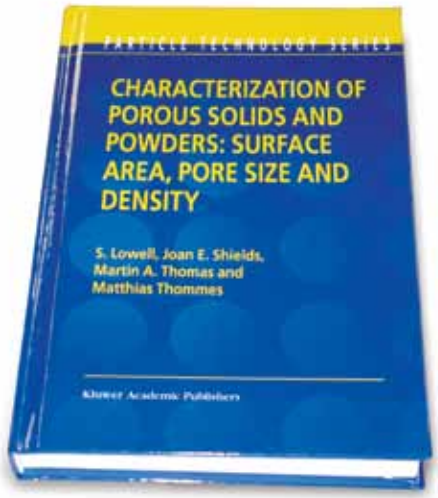

Characterization of Porous Solids and Powders: Surface Area, Pore Size and Density

Volume 16 in the Particle Technology Series
Springer Netherlands, ISBN 1-4020-2302-2
September 2004, 347pp. hardbound

S. Lowell, Quantachrome Instruments, Boynton Beach, USA
Joan E. Shields, Dept. of Chemistry, Long Island University, CW Post Campus, Brookville, NY, USA
Martin A. Thomas, Quantachrome Instruments, Boynton Beach, USA
Matthias Thommes, Quantachrome Instruments, Boynton Beach, USA

This book gives a unique overview of principles associated with the characterization of solids with regard to their surface area, pore size and density. The book covers methods based on gas adsorption (physi- and chemisorption), mercury porosimetry and pycnometry. Not only are the theoretical and experimental basics of these techniques described, but also the most recent developments, particularly in light of the tremendous progress made in recent years in materials science and nanotechnology. The application of classical theories and methods for pore size analysis are discussed in contrast with the most advanced microscopic theories based on statistical mechanics (e.g. density functional theory and molecular simulation). The book will appeal both to students and to scientists in industry who are in need of accurate and comprehensive pore and surface area characterization of their materials.

Review:

An updated version of the classical textbook (Powder Surface Area and Porosity, 3rd ed., 1991) by the first two authors "the book now includes recent developments in the areas of density functional theory, molecular simulations, pore network theories, and it has an expanded section on heterogeneous catalysts..... An interesting aspect is the book's clear division between theoretical aspects (Part 1) and experimental aspects (Part 2) of the various techniques..... The book also demonstrates a good balance between how deep a theoretical concept is being discussed and how many real-world examples are presented.

Summing up: Recommended. Lower-division undergraduates through professionals; two-year technical program students."

H. Giesche, Alfred University, in: CHOICE, May 2005, Vol. 42 No.09

TABLE OF CONTENTS