Record Nr. UNINA9910791982703321 Nanoporous materials: advanced techniques for characterization, **Titolo** modeling, and processing / / edited by Nick Kanellopoulos Pubbl/distr/stampa Boca Raton, Fla.:,: CRC Press,, 2011 **ISBN** 0-429-13425-8 1-4398-1105-9 Descrizione fisica 1 online resource (564 p.) Altri autori (Persone) KanellopoulosN. K (Nick K.) 620.116 Disciplina Soggetti Porous materials Nanostructured materials Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Front cover; Contents; Preface; Editor; Contributors; Part I. Basic Nota di contenuto Principles, Recent Advances, and Expected Developments of Advanced Characterization Techniques; Chapter 1. Scattering Techniques; Chapter 2. Studying Diffusion and Mass Transfer at the Microscale: Chapter 3. Nanoscale Microscopies; Chapter 4. Calorimetric Techniques; Chapter 5. Combination of In Situ and ExSitu Techniques for Monitoring and Controlling the Evolution of Nanostructure of Nanoporous Materials; Part II. Fundamentals, Recent Advances, and Expected Developments of Simulation Methods; Chapter 6. Mesoscopic Methods Chapter 7. Characterization of Macroscopically Nonhomogeneous Porous Media through Transient Gas Sorption or Permeation MeasurementsPart III. Fundamentals, Recent Advances and Improvements, Membrane, Catalytic and Novel Processes Involving Nanoporous Materials; Chapter 8. Synthesis Processes of Nanoporous Solids; Chapter 9. Sorption Processes; Chapter 10. Fundamental Approach to Supercritical Hydrogen Adsorptivity of Nanoporous Carbons; Chapter 11. Membrane Processes Chapter 12. Diffusional Transport in Functional Materials: Zeolite, MOF, and Perovskite Gas Separation Membranes, Proton Exchange Membrane

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## Sommario/riassunto

Having successfully replaced elements used in traditional, pollution-prone, energy-consuming separation processes, nanoporous materials play an important role in chemical processing. Although their unique structural or surface physicochemical properties can, to an extent, be tailored to meet specific process-related requirements, the task of characterizing them completely is still a difficult and frequently controversial problem. Nanoporous Materials: Advanced Techniques for Characterization, Modeling, and Processing outlines existing and expected innovations i