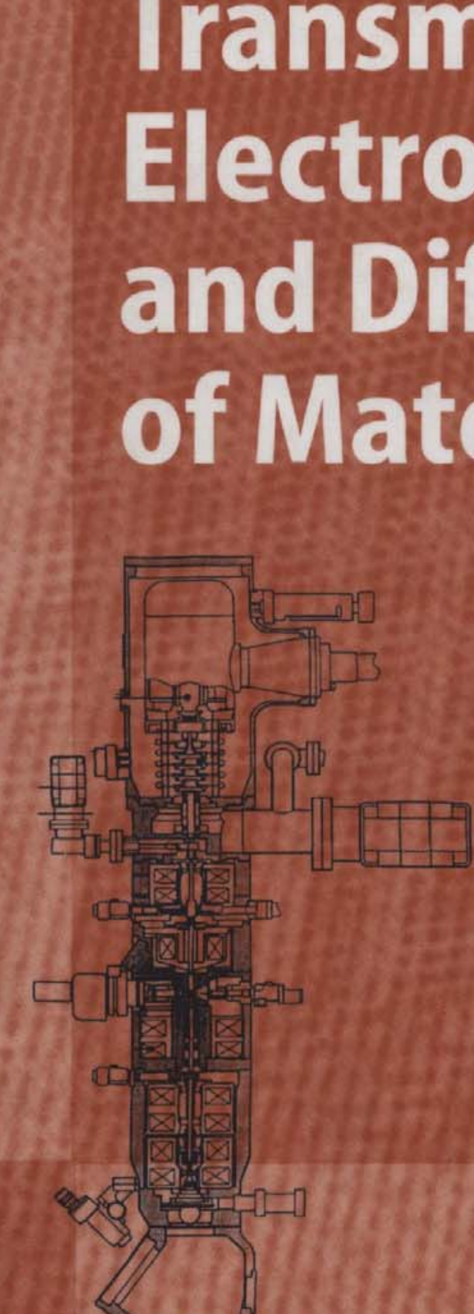
B. Fultz
J. M. Howe

Transmission Electron Microscopy and Diffractometry of Materials



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Contents

In section titles, the asterisk, "*," denotes a more specialized topic. The double dagger, "‡," warns of a higher level of mathematics, physics, or crystallography.

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Transmission Electron Microscopy and Diffractometry of Materials

This book teaches graduate students the concepts of transmission electron microscopy (TEM) and x-ray diffractometry (XRD) that are important for the characterization of materials. It emphasizes themes common to both techniques, such as scattering, wave coherence and interference, unit cells and diffraction patterns, and effects of disorder in the material. It also describes unique aspects of each technique, especially imaging techniques for TEM: conventional, high-resolution, and *Z*-contrast imaging. Both practical and theoretical issues are explained in detail. The book can be used in an introductory-level or advanced-level text, since sections/chapters are sorted according to difficulty and grouped for use in quarter and semester courses on TEM and XRD. Each chapter includes a set of problems to illustrate principles, and the extensive Appendix includes laboratory exercises.

"I can warmly recommend this book, which is attractively priced, as an excellent addition for any materials scientist or physicist who wants a good overview of current diffraction and imaging techniques."
John Hutchison in *Journal of Microscopy*

"I can recommend it as a valuable resource for anyone involved in a higher-level course on materials characterization."
Ray Egerton in *Micron*

"A wonderful book. A rare combination of depth, practical advice, and problems for every aspect of modern XRD, TEM, and EELS. No materials lab should be without it now that TEM/STEM has become such a crucial tool for nanoscience."
John C. H. Spence, Arizona State University

"I give a lecture course here on advanced electron microscopy and will certainly be recommending this book for my course. It is a superb book."
Colin Humphreys, Cambridge University

"This text offers the most complete pedagogical treatment of scattering theory available in a single source for graduate instruction in contemporary materials characterization. Its integration of photons and electrons, beam lines and electron microscopes, theory and practice, assists students with diverse scientific and technical backgrounds to understand the essence of diffraction, spectrometry and imaging. Highly recommended."
Ronald Gronsky, University of California, Berkeley

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