Comparative Methods For The Pore Size Distribution

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BURNETT LAWRENCE

Experimental Methods in Catalytic Research Elsevier
Experimental Methods in Catalytic Research, Volume I provides a useful account of procedures in various areas of catalytic research. This book describes the method and its fundamental principles, the apparatus used, the data obtained and their interpretation, and the account of the special problems related to catalytic research. Organized into 11 chapters, this volume begins with an overview of the kinetic phenomena such as quantitative studies of reaction rate and factors influencing rate. This text then examines the general properties that are of major importance to catalysis since catalytic rates depend mainly on available active surface. Other chapters consider the detailed mechanism of any catalytic reaction, which include the electronic structure of the chemisorption bond. This book discusses as well several experimental methods developed to study surface reactions under highly idealized conditions. The final chapter deals with the phenomenon associated with the spin of an electron. This book is a valuable resource for chemical engineers.
Abnormal Pressures While Drilling Elsevier
Membrane Characterization provides a valuable source of information on how membranes are characterized, an extremely limited field that is confined to only brief descriptions in various technical papers available online. For the first time, readers will be able to understand the importance of membrane characterization, the techniques required, and the fundamental theory behind them. This book focuses on characterization techniques that are normally used for membranes prepared from polymeric, ceramic, and composite materials. Features specific details on many membrane characterization techniques for various membrane materials of industrial and academic interest Contains examples of international best practice techniques for the evaluation of several membrane parameters, including pore size, charge, and fouling Discusses various membrane models more suitable to a specific application Provides examples of ab initio calculations for the design, optimization, and scale-up of processes based on characterization data
Comparison of Methods for the Determination of the Pore System of a Potential German Gas Shale CRC Press
The book covers basic theory, progress and applications of sodium-ion batteries. It intoduces the reader to anode, cathode, electrolyte battery materials and properties. It also describes compatibility and stability of the whole battery system. It is a valuable resource for anyone interested in energy storage.
Management of Saline Soils and Waters CRC Press
The development of nanomaterials plays a fundamental role in current and future technology applications, particularly nanomaterials that have multiple functionalities. This book provides a broad overview of the effect of nanostructuring in the multifunctionality of different widely studied nanomaterials. This book is divided into four sections constituting a road map that groups materials sharing certain types of nanostructuring, including nanoporous, nanoparticled, 2D laminar nanomaterials, and computational methods for characterizations of nanostructures. This structured approach in nanomaterials research will serve as a valuable reference material for chemists, (bio)engineers, physicists, nanotechnologists, undergraduates, and professors.
Quantitative Characterization and Performance of Porous Implants for Hard Tissue Applications Editions TECHNIP
In the past decades advances have been made in the research and practice on unsaturated soil mechanics. In 2000 the first Asia-Pacific Conferences on Unsaturated Soils was organized in Singapore. Since then, four conferences have been held under the continued support of the Technical Committee on Unsaturated Soils (TC106) of the International Socie
Trace Elements in Soil Pore Water Springer
This book Catalysis from Theory to Application. An Integrated Course encompasses the lectures of an integrated course on Catalysis (CIC2006) organized in the University of Coimbra according to the guidelines set up by the ERA-Net ACENET (Applied Catalysis European Network). The book is subdivided in five sections: heterogeneous, homogeneous, photo- and electro-catalysis and a fifth section covering experimental design and planning.The course and the lectures presented in this book intend to offer a broad and comprehensive survey on the different subjects of catalysis. Indeed, most graduate students in Chemistry or Chemical Engineering have only fragmented knowledge. Accordingly, the book is intended for undergraduate and post-graduate students or Industrial Researchers of Chemistry and Chemical Engineering interested in acquiring integrated knowledge in this field.
Membrane Characterization John Wiley & Sons
Composites are made up of constituent materials with high engineering potential. This potential is wide as wide is the variation of materials and structure constructions when new updates are invented every day. Technological advances in composite field are included in the equipment surrounding us daily; our lives are becoming safer, hand in hand with economical and ecological advantages. This book collects original studies concerning composite materials, their properties and testing from various points of view. Chapters are divided into groups according to their main aim. Material properties are described in innovative way either for standard components as glass, epoxy, carbon, etc. or biomaterials and natural sources materials as ramie, bone, wood, etc. Manufacturing processes are represented by moulding methods; lamination process includes monitoring during process. Innovative testing procedures are described in electrochemistry, pulse velocity, fracture toughness in macro-micro mechanical behaviour and more.
Characterization of Porous Solids and Powders: Surface Area, Pore Size and Density Springer Science & Business Media
The importance of porosity has long been recognized by scientists and engineers. Porous solids are widely encountered in industry and everyday life and their behaviour, e.g. chemical reactivity, adsorptive capacity, and catalytic activity is dependent on their pore structure. A considerable amount of work on porous solids has been undertaken both in academic and in industrial laboratories. However, all this activity is in urgent need of a critical appraisal. To undertake this task, a number of leading experts in the field of adsorption, porosimetry, X-ray and neutron scattering, optical and electron microscopy, calorimetry and fluid permeation, were brought together at the 1987 IUPAC (COPS I) Symposium. This proceedings volume provides an up-to-date overall review of the theoretical foundations for modelling and characterizing porous systems. It deals with most of the techniques in current use as applied to both model systems and porous solids of industrial importance. The reader will find the description and discussion of a number of novel techniques as well as a critical appraisal and comparison of the more established methods. All those concerned with the characterization of porous solids in academic and industrial laboratories will find much to interest them in this volume. It should be on the bookshelf of applied research centres involved in adsorption, catalysis, purification of gases and liquids, pigments, fillers, building materials, etc.
A Comparison of Methods Used to Measure Pore Size in Solids Springer Nature
This unique book brings together high-quality research contributions on ecological aspects of urbanization, water quality concerns in an urban environment, and climate change issues with a strong Indian focus under one umbrella. It includes several case studies that discuss urban water management, particularly highlighting the quality aspects. Urbanization is an ecological disturbance that the modern world accepts as essential in the absence of a better alternative that could provide an equal level of comfort. The prohibitive costs of eco-friendly production technologies are forcing the developing world to generate industrial waste that is detrimental to the environment. At the same time, the availability of adequate fresh water is another challenge for our climate-change impacted world. The scientific

community is, therefore, searching for ways towards ecologically sustainable urban development. Discussing all these issues, this book offers a useful guide for academicians, researchers, practicing engineers, and managers dealing with diverse water-related problems in urban areas.

Molten Salts Chemistry Elsevier

Analytical Methods for Coal and Coal Products, Volume I presents the analytical problems and methods for coal and its numerous products. This book discusses the technological importance of the measurement of the physical properties of coal. Organized into four parts encompassing 19 chapters, this volume starts with an overview of the petrographic analysis of coal wherein it involves two distinctive methods, namely, the reflected light and the transmitted light techniques. This text then discusses the means and methods of reflectance determination and proceeds to outline some of the results obtained and conclusions derived from them about the nature of coal. Other chapters explain the mechanical properties of coal, which are measured in order to predict its behavior in coal mines, coal winning, coal storage, coal comminution, coal handling, briquetting and agglomeration, and several other situations. The final chapter deals with the characterization of the liquid products of coal conversion. This book is a valuable resource for engineers, scientists, chemists, and researchers.

Catalysis from Theory to Application: An Integrated Course Walter de Gruyter GmbH & Co KG

The original properties of mesoporous molecular sieves are so unique that the design of most existing catalysts could be reconsidered. It might indeed be of interest to introduce MMS either as a support or as the active phase, merely on the basis of their high surface areas, narrow pore size distribution and flexibility in composition. The recent literature provides examples of MMS based catalysts of many types such as acid-base solids, supported metals and supported oxides, mixed oxides, anchored complexes and clusters, grafted organic functional groups and others. Examples of all these developments are documented in the present proceedings including some spectacular new proposals. The new metallic (Pt) mesophases are specially worth mentioning because they represent a new approach to producing non-supported highly dispersed metals. In these proceedings the reader will find feature articles and regular papers from many worldwide groups, covering all aspects of synthesis, physical characterization and catalytic reactivity of MMS and their chemically modified forms. It is actually remarkable that this recent development brought together an even broader spectrum of scientists from traditionally unrelated fields such as those of liquid crystals, surfactants, sol-gels, amorphous oxides and mixed oxides, solid state, adsorbents and heterogeneous catalysts. Obviously, this is a fast-growing research area which triggers the imagination and creativity at the cross-road between material design, molecular surface tailoring and catalytic applications.

Unsaturated Soil Mechanics - from Theory to Practice ASTM International

Small Angle X-Ray and Neutron Scattering with Applications to Geomaterials provides techniques for the analysis of geomaterials, which is of great significance for humans because geomaterials are related to earthquake, resource development, underground spaces, carbon dioxide storage, and more. The book introduces the fundamental theory of small angle X-ray and neutron scattering and covers pore accessibility characterization for natural rocks from four aspects, including quantitative evaluation of pore structure heterogeneity and anisotropy, quantification of pore modification in coals due to pulverization, estimation and modeling of coal pore accessibility, and nanoscale coal deformation and alteration of porosity and pore orientation under uniaxial compression. Finally, interactions between pore structures and fluid behaviors in geomaterials are introduced, along with the connections between small-angle scattering and other techniques (NMR cytophotometry, Transmission Electron Microscopy and synchrotron radiation SAXS and nano-CT) described. Covers both theory and applications of small angle X-ray and neutron scattering as related to geomaterials Provides context for using the techniques described in the book in connection with other well-known techniques Includes analysis methods of interactions between pore structures and fluid behaviors in geomaterials

NOAA Technical Report NMFS CIRC. MDPI

Experimental Methods in Catalytic Research, Volume I provides a useful account of procedures in various areas of catalytic research. This book describes the method and its fundamental principles, the apparatus used, the data obtained and their interpretation, and the account of the special problems related to catalytic research. Organized into 11 chapters, this volume begins with an overview of the kinetic phenomena such as quantitative studies of reaction rate and factors influencing rate. This text then examines the general properties that are of major importance to catalysis since catalytic ...

A comparison of two methods of estimating the soil pore network available to protozoa Elsevier

A study of the influence of the chemical environment on the engineering behavior of clayey soils warrants an understanding of the chemistry of the pore water present in the soil, together with the physico-chemical properties of the soil minerals. There are several techniques available for the extraction of the pore water from soil samples. Following a review of these techniques, two methods were considered suitable for the extraction of pore water from overconsolidated clay deposits. Pore water was extracted from several clay shales and bentonitic clays from western Canada using the high-pressure mechanical squeezing technique and the saturation extract technique during this study.

Comparative Evaluation of Geotextile Pore Sizes Using Bubble Point Test and Image Analysis Academic Press

This book contains 29 papers from the Clean Energy: Fuel Cells, Batteries, Renewables; Green Technologies for Materials Manufacturing and Processing II; and Materials Solutions for the Nuclear Renaissance symposia held during the 2010 Materials Science and Technology (MS&T'10) meeting, October 17-21, 2010, Houston, Texas. Topics include Batteries; Corrosion and Materials Degradation; Fuel Cells & Electrochemistry; Fossil Energy Materials; Solar Energy; Waste Minimization; Green Manufacturing and Materials Processing; Immobilization of Nuclear Wastes; Irradiation and Corrosion Effects; and Materials Performance in Extreme Environments.

Atomic Force Microscopy Geological Society of London

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.

Annual Report Elsevier

Surface Area Determination covers the proceedings of the International Symposium on Surface Area Determination. The title presents 35 papers that are organized into nine parts; the papers primarily emphasize the methods for surface area determination. The coverage of the book includes methods such as the BET method, low adsorption methods, and flow methods. The text also reviews papers about various types of surface, including heterogeneous surfaces, porous solids, clays, and small area surfaces. The book will be of great use to researchers and practitioners of disciplines that involve surface area determination, such as chemistry, chemical engineering, and chemical physics.

Development of Unconventional Reservoirs Scientific Publishers

Molten salts and fused media provide the key properties and the theory of molten salts, as well as aspects of fused salts chemistry, helping you generate new ideas and applications for fused salts.Molten Salts Chemistry: From Lab to Applications examines how the electrical and thermal properties of molten salts, and generally low vapour pressure are well adapted to high temperature chemistry, enabling fast reaction rates. It also explains how their ability to dissolve many inorganic compounds such as oxides, nitrides, carbides and other salts make molten salts ideal as solvents in electrometallurgy, metal coating, treatment of by-products and energy conversion.This book also reviews newer applications of molten salts including materials for energy storage such as carbon nano-particles for efficient super capacitors, high capacity molten salt batteries and for heat transport and storage in solar plants. In addition, owing to their high thermal stability, they are considered as ideal candidates for the development of safer nuclear reactors and for the treatment of nuclear waste, especially to separate actinides from lanthanides by electrorefining. Explains the theory and properties of molten salts to help scientists understand these unique liquids Provides an ideal introduction to this expanding field Illustrated text with key real-life applications of molten salts in synthesis, energy, nuclear, and metal extraction

Advances in Materials Science for Environmental and Nuclear Technology II BoD – Books on Demand

A comprehensive overview of the key geologic, geomechanical and engineering principles that govern the development of unconventional oil and gas reservoirs. Covering hydrocarbon-bearing formations, horizontal drilling, reservoir seismology and environmental impacts, this is an invaluable resource for geologists, geophysicists and reservoir engineers.

Nanostructured Multifunctional Materials Elsevier

Limestone is a highly successful and widely used building material, found in many important historic buildings and new monuments around the world. Whilst its success reflects its durability under a wide range of environmental conditions, there are still important questions surrounding the selection, use and conservation of build-ing limestones. In order to make best use of new limestone today, and to conserve old limestone most effectively, we need to bring modern research methods to bear on understanding the characteris-tics of different limestones, what mortars to use, and how key lime-stones have responded to polluted atmospheres. This volume brings together recent inter-disciplinary research on these issues, illustrating the diversity of innovative techniques that are now be-ing applied to furthering our understanding of building limestones.

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