

## BOOK REVIEWS

**New Developments in Zeolite Science and Technology.** Edited by Y. MURAKAMI, A. IJIMA, AND J. W. WARD. Studies in Surface Science and Catalysis, Volume 28. Elsevier, Amsterdam, 1986. 1092 pp., \$214.00

This book contains the proceedings of the 7th International Zeolite Conference which was held in Tokyo, on August 17-22, 1986. It includes an introductory talk, two plenary lectures, nine invited lectures, and 121 full papers. The contributions are mostly from leading scientists and they are grouped in eight chapters.

Chapter 1 contains the introductory talk and the two plenary lectures.

Chapter 2, entitled "Geology and Mineralogy," includes nine papers.

Chapter 3 on Synthesis covers various aspects of preparation, crystallization, and characterization of novel molecular sieves. Twenty-one papers are presented in this section.

Chapter 4 deals with Ion Exchange and Modification including 11 contributions.

Chapter 5, "Structure," shows, through 14 articles, the application of a variety of bulk and surface techniques to the characterization of the molecular sieve materials.

Chapter 6, "Adsorption and Diffusion," includes 22 contributions. The papers cover subjects such as qualitative and quantitative studies of acidity, diffusivities determined by various techniques, and the effect of pretreatments on both diffusion and adsorption behavior of molecular sieves.

Chapter 7, devoted to Catalysis, is the largest one in this book with 44 papers. The nonconventional zeolites such as SAPO and metallosilicates are well represented in this section. The conversion of alcohols, light hydrocarbons, and syngas to a variety of products makes up another important portion of this chapter. Other papers cover various aspects of metal exchanged zeolites as well as more basic topics such as the nature of active sites, shape selectivity, and deactivation phenomena. The application of zeolites in various forms to reactions such as HDS, HDN, hydrocracking, alkylation, dealkylation, etc., completes this section.

Chapter 8, "Applications," contains nine papers devoted to applied aspects of molecular sieves in fields such as detergent formulation, carbohydrate and gas separation, energy storage, food processing, and nutrition.

The overall presentation of the book is very good

and it provides an up-to-date view of the main research groups working on the various aspects of zeolite chemistry and technology. It contains a wealth of new information and therefore is a necessary requirement for all who are seriously involved in zeolite research.

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**Catalytic Hydrogenation.** Edited by L. ČERVENÝ. Studies in Surface Science and Catalysis, Vol. 27. Elsevier, Amsterdam/New York, 1986. 677 pp., \$118.00.

Catalytic hydrogenation has resulted in major contributions to many fields of chemistry and it is a key process in the chemical industry. The field of catalytic hydrogenation is so wide and publications are so numerous that the need for a comprehensive review is obvious to thoroughly update the literature.

This book consists of four parts and is divided into 18 chapters written by 36 scientists who are the top experts of their fields.

*Chapter 1* focuses on the kinetics of heterogeneous hydrogenation of organic compounds (S. L. Kiperman).

*Chapter 2* deals with synergy in catalytic reactions involving hydrogen and the possible role of surface-mobile species (B. K. Hodnett and B. Delmon).

*Chapter 3* is devoted to the adsorption and hydrogenation of carbonyl and related compounds on transition metal catalysts (K. Tanaka).

*Chapter 4* summarizes the knowledge on the hydrogenation of nitriles (J. Volf and J. Pašek).

*Chapter 5* discusses the hydrogenolysis of C-C bonds on platinum-based bimetallic catalysts (F. Garin, L. Hilaire, and G. Maire).

*Chapter 6* treats the hydrogenative denitrogenation of model compounds as related to the refining of liquid fuels (H. Schulz, M. Schon, and N. M. Rahman).

*Chapter 7* considers the effect of catalyst composition on reaction networks in hydrodesulphurization (M. Zdražil and M. Kraus).

*Chapter 8* discusses the carrier effect on hydrogenation properties of metals (G. M. Pajonk and S. J. Teichner).

*Chapter 9* reviews the role of bimetallic catalysts in catalytic hydrogenation and hydrogenolysis (L. Guzzi and Z. Schay).

*Chapter 10* discusses the supported mono- and bimetallic catalysts in hydrocarbon conversions (J. Völter).

*Chapter 11* considers supported bimetallic catalysts prepared by controlled surface reactions (J. Margitfalvi, S. Szabó, and F. Nagy).

*Chapter 12* deals with new supported metallic nickel systems (J. M. Marinas, J. M. Campelo, and D. Luna).

*Chapter 13* reviews supported metal complexes as hydrogenation catalysts (Yu. I. Yermakov and L. N. Arzamaskova).

*Chapter 14* gives a study on supported asymmetric hydrogenation catalysts (J. Hetflejš).

*Chapter 15* is devoted to the liquid-phase hydrogenation and the role of mass and heat transfer in

slurry reactors (G. Gut, O. M. Kut, F. Yucelen, and D. Wagner).

*Chapter 16* deals with the application of fixed-bed reactors to liquid-phase hydrogenation (J. Hanika and V. Staněk).

*Chapter 17* gives a review on the control of hydrogenation autoclaves (J. Horák).

*Chapter 18* treats the selective hydrogenation applied to the refining of petrochemical raw materials produced by steam cracking (M. L. Derrien).

This book covers the latest scientific results in the field of catalytic hydrogenation and provides valuable information to all who are involved in this field and will be a valuable addition to their libraries.

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