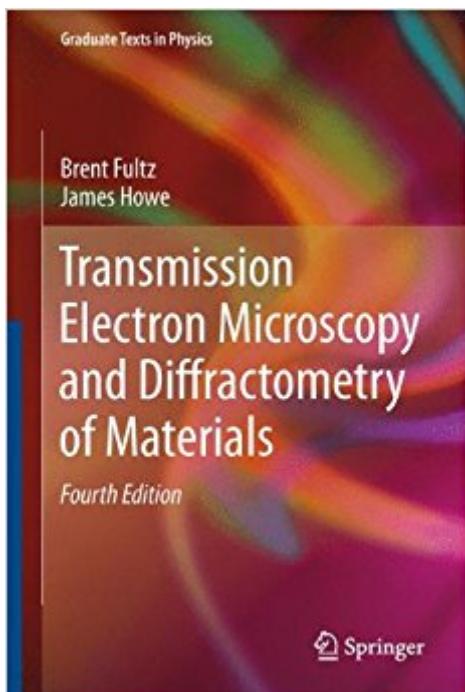


The book was found

# 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

Series: Graduate Texts in Physics

Hardcover: 764 pages

Publisher: Springer; 4th ed. 2013 edition (October 14, 2012)

Language: English

ISBN-10: 3642297609

ISBN-13: 978-3642297601

Product Dimensions: 6.1 x 1.6 x 9.2 inches

Shipping Weight: 2.6 pounds (View shipping rates and policies)

Average Customer Review: 4.7 out of 5 stars 4 customer reviews

Best Sellers Rank: #2,183,709 in Books (See Top 100 in Books) #62 in Books > Science & Math > Experiments, Instruments & Measurement > Electron Microscopes & Microscopy #218 in Books > Engineering & Transportation > Engineering > Materials & Material Science > Testing #746 in Books > Science & Math > Physics > Solid-State Physics

## 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 *Micro*

“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

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.

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 usin 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.

[Download to continue reading...](#)

Transmission Electron Microscopy and Diffractometry of Materials (Graduate Texts in Physics)  
Electron microscopy for beginners: Easy course for understanding and doing electron microscopy  
(Electron microscopy in Science) Electron Diffraction in the Transmission Electron Microscope  
(Microscopy Handbooks) Scanning Electron Microscopy, X-Ray Microanalysis, and Analytical  
Electron Microscopy: A Laboratory Workbook Transmission Electron Microscopy: Physics of Image  
Formation and Microanalysis (Springer Series in Optical Sciences,) Transmission Electron  
Microscopy: A Textbook for Materials Science Transmission Electron Microscopy: A Textbook for  
Materials Science (4 Vol set) Transmission Electron Microscopy: A Textbook for Materials  
Science:2nd (Second) edition Scanning and Transmission Electron Microscopy: An Introduction  
Scanning Transmission Electron Microscopy: Imaging and Analysis Scanning Transmission  
Electron Microscopy of Nanomaterials : Basics of Imaging and Analysis Scanning Transmission  
Electron Microscopy of Nanomaterials: Basics of Imaging Analysis Sample Preparation Handbook  
for Transmission Electron Microscopy: Techniques Biological Specimen Preparation for  
Transmission Electron Microscopy (Princeton Legacy Library) Introduction to Conventional  
Transmission Electron Microscopy (Cambridge Solid State Science Series) Electron Microprobe  
Analysis and Scanning Electron Microscopy in Geology Liquid Cell Electron Microscopy (Advances  
in Microscopy and Microanalysis) High Energy Electron Diffraction and Microscopy (Monographs on  
the Physics and Chemistry of Materials) Image Formation in Low-Voltage Scanning Electron  
Microscopy (SPIE Tutorial Text Vol. TT12) (Tutorial Texts in Optical Engineering) The Physics of  
Free Electron Lasers (Advanced Texts in Physics)

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)