Book Review

X-Ray Diffraction Methods in Polymer Science

Leroy Alexander

(Wiley - Interscience 1970)
£13·25

The book fills a real need and does this eminently. It provides a textbook on X-ray diffraction methods as applied, or as applicable, to linear polymers of essentially synthetic origin. (Intentionally, only secondary attention is given to biological polymers.) It is for use by scientists who in one form or other are committed to work on high polymers, but are not professional crystallographers. In doing so it first provides an introduction to X-ray diffraction. In this it is not, and is not claiming to be, self sufficient, as such treatments can be found more fully in other conventional textbooks. After this it branches out into specialised diffraction topics with specific applications to high polymers. These are best listed by quoting the chapter headings: Degree of crystallinity, preferred orientation, macrostructure from small angle scattering, microstructure from wide angle diffraction, lattice distortions and crystallite size. Eleven appendices contain essential data on X-rays, diffraction and polymer crystallography, all available elsewhere, but useful to have at hand under the same cover. The emphasis is on quantitative formulations from first principles. The instrumentation aspects are extensively dealt with and illustrated. It contains a fairly comprehensive references list to original sources. The background to relevant parts of polymerscience is skilfully fused with the diffraction material. This should be useful, although in itself inadequate, for crystallographers wishing to work on polymers. However, it is not the aim of the book to teach any part of polymer science, but to instruct the polymer scientist in those aspects of X-ray diffraction which they may have to practice or at least understand. In this respect the book is unique and indispensable and likely to remain so for a long time to come.

A.K.