

## BOOK REVIEW

*Zeolite Chemistry and Catalysis*. Edited by JULE A. RABO. ACS Monograph, 171, Amer. Chem. Soc., Washington, D. C. 1976. 796 pp. \$65.00.

This book surveys the catalytic properties of zeolites. In order to consider these properties within an adequate framework of reference great importance is given to the structure and chemistry of these materials. The book is divided into three sections. The first one discusses the structure and chemistry of zeolites. The second emphasizes the relationship between catalytic activity and zeolite chemistry while the last one gives an overall view of technical applications.

The first two chapters are mainly devoted to discussion of the structure of different zeolites. X-ray as well as infrared data are the main sources of information used for this purpose. The first chapter serves as an introduction for the whole book by giving the basics of nomenclature and by providing some insight into several problems that are considered more extensively later in the book. The third and lengthiest chapter covers a wide range of infrared studies of zeolite surfaces. This includes a worthwhile critical discussion of different techniques employed in studying these systems. Chapter IV deals with the important technical problem of zeolite stability and ways to improve it. In Chapter V one finds a survey of the interactions between salts and zeolites in the anhydrous state. Chapter VI is devoted to ESR spectroscopy. It gives a short review of the basics followed by a coverage of studies on both stable and radiation induced radicals as well as intracrystalline and redox phenomena. Chapter VII gives a concise but quite complete view

of diffusion in zeolites. It also briefly describes the different experimental techniques used to obtain diffusion data. This chapter is well placed, i.e., just before the start of the section on chemistry and mechanism. Chapter VIII contains a systematic and straightforward approach to the abundant literature on hydrocarbon transformations over zeolites. The authors have done a good job in summarizing the flood of data in this area. The following chapter acceptably covers the reactions of molecules containing heteroatoms. Chapter X completes this section by reviewing studies on metal containing zeolites, a relatively undeveloped topic compared with the rest of zeolite catalysis. This is also a suitably located chapter to serve as a transition for the technology section. This section covers the current as well as potential industrial applications of zeolites as catalysts. Information on preparation of cracking catalysts as well as technical descriptions of the more important catalytic processes are given.

The presentation of the book is very good although it would have been helpful to have an index added to each chapter for quicker reference. The literature is covered approximately through the first half of 1974. It took almost two years to publish and this is regrettable because overall, it is a valuable reference book for those concerned with research and applications of zeolite catalysts.

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