JOURNAL OF SOLID STATE CHEMISTRY 104, 476 (1993)

BOOK REVIEW

Catalytic Chemistry. By BRUCE C. GATES. Wiley, New York, 1992. xxi + 458 pp. $79.00.

In this book, Bruce Gates succeeds in providing a succinct, coherent introduction to the subject of catalysis. In doing so, he fills a long standing need for a textbook from which to teach an advanced undergraduate course in catalysis. Beginning with the introduction in the first chapter, a basic understanding of catalysis is presented in an unusually readable and interesting fashion. A well-balanced blend of the theoretical, chemical, engineering, and applied aspects of catalysis is given. The formatting of examples into problems followed by their solutions serves to emphasize the concepts being discussed in a clear, practical manner.

Chapters 2 through 4, which deal with catalysis in solutions, by enzymes, and by polymers, are well written and very good treatments of the subjects. Although they contain little solid state chemistry as such, they lay excellent groundwork for the discussion of structure–function relationships in Chapters 5 and 6.

Chapter 5 begins with a concise introduction to the structure of crystalline solids in general and zeolites in particular. This leads to a discussion of the use of zeolites and other molecular sieves in catalysis, emphasizing the role of these unique structures in providing information about the geometries of catalytically active sites as well as the applications resulting from the unique transport phenomena through their pore structures.

In the chapter entitled "Catalysis on Surfaces," a very basic description is given of various surface characterization techniques and the information obtained from each. Although the role of the surface structures of inorganic solids is emphasized, the role of the catalyst bulk is also discussed for several catalysts.

This book is an excellent text for a course in catalysis and as such treats solid state chemistry only to the extent that it enhances the discussions of catalysis.

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