Characterization Of Porous Solids Vii Volume 160 Proceedings Of The 7th International Symposium On The Characterization Of Porous Solids Cops Vii Studies In Surface Science And Catalysis

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Commemoration for Nobel Laureate Professor Suzuki Special Symposium at IUMRS-ICAM2017 Elsevier
This book provides authoritative information, techniques and data necessary for the appropriate understanding of biomass and biowaste (understood as contaminated biomass) composition and behaviour while processed in various conditions and technologies. Numerous techniques for characterizing biomass, biowaste and by-product streams exist in literature. However, there lacks a reference book where these techniques are gathered in a single book, although such information is in increasingly high demand. This handbook provides a wealth of characterization methods, protocols, standards, databases and references relevant to various biomass, biowaste materials and by-products. It specifically addresses sampling and preconditioning methods, extraction techniques of elements and molecules, as well as biochemical, mechanical and thermal characterization methods. Furthermore, advanced and innovative methods under development are highlighted. The characterization will allow the analysis, identification and quantification of molecules and species including biomass feedstocks and related conversion products. The characterization will also provide insight into physical, mechanical and thermal properties of biomass and biowaste as well as the resulting by-products.
Recent Progress in Mesostructured Materials Characterization of Porous Solids VIIProceedings of the 7th International Symposium on the Characterization of Porous Solids (COPS-VII), Aix-en-Provence, France, 26-28 May 2005
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.

Characterization of Porous Solids II Academic Press

Nanoporous Materials III contains the invited lectures and peer-reviewed oral and poster contributions to be presented at the 3rd Conference on Nanoporous Materials, which will be hosted in Ottawa, Canada, June 2002. The work 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 M41S and FSM16 and related materials including clays, carbon molecular sieves, colloidal crystal templated organic and inorganic 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 and separation processes as well as the development of nanotechnology. The contents of this title are based on topics to be discussed by invited lecturers, which deal with periodic mesoporous organosilicas, stability and catalytic activity of aluminosilicate mesostructures, electron microscopy studies of ordered materials, imprinted polymers and highly porous metal-organic frameworks. The other contributions deal with tailoring the surface and structural properties of nanoporous materials, giving a detailed characterization as well as demonstrating their usefulness for advanced adsorption and catalytic applications.

Principles, Methodology and Applications Elsevier

The declared objective of this book is to provide an introductory review of the various theoretical and practical aspects of adsorption by powders and porous solids with particular reference to materials of technological importance. The primary aim is to meet the needs of students and non-specialists who are new to surface science or who wish to use the advanced techniques now available for the determination of surface area, pore size and surface characterization. In addition, a critical account is given of recent work on the adsorptive properties of activated carbons, oxides, clays and zeolites. Provides a comprehensive treatment of adsorption at both the gas/solid interface and the liquid/solid interface Includes chapters dealing with experimental methodology and the interpretation of adsorption data obtained with porous oxides, carbons and zeolites Techniques capture the importance of heterogeneous catalysis, chemical engineering and the production of pigments, cements, agrochemicals, and pharmaceuticals

Materials for Carbon Capture Royal Society of Chemistry

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

Fundamentals and Applications Elsevier

The developments in the area of ordered nanoporous solids have moved beyond the traditional catalytic and separation uses and given rise to a wide variety of new applications in different branches of chemistry, physics, material science, etc. The activity in this area is due to the outstanding properties of nanoporous materials that have attracted the attention of researchers from different communities. However, recent achievements in a specific field often remain out of the focus of collaborating communities. This work summarizes the latest developments and prospects in the area of ordered porous solids, including synthetic layered materials (clays), microporous zeolite-type materials, ordered mesoporous solids, metal-organic-framework compounds (MOFs), carbon, etc. All aspects, from synthesis via comprehensive characterization to the advanced applications of ordered porous materials, are presented. The chapters are written by leading experts in their respective fields with an emphasis on recent progress and the state of the art. * Summarizes the latest developments in the field of ordered nanoporous solids * Presents state-of-the-art coverage of applications related to porous solids * Incorporates 28 contributions from experts across the disciplines

Natural Gas Conversion VII Elsevier

This two-volume book provides an overview of physical techniques used to characterize the structure of solid materials, on the one hand, and to investigate the reactivity of their surface, on the other. Therefore this book is a must-have for anyone working in fields related to surface reactivity. Among the latter, and because of its most important industrial impact, catalysis has been used as the directing thread of the book. After the preface and a general introduction to physical techniques by M. Che and J.C. Védrine, two overviews on physical techniques are presented by G. Ertl and Sir J.M. Thomas for investigating model catalysts and porous catalysts, respectively. The book is organized into four parts: Molecular/Local Spectroscopies, Macroscopic Techniques, Characterization of the Fluid Phase (Gas and/ or Liquid), and Advanced Characterization. Each chapter focuses upon the following important themes: overview of the technique, most important parameters to interpret the experimental data, practical details, applications of the technique, particularly during chemical processes, with its advantages and disadvantages, conclusions.

Characterization of the Dynamic Behavior of Porous Solids. Volume 7. Microstructural Characterization of Several Porous Ceramics and Porous Beryllium Springer Nature

The 7th International Symposium on the Characterization of Porous Solids (COPS-VII) was held in the Congress Centre in Aix-en-Provence between the 25th-28th May 2005. The symposium covered recent results of fundamental and applied research on the characterization of porous solids. Papers relating to characterization methods such as gas adsorption and liquid porosimetry, X-ray techniques and microscopic measurements as well as the corresponding molecular modelling methods were given. These characterization methods were shown to be applied to all types of porous solids such as clays, carbons, ordered mesoporous materials, porous glasses, oxides, zeolites and metal organic frameworks. * 36 oral presentations and 166 posters and around 230 guests from 27 countries. * A large part of this symposium was devoted to the use computational methods to characterise porous solids

Scientific Bases for the Preparation of Heterogeneous Catalysts Elsevier

This book offers an overview of the state of the art in the field of DeNOx catalysis in order to focus novel orientations, new technological developments, from laboratory to industrial scale. A particular attention has been paid towards the implementation of catalytic processes for minimising NOx emissions either from stationary or mobile sources under lean condition to meet future standard regulations of NOx emissions. In the first part of this book, critical aspects reported in the literature which usually make difficult the achievement of efficient catalytic technologies in those conditions are summarised and analysed in order two separate new perspectives. The second part deals with fundamental aspects at molecular level. A better understanding of the reactions involved under unsteady-state conditions is probably a pre-requisite step for improving the performances of the actual processes or developing original ones. The development of powerful in situ spectroscopic techniques is of fundamental interest for kinetic modelling. Correlations between spectroscopic and kinetic data with those obtained from theoretical calculations are reported. Some illustrations emphasise the fact that these comparisons may help in determining the nature of the catalytic active sites and building predictive tools for simulations under running conditions. The latter part of this book will be illustrated by different practical approaches covering various aspects related to the catalysts preparation and the development of alternative technologies which include industrial considerations. - New technological developments for investigating catalytic reactions in transient conditions (in situ and operando spectroscopic techniques) - Concerted approaches in DeNOx catalysis - How academic aspects (kinetic, in situ spectroscopic measurements) can provide useful information for practical applications - Comparison of different approaches provided by academic and industrial partners

Synthesis and Structure Springer Nature

The Second IUPAC Symposium on the Characterization of Porous Solids (COPS-II) provided the opportunity for detailed discussion and appraisal of the most important techniques currently used for the characterization of porous materials, especially those of technological importance. The 82 selected papers and reviews contained in this volume are mainly concerned with the theoretical and experimental aspects of adsorption, fluid penetration, small-angle scattering and spectroscopic methods with their application in the study of adsorbents, catalysts, constructional materials, etc. Particular attention is given to the characterization of carbons, oxides, zeolites, clays, cement and polymers. The wide range of materials and techniques described in this book provide a useful and comprehensive reference source for academic and industrial scientists and technologists.

Chemistry of Zeolites and Related Porous Materials John Wiley & Sons

Introduction to Zeolite Molecular Sieves, 3rd Edition presents a collection of the most important results and ideas in the field of molecular sieve chemistry and technology, the most important experimental techniques related to the research activities in molecular sieves, and identifies new areas of molecular sieve chemistry. Chapters start at a reasonably simple entry level, but also covers the present state-of-the-art in the field. Topics covered include structure, synthesis, characterization, ion exchange, adsorption, diffusion, separations, and natural zeolites. * 6 years since the last edtion this book brings together the rapid development within the field of molecular sieve chemistry and applications * Accessible to newcomers to the field, also containing valuable information for experienced researchers * 27 chapters written by renowned scientists in their field, including updates on some 2nd edition chapters

Proceedings of the 6th International Symposium on the Characterization of Porous Solids (COPS-VI), Allicante, Spain, May 8 - 11 2002 Elsevier

Characterization of Liquids, Dispersions, Emulsions and Porous Materials Using Ultrasound, Third Edition, presents a scientific background for novel methods of characterizing homogeneous and heterogeneous liquids (dispersions, emulsions, and gels) as well as porous materials. Homogeneous liquids are characterized in rheological terms, whereas particle-size distribution and zeta potential are parameters of heterogeneous liquids. For porous materials, porosity, pore size, and zeta potential are output characteristics. These methods are based on ultrasound, which opens an opportunity for simplifying the sample preparation by eliminating dilution. This in turn, makes measurements faster, easier, precise, suitable for accurate quality control, PAT, and formulation of complex systems. This book provides theoretical background of acoustics, rheology, colloid science, electrochemistry, and other relevant scientific fields, describing principles of existing instrumentation and, in particular, commercially available instruments. Finally, the book features an extensive list of existing applications. Presents a theoretical multi-disciplinary background of several new ultrasound analytical techniques in one place Validates the theoretical basis of several new analytical techniques Compares the efficiency and applications of various ultrasound techniques Lists many ultrasound applications in colloid chemistry Contains an extensive bibliography on this multidisciplinary topic

Zeolites and Related Materials: Trends Targets and Challenges(SET) Elsevier

The Proceedings of the 15th International Zeolite Conference contain 291 full papers, including the full papers of 5 plenary lecture, 12 keynote lectures, and 4 invited lectures at the R. M. Barrer Symposium. The topics of these full papers include synthesis, modifications, structures, characterization, adsorption, separation and diffusion, catalysis, host-guest chemistry and advanced materials, industrial applications, theory and modeling, mesostructured materials, MOF materials, and natural zeolites. The other 271 full papers were selected from the about 1000 contributions submitted to the 15th IZC. - Most recent research results in zeolite science - Full indexes - Wide coverage of zeolite science and technology

Characterization of Porous Solids and Powders: Surface Area, Pore Size and Density Academic Press

A surge of interest in the geomechanical and petrophysical properties of mudrocks (shales) has taken place in recent years following the development of a shale gas industry in the United States and elsewhere, and with the prospect of similar developments in the UK. Also, these rocks are of particular importance in excavation and construction geotechnics and other rock engineering applications, such as underground natural gas storage, carbon dioxide disposal and radioactive waste storage. They may greatly influence the stability of natural and engineered slopes. Mudrocks, which make up almost three-quarters of all the sedimentary rocks on Earth, therefore impact on many areas of applied geoscience. This volume focuses on the

mechanical behaviour and various physical properties of mudrocks. The 15 chapters are grouped into three themes: (i) physical properties such as porosity, permeability, fluid flow through cracks, strength and geotechnical behaviour; (ii) mineralogy and microstructure, which control geomechanical behaviour; and (iii) fracture, both in laboratory studies and in the field.

Valorization and Management Techniques Elsevier Science Serials

The 7th International Symposium on the Characterization of Porous Solids (COPS-VII) was held in the Congress Centre in Aix-en-Provence between the 25th-28th May 2005. The symposium covered recent results of fundamental and applied research on the characterization of porous solids. Papers relating to characterization methods such as gas adsorption and liquid porosimetry, X-ray techniques and microscopic measurements as well as the corresponding molecular modelling methods were given. These characterization methods were shown to be applied to all types of porous solids such as clays, carbons, ordered mesoporous materials, porous glasses, oxides, zeolites and metal organic frameworks. * 36 oral presentations and 166 posters and around 230 guests from 27 countries. * A large part of this symposium was devoted to the use computational methods to characterise porous solids

Proceedings of the 9th International Symposium Louvain-la-Neuve, Belgium, September 10-14, 2006 Springer Science & Business Media

This book contains 99 of the papers that were presented at the 6th in the series of Symposia on Characterization of Porous Solids held in Alicante, Spain, May 2002. Written by leading international specialists in the subject, the contributions represent an up-to-date and authoritative account of recent developments around the world in the major methods used to characterize porous solids. The book is a useful work of reference for anyone interested in characterizing porous solids, such as MCM-41 mesoporous materials, pillared clays, etc. Papers on pore structure determination using gas adsorption feature strongly, together with papers on small angle scattering methods, mercury porosimetry, microcalorimetry, scanning probe microscopies, and image analysis.

Chemistry on Modified Oxide and Phosphate Surfaces: Fundamentals and Applications Elsevier Science

Biocatalysis in Oil Refining focuses on petroleum refining bioprocesses, establishing a connection between science and technology. The micro organisms and biomolecules examined for biocatalytic purposes for oil refining processes are thoroughly detailed. Terminology used by biologists, chemists and engineers is brought into a common language, aiding the understanding of complex biological-chemical-engineering issues. Problems to be addressed by the future R&D activities and by new technologies are described and summarized in the last chapter. * Updated references * Studying bioprocessing problems, looking at opportunities for improvements and technology developments

Applications to Energy Storage and Environmental Science Elsevier

Recent Progress in Mesostructured Materials is a selection of oral and poster communications presented during the 5th International Mesostructured Materials Symposium (5th IMMS2006). Authorized by International Mesostructured Material Association (IMMA) and hosted by the Fudan University, China. The scope of this involved field covers both traditional inorganic mesostructured molecular sieves and mesostructured materials like organic polymers, metals, organic-inorganic nanocomposites, and ordered mesoporous carbons, the hot topics in chemistry, crystallization, structure, liquid crystalline, catalysis and materials science. This symposium provided a forum for the presentation of the most novel development and knowledge in the science and technology of mesostructured materials. Papers presented cover a wide range of topics that include synthesis, structure determination, characterisation, modelling, and application in catalysis, adsorption, biochemistry and advanced material sciences. * This highly visual book is a must for readers looking to stay up-to-date on mesostructure science * A selection of more than 200 oral and poster papers, covering research aspects/developing trends of mesostructured materials * An important reference for those working in the material science, catalysis and biotechnology fields

Recent Advances and Prospects Academic Press

This volume of Studies in Surface Science and Catalysis contains the Proceedings of the 9th International Symposium on the Scientific Bases for the Preparation of Heterogeneous Catalysts, held on the campus of the "Universit catholique de Louvain" (UCL) in Louvain-la-Neuve, Belgium, on September 10-14, 2006. This series of symposia was initiated in 1975 on a regular 4-year interval basis. The Symposium covered the following topics: key aspects in catalysts preparation, micro- and mesoporous supports, supported metal catalysts, structured catalysts, tailored zeolites, catalysis by bases, and catalysts for fuel production. These topics served as guidelines for the sessions both in the programs of oral communications (41 contributions including 7 keynote communications – one for each topic) and poster presentations (101 contributions). In addition, the opening invited lecture addressed the question of scaling-up high-throughput experimental approaches. * Contains a collection of the papers presented at the workshop

Characterization of porous solids VII : proceedings of the 7th International Symposium on the Characterization of Porous Solids (COPS-VII), Aix-en-Provence, France, 26-28 May 2005 Elsevier

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.