste for re-use immediately reduces the volume of landfill. Furthermore, the scarcity of some elements (such as phosphorous and the rare-earth metals) increases the need for their recovery from waste streams. This volume of *Issues in Environmental Science and Technology* examines the potential resource available from several waste streams, both domestic and industrial. Opportunities for exploiting waste are discussed, along with their environmental and economic considerations. Landfill remains an unavoidable solution in some circumstances, and the current situation regarding this is also presented. Other chapters focus on mine waste, the recovery of fertilisers, and the growing potential for compost. In keeping with the *Issues* series, this volume is written with a broad audience in mind. University students and active researchers in the field will appreciate the latest research and discussion, while policy makers and members of NGOs will benefit from the wealth of information presented.

ENCYCLOPEDIA OF AGRICULTURE AND FOOD SYSTEMS

Elsevier 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.

PUBLICATIONS OF THE NATIONAL BUREAU OF STANDARDS

PROCESSING AND FINISHING OF POLYMERIC MATERIALS, 2 VOLUME SET

John Wiley & Sons An authoritative reference on the processing and finishing of polymeric materials for scientists and practitioners. Owing to their versatility and wide range of applications, polymeric materials are of great commercial importance. Manufacturing processes of commercial products are designed to meet the requirements of the final product and are influenced by the physical and

chemical properties of the polymeric material used. Based on Wiley's renowned Encyclopedia of Polymer Science and Technology, Processing and Finishing of Polymeric Materials provides comprehensive, up-to-date details on the latest manufacturing technologies, including blending, compounding, extrusion, molding, and coating. Written by prominent scholars from industry, academia, and research institutions from around the globe, this reference features more than forty selected reprints from the Encyclopedia as well as new contributions, providing unparalleled coverage of such topics as: Additives Antistatic agents Bleaching Blowing agents Calendaring Casting Coloring processes Dielectric heating Electrospinning Embedding Processing and Finishing of Polymeric Materials is an ideal resource for polymer and materials scientists, chemists, chemical engineers, materials scientists, process engineers, and consultants, and serves as a valuable addition to libraries of chemistry, chemical engineering, and materials science in industry, academia, and government.

PUBLICATIONS

PUBLICATIONS OF THE NATIONAL BUREAU OF STANDARDS ... CATALOG

PUBLICATIONS - UNITED STATES. NATIONAL BUREAU OF STANDARDS

MISCELLANEOUS PUBLICATION - NATIONAL BUREAU OF STANDARDS

RIEGEL'S HANDBOOK OF INDUSTRIAL CHEMISTRY

Springer Science & Business Media The aim of this book is to present in a single volume an up-to-date account of the chemistry and chemical engineering which underlie the major areas of the chemical process industry. This most recent edition includes several new chapters which comprise important threads in the industry's total fabric. These new chapters cover waste minimization, safety considerations in chemical plant design and operation, emergency response planning, and statistical applications in quality control and experimental planning. Together with the chapters on chemical industry economics and wastewater treatment~ they provide a unifying base on which the reader can most effectively apply the information provided in the chapters which describe the various areas of the chemical process industries. The ninth edition of this established reference work contains the contributions of some fifty experts from industry, government, and academe. I have been humbled by the breadth and depth of their knowledge and expertise and by the willingness and enthusiasm with which they shared their knowledge and insights. They have, without exception, been unstinting in their efforts to make their respective chapters as complete and informative as possible within the space available. Errors of omission, duplication, and shortcomings in organization are mine. Grateful acknowledgment is made to the editors of technical journals and publishing houses for permission to reproduce illustrations and other materials and to the many industrial concerns which contributed drawings and photographs. Comments and criticisms by readers will be welcome.

CHEMISTRY AND TECHNOLOGY OF LUBRICANTS

Springer Science & Business Media The use of lubricants began in ancient times and has developed into a major international business through the need to lubricate machines of increasing complexity. The impetus for lubricant development has arisen from need, so lubricating practice has preceded an understanding of the scientific principles. This is not surprising as the scientific basis of the technology is, by nature, highly complex and interdisciplinary. However, we believe that the understanding of lubricant phenomena will continue to be developed at a molecular level to meet future challenges. These challenges will include the control of emissions from internal combustion engines, the reduction of friction and wear in machinery, and continuing improvements to lubricant performance and life-time. More recently, there has been an increased understanding of the chemical aspects of lubrication, which has complemented the knowledge and understanding gained through studies dealing with physics and engineering. This book aims to bring together this chemical information and present it in a practical way. It is written by chemists who are authorities in the various specialisations within the lubricating industry, and is intended to be of interest to chemists who may already be working in the lubricating industry or in academia, and who are seeking a chemist's view of lubrication. It will also be of benefit to engineers and technologists familiar with the industry who require a more fundamental understanding of lubricants.

DOCUMENTATION BULLETIN OF THE NATIONAL RESEARCH CENTRE

THE WORLD SCIENTIFIC HANDBOOK OF ENERGY

World Scientific Competition for energy resources worldwide will almost certainly increase because of population growth and economic expansion, especially in countries such as China and India, with large populations. In addition, environmental concerns with the use of certain energy sources add a complicating factor to decisions about energy use. Therefore there is likely to be an increased commitment around the world to invest in energy systems. The World Scientific Handbook of Energy provides comprehensive, reliable and timely sets of data on energy resources and uses; it gathers in one publication a concise description of the current state-of-the-art for a wide variety of energy resources, including data on resource availability worldwide and at different cost levels. The end use of energy in transportation, residential and industrial areas is outlined, and energy storage, conservation and the impact on the environment included. Experts and key personnel straddling academia and related agencies and industries provide critical data for further exploration and research. Experts in these various areas who provide relevant data for further exploration and research include former Head of the Nuclear Reactors Directorate of the CEA; Director of the Potential Gas Agency, who leads a team of 100 geologists, geophysicists and petroleum engineers; former CEO of an Icelandic engineering company that specializes in the design, construction and operation of "Kalina" binary power plants for geothermal, biomass and industrial waste heat recovery applications; Chairman of the Scottish Hydrogen and Fuel Cells Association; former Director of the Geo-Heat Center at the Oregon Institute of Technology, who received the Patricius Medal from the German Geothermal Association for "his pioneer work in the direct use of geothermal energy"; Division Director of NETL's Strategic Center for Coal, who provides expert guidance and consultation to major DOE-funded clean coal

technology and carbon sequestration demonstration projects; an internationally recognized expert in the physics and technology of Inertial Confinement Fusion (ICF); former Senior Scientist and Director of the Center for Distributed Generation and Thermal Distribution with Washington State University, who was responsible for state policy, technical assistance to resource developers and investigations related to geothermal energy development; a main author on the 2005 Billion Ton Report and 2011 Billion Ton Update; and many more extremely well published and well known individuals straddling academia and related agencies and industries.

ENGINEERING AND MINING JOURNAL

PROCESS INTEGRATION FOR RESOURCE CONSERVATION

CRC Press To achieve environmental sustainability in industrial plants, resource conservation activities such as material recovery have begun incorporating process integration techniques for reusing and recycling water, utility gases, solvents, and solid waste. *Process Integration for Resource Conservation* presents state-of-the-art, cost-effective techniques

CHEMICAL PRINCIPLES OF TEXTILE CONSERVATION

Routledge 'Chemical Principles of Textile Conservation' provides must-have knowledge for conservators who do not always have a scientific background. This vital book brings together from many sources the material science necessary to understand the properties, deterioration and investigation of textile artefacts. It also aids understanding of the chemical processes during various treatments, such as: cleaning; humidification; drying; disinfestation; disinfection; and the use of adhesives and consolidants in conservation of historical textiles. Textile conservators will now have ready access to the necessary knowledge to understand the chemistry of the objects they are asked to treat and to make informed decisions about how to preserve textiles. The combination of a chemist and a conservator provides the perfect authorial team. It ensures a unique dual function of the text which provides textile conservators with vital chemical knowledge and gives scientists an understanding of textile conservation necessary to direct their research. The many practical examples and case studies illustrate the utility of the relatively large chemical introduction and the essential chemical information which is included. The case studies, many illustrated in colour, range from the treatment of the Ghandis' clothes, high-altitude flying suits and a Mary Quant raincoat, to the Hungarian Coronation Mantle.

PAIN MANAGEMENT AND THE OPIOID EPIDEMIC

BALANCING SOCIETAL AND INDIVIDUAL BENEFITS AND RISKS OF PRESCRIPTION OPIOID USE

National Academies Press Drug overdose, driven largely by overdose related to the use of opioids, is now the leading cause of unintentional injury death in the United States. The ongoing opioid crisis lies at the intersection of two public health challenges: reducing the burden of suffering from pain and containing the rising toll of the harms that can arise from the use of opioid medications. Chronic pain and opioid use disorder both represent complex human conditions affecting millions of Americans and causing untold disability and loss of function. In the context of the growing opioid problem, the U.S. Food and Drug Administration (FDA) launched an Opioids Action Plan in early 2016. As part of this plan, the FDA asked the National Academies of Sciences, Engineering, and Medicine to convene a committee to update the state of the science on pain research, care, and education and to identify actions the FDA and others can take to respond to the opioid epidemic, with a particular focus on informing FDA's development of a formal method for incorporating individual and societal considerations into its risk-benefit framework for opioid approval and monitoring.

NORDIC NUTRITION RECOMMENDATIONS 2012

INTEGRATING NUTRITION AND PHYSICAL ACTIVITY

Nordic Council of Ministers The Nordic countries have collaborated in setting guidelines for dietary composition and recommended intakes of nutrients for several decades through the joint publication of the Nordic Nutrition Recommendations (NNR). This 5th edition, the NNR 2012, gives Dietary Reference Values (DRVs) for nutrients, and compared with earlier editions more emphasis has been put on evaluating the scientific evidence for the role of food and food patterns contributing to the prevention of the major diet-related chronic diseases. Recommendations on physical activity are included and interaction with physical activity has been taken into account for the individual nutrient recommendations wherever appropriate. A chapter on sustainable food consumption has been added. A Nordic perspective has been accounted for in setting the reference values. The NNR 2012 has used an evidence-based and transparent approach in assessing associations between nutrients and foods and certain health outcomes. Systematic reviews form the basis for the recommendations of several nutrients and topics, while a less stringent update has been done for others. The systematic reviews and individual chapters have been peer reviewed and the systematic reviews are published in the *Food & Nutrition Research* journal. The draft chapters were subject to an open public consultation. Recommendations have been changed only when sufficient scientific evidence has evolved since the 4th edition. The primary aim of the NNR 2012 is to present the scientific background of the recommendations and their application. A secondary aim is for the NNR 2012 to function as a basis for the national recommendations that are adopted by the individual

NANOMATERIALS AND NANOTECHNOLOGY

BIOMEDICAL, ENVIRONMENTAL, AND INDUSTRIAL APPLICATIONS

Springer Nature This book provides a complete overview of a wide range of nanomaterials from their synthesis and characterization to current and potential applications with special focus on the use of such nano-based products as functional agents in biomedical, environmental and industrial applications. It addresses the intrinsic relationship between aspects involving the synthesis of nanocompounds, their bio-physico-chemical properties and their interactions occurring in biomedical, environmental and industrial

matrix. This book is of interest to engineers, academics and research scholars working in these fields.

NORDIC PULP & PAPER RESEARCH JOURNAL

REACTIVE MODIFIERS FOR POLYMERS

Springer Science & Business Media Chemical modification of polymers by reactive modifiers is no longer an academic curiosity but a commercial reality that has delivered a diverse range of speciality materials for niche markets: reactively grafted styrenic alloys, maleated polyolefins, super-tough nylons, silane modified and moisture-cured polyolefins, and thermoplastic elastomers, are but few examples of commercial successes. Although the approach of reactive modification of polymers has been largely achieved either in solution or in the solid state (through in situ reactions in polymer melts), it is the latter route that has attracted most attention in the last two decades owing to its flexibility and cost-effectiveness. This route, referred to as reactive processing, focuses on the use of suitable reactive modifier(s) and the adoption of conventional polymer processing machinery, an extruder or a mixer, as a chemical reactor, to perform in situ targeted reactions for chemical modification of preformed polymers. This relatively simple, though scientifically highly challenging, approach to reactive modification offers unique opportunities in exploiting various reactive modifiers for the purpose of altering and transforming in a controlled manner the properties of preformed commercial polymers into new/speciality materials with tailor-made properties and custom-designed performance for target applications. Such an economically attractive route constitutes a radical diversion away from the traditional practices of manufacturing new polymers from monomers which involves massive investments in sophisticated technologies and chemical plants.

STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES

A PATH FORWARD

National Academies Press Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and promote best practices with consistent application. *Strengthening Forensic Science in the United States: A Path Forward* provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. *Strengthening Forensic Science in the United States* gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.