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3: Synthesis of Zeolites and Manufacture of Zeolitic Catalysts and Adsorbents 3.1 Introduction; 3.2 Synthesis of Zeolites and Aluminophosphate Molecular Sieves; 3.2.1 Hydrothermal Synthesis-The Key to Metastable Phases; 3.2.2 Typical Zeolite Syntheses; 3.2.3 Important Synthesis Parameters-Zeolites; 3.2.4 Typical Aluminophosphate Syntheses; 3.2.5 Important Synthesis Parameters-Aluminophosphates; 3.2.6 Dewatering, Filtration and Washing of Molecular Sieve Products; 3.3 Forming Zeolite Powders into Usable Shapes; 3.3.1 Chemical Engineering Considerations in Zeolite Forming 3.3.2 Ceramic Engineering Considerations in Zeolite Forming 3.3.3 Bound Zeolite Forms; 3.3.4 Other Zeolite Forms-Colloids, Sheets, Films and Fibers; 3.4 Finishing: Post-Forming Manufacturing of Zeolite Catalysts and Adsorbents; 3.4.1 Post-Forming Crystallization; 3.4.2 Stabilization and Chemical Modification of Zeolites; 3.4.3 Ion Exchange and Impregnation; 3.4.4 Drying and Firing; 3.5 Selected New Developments in Catalyst and Adsorbent Manufacture; References; 4: Zeolite Characterization; 4.1 Introduction; 4.1.1 Importance of Characterization; 4.2 Multi-Technique Methodology 4.2.1 Identification of the Structure of a Newly Invented Zeolite 4.3 X-Ray Powder Diffraction Characterization of Zeolitic Systems; 4.3.1 Interpretation of Powder Diffraction Data for Zeolites; 4.3.2 Phase Identification and Quantification; 4.3.3 Unit Cell Size Determination; 4.3.4 Crystallite Size; 4.3.5 Rietveld Refinement; 4.4 Electron Microscopy Characterization of Zeolitic Systems; 4.4.1 Importance of Electron Microscopy for Characterizing Zeolites; 4.4.2 Scanning Electron Microscopy; 4.4.2.1 Morphological Characterization; 4.4.2.2 Compositional Characterization 4.4.3 Transmission Electron Microscopy

Sommario/riassunto

This first book to offer a practical overview of zeolites and their commercial applications provides a practical examination of zeolites in three capacities. Edited by a globally recognized and acclaimed leader in the field with contributions from major industry experts, this handbook and ready reference introduces such novel separators as zeolite membranes and mixed matrix membranes. The first part of the book discusses the history and chemistry of zeolites, while the second section focuses on separation processes. The third and final section treats zeolites in the field of catalysis.
