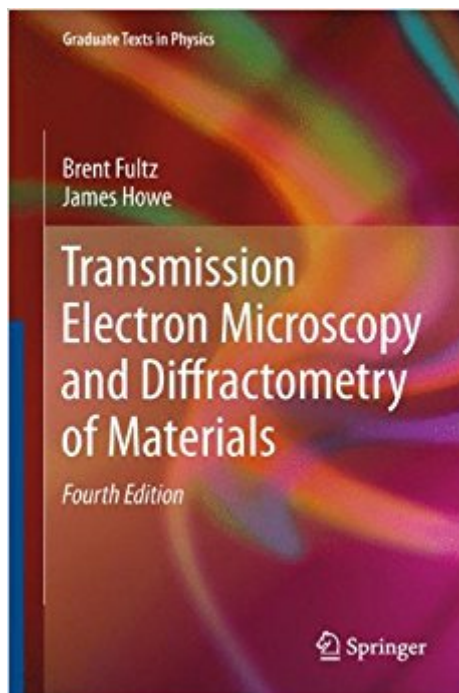




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# Transmission Electron Microscopy And Diffractometry Of Materials (Graduate Texts In Physics)



## Synopsis

This book explains concepts of transmission electron microscopy (TEM) and x-ray diffractometry (XRD) that are important for the characterization of materials. The fourth edition adds important new techniques of TEM such as electron tomography, nanobeam diffraction, and geometric phase analysis. A new chapter on neutron scattering completes the trio of x-ray, electron and neutron diffraction. All chapters were updated and revised for clarity. The book explains the fundamentals of how waves and wavefunctions interact with atoms in solids, and the similarities and differences of using x-rays, electrons, or neutrons for diffraction measurements. Diffraction effects of crystalline order, defects, and disorder in materials are explained in detail. Both practical and theoretical issues are covered. The book can be used in an introductory-level or advanced-level course, since sections are identified by difficulty. Each chapter includes a set of problems to illustrate principles, and the extensive Appendix includes laboratory exercises.

## Book Information

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## Customer Reviews

"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 your 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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The book is really fantastic. I was struggling to learn and understand the diffraction methods - indexing a pattern, travelling from one zone axis to another, reading a stereographic projection - and this book really saved me all the time. Better than William and Carter.

The book is good for both beginners and advanced TEM students or researchers. I like it because it's easy to read and the content covers most of the basic applications of TEM.

An excellent introduction to the topic and also serves as great reference material.

I have bought the second edition years ago, and since then have been using repeatedly. This text is deep in physics behind the TEM image formation and relatively concise in math. Application

examples are also described in detail. To follow up, I also recommend Kirkland's book and Egerton's book.

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