

tron microscopy. The data obtained by these methods for some minerals are of a decisive importance as diagnostic features (for instance, the data of electron microscopy and selected area diffraction for halloysites and serpentines). Unfortunately, these methods and their role have not found due attention in the five volumes, and they might take a worthy place in future editions.

The X-ray method is of the most importance for the identification of minerals. It has become necessary not only for specialist researchers but in fact for all petrologists and mineralogists as well. Therefore it would be expedient to provide the work *Rock-forming Minerals* with tables of X-ray powder diagrams, either including them in the text or in an addendum at the end of each volume.

In conclusion, we should like to emphasize once more the great scientific and practical value of *Rock-forming Minerals* and the desirability of its reissue in an updated and perfected version.

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X-ray diffraction methods in polymer science. By LEROY E. ALEXANDER. Pp. xv + 582. New York: JOHN WILEY, 1970. Price 265s.

This monograph is a most valuable compilation of material which, up to now, has been scattered through a wide range of journals such as *J. Polymer Sci.*, *Kolloid-Z.*, *Phil. Mag.*, *Helv. Chim. Acta*, *Makromol. Chem.*, *Nuovo Cimento*, *Acta Cryst.*, *Nippon Kagaku Zasshi*, etc., etc. Among other purely factual items are almost five hundred references to specific papers in the text and a further five hundred references to papers from which the thirty-six pages of crystallographic data for about 270 polymers have been derived. Numerous general references are also included.

The introductory chapter discusses first the basic concepts associated with crystallization in polymers and with

X-ray scattering in general; then follow more detailed discussions of both wide-angle and small-angle scattering by polymers. Chapter 2 deals with instrumentation and includes treatment of the problems of specimen preparation and mounting, comparative discussions of diffractometer and photographic methods, and a section on optical diffractometer techniques for interpretation. Chapters 3 and 4 discuss the fascinating and controversial subject of degree of crystallinity in polymers and preferred orientation respectively. The remaining chapters deal with the possibilities of obtaining information on macro-structure from low-angle scattering, relationships between micro-structure and wide-angle scattering and finally a shorter treatment of the problems of lattice distortion and of crystallite size. The book is written for research workers in two main categories – those engaged in polymer studies who want to understand the contribution that X-ray diffraction can make and those engaged in X-ray diffraction studies who wish to widen their experience of their application in materials science.

It is difficult to know where to begin in commenting on such a large and comprehensive book but, as an X-ray crystallographer relatively recently entering the field of polymers, I found the chapter on the degree of crystallinity and the two on macro and micro-structures perhaps the most valuable. The presentation is highly concentrated but extremely clear and will save newcomers to the field enormous amounts of time in hunting through the literature. The author manages to mix purely technical and experimental details with discussions of the background theory and even detailed, step-by-step instructions for carrying out analyses of resulting data.

This book would earn its place on the library shelf purely for the factual material which has already been mentioned at the beginning of this review, but its place in the laboratory and on the desk is also fully justified by the clarity and completeness of the exposition and the sense of perspective and balance that it brings to its subject.

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