

Novae Series Quantachrome

Written with both postgraduate students and researchers in academia and industry in mind, this reference covers the chemistry behind metal nanopowders, including production, characterization, oxidation and combustion. The contributions from renowned international scientists working in the field detail applications in technologies, scale-up processes and safety aspects surrounding their handling and storage.

Collection of selected, peer reviewed papers from the XI International Conference Prospects of Fundamental Sciences Development (PFSD-2014), April 22-25, 2014, Tomsk, Russia. The 97 papers are grouped as follows: Chapter 1: Chemistry and Physics of Materials, Environmental Materials; Chapter 2: Structure Materials, Mechanics and Dynamics of Materials; Chapter 3: Material Science in Biology and Medicine; Chapter 4: Mathematical Methods in Materials Science

There is some talk about an antibiotic Armageddon due to quickly developing resistance towards commercially available antibiotics. For the most part, the classical antibiotic pipeline has dried up, and antibiotic resistance to any new drugs quickly develops. It is here that metal-based antimicrobials can step forward as possible solutions in this antimicrobial resistance era. The biological targets of metal atoms are more diverse, thus making it more difficult for bacteria to develop resistance compared with classical antibiotics. The metal silver has been used since antiquity for wound healing and water purification. At present, it is the most prevalent antimicrobial metal used in healthcare, industry, and consumer products. Silver is being used in the form of ionic salt, colloids, or in specific nanomaterials, and as described in this book, it can be applied as mixtures with other

antimicrobials or coating composites. The different formulations are explored for their efficacy against a variety of problems related to agricultural and medical infections. Whilst by no means exhaustive, this book nicely highlights the present directions in silver-based antimicrobial research and antimicrobial formulation development. The chapters have been organized from a general introductory review to approaches of mixing other antimicrobials and materials to enhance silver performance. This is followed by synthetic approaches. First are biogenic (sometimes called green or eco-friendly) approaches, followed by advanced physical–chemical synthetic approaches. The book ends with an overview of applications through a review of patents over the past 10 years.

Environmental sustainability issues in a fragile, semi-arid region and its coastal area, which experience climate changes from extreme drought conditions to the effects of hurricanes over a period of weeks to years, provide specific challenges for the ecosystems and the populations existing within the region. The research presented focuses on the problems and some solutions specific to the South Texas–Mexico border region, on both sides of the Rio Grande, focusing on water and air pollution.

The objective of this volume is to consolidate within a single text the most current knowledge, practical methods, and regulatory considerations pertaining to formulations development with poorly water-soluble molecules. A pharmaceutical scientist's approach toward solubility enhancement of a poorly water-soluble molecule typically includes detailed characterization of the compound's physiochemical properties, solid-state modifications, advanced formulation design, non-conventional process technologies, advanced analytical characterization, and specialized product performance analysis techniques. The

scientist must also be aware of the unique regulatory considerations pertaining to the non-conventional approaches often utilized for poorly water-soluble drugs. One faced with the challenge of developing a drug product from a poorly soluble compound must possess at minimum a working knowledge of each of the abovementioned facets and detailed knowledge of most. In light of the magnitude of the growing solubility problem to drug development, this is a significant burden especially when considering that knowledge in most of these areas is relatively new and continues to develop

Collection of selected, peer reviewed papers from the 20th Brazilian Conference on Materials Science and Engineering (CBECIMAT), November 4-8, 2012, Joinville, Santa Catarina. Volume is indexed by Thomson Reuters CPCI-S (WoS). The 132 papers are grouped as follows: Chapter 1: Biomaterials; Chapter 2: Materials Characterization; Chapter 3: Modeling; Chapter 4: Cements; Chapter 5: Materials Degradation; Chapter 6: Ecological Materials; Chapter 7: Surface Engineering; Chapter 8: Materials Science and Engineering; Chapter 9: Electrical Electronics and Optical Materials; Chapter 10: Magnetic Materials; Chapter 11: Nanostructured Materials; Chapter 12: Materials Power Generation; Chapter 13: Processing; Chapter 14: Mechanical Properties; Chapter 15: Recycling; Chapter 16: Synthesis; Chapter 17: Micellaneous

The two volumes of these Proceedings contain about 200 conference papers and 10 keynote papers presented at the First International Conference on Construction Materials and Structures, held in Johannesburg, South Africa from 24 to 26 November 2014. It includes sections on Materials and characterization; Durability of construction materials; Structural implications, performance, service life; Sustainability, waste utilization, the environment; and Building

science and construction.

Proceedings containing 231 manuscripts that were submitted and approved for the 13th biennial worldwide refractories congress recognized as the Unified International Technical Conference on Refractories(UNITECR), held September 10-13, 2013.

This book introduces a variety of treatment technologies, such as physical, chemical, and biological methods for the treatment of gas emissions, wastewater, and solid waste. It provides a useful source of information for engineers and specialists, as well as for undergraduate and postgraduate students, in the areas of environmental science and engineering.

Nanoporous Materials IV contains the invited lectures and peer-reviewed oral and poster contributions to be presented at the 4th International Symposium on Nanoporous Materials, which will be hosted in Niagara Falls, Ontario, Canada, June 7-10, 2005. This volume covers complementary approaches to and recent advances in the field of nanostructured materials with pore sizes larger than 1nm, such as periodic mesoporous molecular sieves (e.g., MCM-41 and SBA-15) and related materials including clays, ordered mesoporous carbons, colloidal crystal templated materials, porous polymers and sol gels. The broad range of topics covered in relation to the synthesis and characterization of ordered mesoporous materials are of great importance for advanced adsorption, catalytic, separation and environmental processes as well as for the development of nanotechnology. This volume contains over 120 contributions related to the synthesis

of ordered mesoporous silicas, organosilicas, nonsiliceous inorganic materials, carbons, polymers and related materials, their characterization and applications in adsorption, catalysis and environmental clean up. * Unique contributions brings readers up-to-date on new research and application developments * Figures and tables supplement comprehensive topics * Extensive author and subject index

An update of the definitive annual reference source in the field of aluminum production and related light metals technologies, a great mix of materials science and practical, applied technology surrounding aluminum, bauxite, aluminum reduction, rolling, casting, and production.

In 2018, the International Symposium on Nanogeoscience was held in Guiyang, China. Scholars from around the globe gathered to discuss recent progress and development trends in various aspects of nanogeoscience, including nanomineralogy.

Nanomineralogy, an important aspect of nanogeoscience, focuses on the composition, structure, and physical and chemical properties of nanoscale minerals and their interrelations with other Earth critical components. To give a sampling of the latest progress in nanomineralogy and related fields, we offer this Special Issue, which describes a full range of recent nanomineralogic achievements relating to everything from nanominerals and geochemistry, mineral nanostructures, and nanomineral deformation, to nanopores in oil and gas reservoirs, nanomineral deposits, and nanomineral material. Today,

nanomineralogy faces a new strategic opportunity as well as a revolutionary challenge. We thus present this special nanomineralogy-focused issue of Minerals with the aim of encouraging our colleagues to familiarize themselves with current developments, trends, and directions in nanomineralogy, enabling an understanding of the potential of the field as a whole. We look forward to developing further scientific research and cooperation in nanomineralogy, hoping thereby to attract and guide young scholars to participate in this field.

The papers included in this issue of ECS Transactions were originally presented in the symposium ζ Electrochemistry of Novel Materials for Energy Storage and Conversion ζ , held during the 218th meeting of The Electrochemical Society, in Las Vegas, Nevada from October 10 to 15, 2010.

This collection of research articles and reviews covers the latest work in the design, delivery, dynamic abilities, and immune stimulation of RNA nanoparticles which have driven the utilization of their immunomodulatory properties. The unknown immune properties of nucleic acid nanoparticles have been a major hurdle in their adaptation until the works herein began assessing their structure-activity relationships. This collection chronologically follows the path of investigating the recognition of design components to implementing them into nucleic acid nanostructures. RNA nanotechnology is an emerging platform for therapeutics with increasing clinical relevance as this approach becomes more widely used and approved for the treatment of various diseases. The latest research aims to take advantage of RNA's

modular nature for the design of nanostructures which can interact with their environments to communicate programmed messages with intracellular pathways. In doing so, nanoparticles can be used to elicit or elude responses by the immune system as desired in conjunction with their therapeutic applications.

Functional advanced biopolymers have received far less attention than renewable biomass (cellulose, rubber, etc.) used for energy production. Among the most advanced biopolymers known is chitosan. The term chitosan refers to a family of polysaccharides obtained by partial de-N-acetylation from chitin, one of the most abundant renewable resources in the biosphere.

Chitosan has been firmly established as having unique material properties as well as biological activities. Either in its native form or as a chemical derivative, chitosan is amenable to being processed—typically under mild conditions—into soft materials such as hydrogels, colloidal nanoparticles, or nanofibers. Given its multiple biological properties, including biodegradability, antimicrobial effects, gene transfectability, and metal adsorption—to name but a few—chitosan is regarded as a widely versatile building block in various sectors (e.g., agriculture, food, cosmetics, pharmacy) and for various applications (medical devices, metal adsorption, catalysis, etc.). This Special Issue presents an updated account addressing some of the major applications, including also chemical and enzymatic modifications of oligos and polymers. A better understanding of the properties that underpin the use of chitin and chitosan in different fields is key for boosting their more extensive

industrial utilization, as well as to aid regulatory agencies in establishing specifications, guidelines, and standards for the different types of products and applications.

"Presents the latest research on the flow and structure of complex particulate suspensions, the adsorption behavior of polymers, and the consolidation behavior and mechanical properties of films. Highlights recent advances in polymer functionality, conformation, and chemistry for biological, biomedical, and industrial applications."

Over the last few decades, the study of microbial biofilms has been gaining interest among the scientific community. These microbial communities comprise cells adhered to surfaces that are surrounded by a self-produced exopolymeric matrix that protects biofilm cells against different external stresses. Biofilms can have a negative impact on different sectors within society, namely in agriculture, food industries, and veterinary and human health. As a consequence of their metabolic state and matrix protection, biofilm cells are very difficult to tackle with antibiotics or chemical disinfectants. Due to this problem, recent advances in the development of antibiotic alternatives or complementary strategies to prevent or control biofilms have been reported. This book includes different strategies to prevent biofilm formation or to control biofilm development and includes full research articles, reviews, a communication, and a perspective.

The Cleantech conference, which runs parallel with NSTI's Nanotech, is designed to promote advancements in traditional technologies, emerging technologies, and clean business practices, covering important developments in renewable energy, clean technologies, business and policy, bio-energy, and novel technologies, as well as environment. This volume contains peer-reviewed manuscripts describing

the scientific and technological advances presented at the 8th Natural Gas Conversion Symposium held in Natal-Brazil, May 27-31, 2007. This symposium continues the tradition of excellence and the status as the premier technical meeting in this area established by previous meetings. The manuscripts have been divided into eight different topics, Industrial Processes, Economics, Technology Demonstration and Commercial Activities; Production of Hydrogen from Methane, Methanol, and Other Sources; Production of Synthesis Gas; Fischer-Tropsch Synthesis of Hydrocarbons; From Synthesis Gas to Catalytic Combustion; From Natural Gas to Chemicals; Light Hydrocarbons; and Production and Conversion. These are the most interesting subjects in the utilization of natural gas with recent scientific innovation and technological advances. The book is of interest to all students and researchers active in utilization of natural gas. *

Research comes from the most important industries and research centres in the field * Features new studies from all around the world * Important for consulting and updating research and development data

In the last few decades, research on the elaboration by palladium-catalytic processes of C-C bonds or the activation of C-H bonds has increased considerably. Yet there is still room for much improvement in terms of selectivity, or enantioselectivity, via the development of new ligands or the study of the catalytic effect of other metals to carry out the same chemical transformations. In addition, the attention paid to environmentally friendly methods in terms of the quantities of catalysts, ligands, and solvents is currently indispensable. The Mizoroki-Heck reaction is one of these important catalytic methods which generates C-C bonds in organic synthesis and is also possible by C-H activation. This book, titled "Catalyzed Mizoroki-Heck Reaction or C-H activation" focuses on new advances in the formation of C-C bonds or

new C-H activation methods. It contains original research papers and short reviews on the synthesis of biologically active compounds using these catalytic processes, the identification of new catalysts, of new conditions allowing selectivity or enantioselectivity, the activity and stability of catalyst under turnover conditions, and all improvements in catalytic processes.

Surface Area and Porosity Determinations by Physisorption is a practical guide for industry or academics to the measurement of surface area and pore size using the tool of physical adsorption. Starting with a brief description of what physical adsorption is and the raw data that is obtained. The instrumentation for measuring this isotherm is described in some details. Recommendations are presented as to what instrumentation would be most appropriate for a particular application. An appendix of current commercial instruments is included. The mathematics required for the simple analysis of the obtained isotherm is presented with step-wise instructions for the analysis of the more useful analysis methods.

Subsequent chapters describe the analyses and the theories behind the analyses in more detail. * Includes over 150 figures and tables which illustrate the equipment and examples data acquired * Provides a practical guide for measuring and interpreting physical adsorption * Up-to-date aspects of the more subtle physical adsorption theories such as density functional theory and the quantum mechanical chi theory are presented

This book provides a comprehensive, up-to-date overview on the most pressing issues in the conservation and management of archaeological, architectural, and urban landscapes. Multidisciplinary research is presented on a wide range of built heritage sites, from archaeological ruins and historic centers through to twentieth century and industrial architectural heritage. The role of ICT and new technologies,

including those used for digital archiving, surveying, modeling, and monitoring, is extensively discussed, in recognition of their importance for professionals working in the field. Detailed attention is also paid to materials and treatments employed in preventive conservation and management. With contributions from leading experts, including university researchers, professionals, and policy makers, the book will be invaluable for all who seek to understand, and solve, the challenges faced in the protection and enhancement of the built heritage.

This book chronicles the proceedings of the Fifth International Symposium held on this topic in Toronto. A total of 26 papers covering many ramifications of silanes and other coupling agents are included in this book. The topics covered include: various ways to deposit silanes; silane adsorption; investigation of interfacial interactions between silanes and substrates; factors affecting effectiveness of silanes as adhesion promoters; silanes for corrosion inhibition/protection; application of silanes in a variety of technological areas; silanes in dental biomaterials, in understanding cellular adhesion, and in the field of textiles; and other (non-silane) coupling agents. This book provides a wealth of latest information on this highly technologically important topic and anyone interested in the use of these materials will find this book of great value and interest.

The purpose of this manual is to document methodology and to serve as a reference for the laboratory analyst. The standard methods described in this SSIR No. 42, Soil Survey Laboratory Methods Manual, Version 4.0 replaces as a methods reference all earlier versions of the SSIR No. 42 (1989, 1992, and 1996, respectively) and SSIR No. 1, Procedures for Collecting Soil Samples and Methods of Analysis for Soil Survey (1972, 1982, and 1984). All SSL methods are performed with methodologies appropriate for

the specific purpose. The SSL SOP's are standard methods, peer-recognized methods, SSL-developed methods, and/or specified methods in soil taxonomy (Soil Survey Staff, 1999). An earlier version of this manual (1996) also served as the primary document from which a companion manual, Soil Survey Laboratory Information Manual (SSIR No. 45, 1995), was developed. The SSIR No. 45 describes in greater detail the application of SSL data. Trade names are used in the manual solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee of the product by USDA nor does it imply an endorsement by USDA.

Selected, peer reviewed papers from the Proceedings of the VI International Materials Symposium Materiais 2011 – XV Encontro da Sociedade Portuguesa de Materiais (SPM) Universidade do Minho, April 18-20, 2011, Guimarães, Portugal

An eclectic mix of studies on chemical and electrochemical behaviour of membrane surfaces. The book looks at membranes - both organic and inorganic - from a host of different perspectives and in the context of many diverse disciplines. It explores the behaviours of both synthetic and biological membranes, employing physical, chemical and physiochem

There is a high demand for antimicrobials for the treatment of new and emerging microbial diseases. In particular, microbes developing multidrug resistance have created a pressing need to search for a new generation of antimicrobial agents, which are effective, safe and can be used for the cure of multidrug-resistant microbial infections. Nano-antimicrobials offer effective solutions for these challenges; the details of these new technologies are presented here. The book includes chapters by an international team of experts.

Chemical, physical, electrochemical, photochemical and

mechanical methods of synthesis are covered. Moreover, biological synthesis using microbes, an option that is both eco-friendly and economically viable, is presented. The antimicrobial potential of different nanoparticles is also covered, bioactivity mechanisms are elaborated on, and several applications are reviewed in separate sections. Lastly, the toxicology of nano-antimicrobials is briefly assessed. The 2002 National Conference on Environmental Science and Technology, Greensboro, NC. September 8-10, 2002, addressed pollution prevention needs, solutions, and research and promoted the partnerships needed to protect the environment and improve quality of life. These proceedings contain 34 papers organized into the following sections: - Bioprocessing - Bioremediation - Environmental Justice - Fate and Transport - Innovative Environmental Technologies - Pollution Prevention Separation Processes - Risk and Economics.

This is the fifth edition of the highly successful work first published in 1968, comprising two definitive volumes on particle characterisation. The first volume is devoted to sampling and particle size measurement, while surface area and pore size determination are reviewed in volume 2. Particle size and characterisation are central to understanding powder properties and behaviour. This book describes numerous potential measuring devices, how they operate and their advantages and disadvantages. It comprise a fully comprehensive treatise on the wide range of available equipment with an extensive literature survey, and a list of manufacturers and suppliers. The author's blend of academic and industrial experience results in a readable technical book with information on how to analyse, present, and extract useful information from data. This is an essential reference book for both industrial and academic research workers in a variety of areas including: pharmaceuticals, food science,

pollution analysis and control, electronic materials, agricultural products, polymers, pigments and chemicals. Biomass can be converted to energy, biofuels, and bioproducts via thermochemical conversion processes, such as combustion, pyrolysis, and gasification. Combustion technology is most widely applied on an industrial scale. However, biomass gasification and pyrolysis processes are still in the research and development stage. The major products from these processes are syngas, bio-oil, and char (called also biochar for agronomic application). Among these products, biomass chars have received increasing attention for different applications, such as gasification, co-combustion, catalysts or adsorbents precursors, soil amendment, carbon fuel cells, and supercapacitors. This Special Issue provides an overview of biomass char production methods (pyrolysis, hydrothermal carbonization, etc.), characterization techniques (e.g., scanning electronic microscopy, X-ray fluorescence, nitrogen adsorption, Raman spectroscopy, nuclear magnetic resonance spectroscopy, X-ray photoelectron spectroscopy, and temperature programmed desorption and mass spectrometry), their properties, and their suitable recovery processes.

This book is a result of contributions of experts from international scientific community working in different aspects of nanocomposite science and applications and reports on the state of the art research and development findings on nanocomposites through original and innovative research studies. Through its 19 chapters the reader will have access to works related to the theory, and characterization of various types of nanocomposites such as composites of cellulose and metal nanoparticles, polymer/clay, polymer/Carbon and polymer-graphene nanocomposites and several other exciting topics while it introduces the various applications of nanocomposites in water treatment, supercapacitors, green

energy generation, anticorrosive and antistatic applications, hard coatings, antiballistic and electroconductive scaffolds. Besides, it reviews multifunctional nanocomposites, photonics of dielectric nanostructures and electron scattering in nanocomposite materials.

This book provides different aspects on fuel processing and refinery for energy generation. Most updated research findings along with case studies, real scenario examples, and extensive analyses of original research work and literature reviews is included in this book.

Surface Chemistry and Electrochemistry of Membranes
CRC Press

The growth of interest in newly developed porous materials has prompted the writing of this book for those who have the need to make meaningful measurements without the benefit of years of experience. One might consider this new book as the 4th edition of "Powder Surface Area and Porosity" (Lowell & Shields), but for this new edition we set out to incorporate recent developments in the understanding of fluids in many types of porous materials, not just powders. Based on this, we felt that it would be prudent to change the title to "Characterization of Porous Solids and Powders: Surface Area, Porosity and Density". This book gives a unique overview of principles associated with the characterization of solids with regard to their surface area, pore size, pore volume and density. It covers methods based on gas adsorption (both physi and chemisorption), mercury porosimetry and pycnometry. Not only are the theoretical and experimental basics of these techniques presented in detail but also, in light of the tremendous progress made in recent years in

materials science and nanotechnology, the most recent developments are described. In particular, the application of classical theories and methods for pore size analysis are contrasted with the most advanced microscopic theories based on statistical mechanics (e.g. Density Functional Theory and Molecular Simulation). The characterization of heterogeneous catalysts is more prominent than in earlier editions; the sections on mercury porosimetry and particularly chemisorption have been updated and greatly expanded.

The book represents a collection of papers presented at VI International Symposium "Biogenic - abiogenic interactions in natural and anthropogenic systems" that was held on 24-27 September 2018 in Saint Petersburg (Russia). Papers in this book cover a wide range of topics connecting with interactions between biogenic and abiogenic components in lithosphere, biosphere and technosphere. The main regarding topics are following: methods for studying the interactions between biogenic and abiogenic components; geochemistry of biogenic-abiogenic systems; biomineralization and nature-like materials and technologies; medical geology; biomineralogy and organic mineralogy; biomineral interactions in soil; biodeterioration of natural and artificial materials; biomineral interactions in extreme environment.

The proceedings of the VIIIth International Symposium on the Scientific Bases for the Preparation of Heterogeneous Catalysts, are in line with the general scope of this series of events. Emphasis in all Symposia has been on the scientific aspects of the preparation of

new and industrial catalysts, or on new methods of preparation, rather than on the catalytic reactions in which such solids are ultimately used. In the present context, the catalytic event itself has only been considered as another, though often decisive, method of catalyst characterization.

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