

zeolite crystallization and the most challenging and formidable areas of nucleation and crystal growth. The author's coverage of the kinetics of crystal growth is excellent. This chapter also contains a section on "Organic Bases in Zeolite Synthesis" which treats thoroughly the use of alkylammonium and quaternary ammonium ions. Such work has led to the synthesis of a large number of new zeolite phases, synthetic analogs of several natural zeolites, and, of great significance, zeolites with Si/Al ratios exceeding those of any known natural species.

Chapter 6 reviews "isomorphous" replacement of tetrahedrally coordinated ions or atoms by other similarly coordinated elements, the most obvious being the replacement of Si by Al. This brings up the Lowenstein-rule controversy mentioned above, and Professor Barrer performs an outstanding service in thoroughly reviewing the very recent literature on this subject. This chapter also reviews the aluminum phosphate molecular sieves alluded to above. With regard to many similar framework-substituted compounds, Professor Barrer is rather forthright in stating, "... iron, certain rare earth elements and boron can replace Si or Al, but the structures are not zeolites. The evidence of significant framework substitution by B(III), Fe(III), Cr(III), Zr(IV) or Ti(IV), under the

low-temperature aqueous alkaline conditions normally used in zeolitization, is incomplete and ambiguous." Chapter 7 treats the salt-bearing "tectosilicates," which are of lesser interest to many people concerned with the most important applications of zeolites. These materials tend to be "stuffed" with salts and therefore generally are unable to take up the types of molecules usually sorbed and/or catalyzed by normal zeolites.

In addition to a subject index, the volume contains a substance index which is very useful, especially for locating information on a specific zeolite or zeolite family. Readers who have had some experience with zeolite synthesis and the hydrothermal chemistry of silica and silicates can appreciate what a difficult task Professor Barrer undertook in putting this book together. The number of variables encountered in this field is really overwhelming, and the author has done a commendable job in achieving some degree of order in a chaotic field. This reviewer would not recommend the book to the beginner, but for those who have some knowledge of zeolites in general and who have lived, to some extent at least, with the frustrations of zeolite synthesis, this book is a blessing.

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## ERRATA

In the paper by Dyrek, Klapayta, and Sojka (Volume 31, Number 3, 223–229), the first word of line 4 of the Abstract should read "decreased" instead of "increased." The three foreign-language translations of the abstract should be corrected in a similar manner.

In the note by Novich and Martin (Volume 31, Number 3, 235–238), the coefficient of variation equation on p. 235 should read as follows:

$$CV = 100\bar{d}[\Sigma (ld - \bar{d})^2/(n - 1)]^{1/2}.$$

The authors of these articles regret the inconvenience caused to the readers.