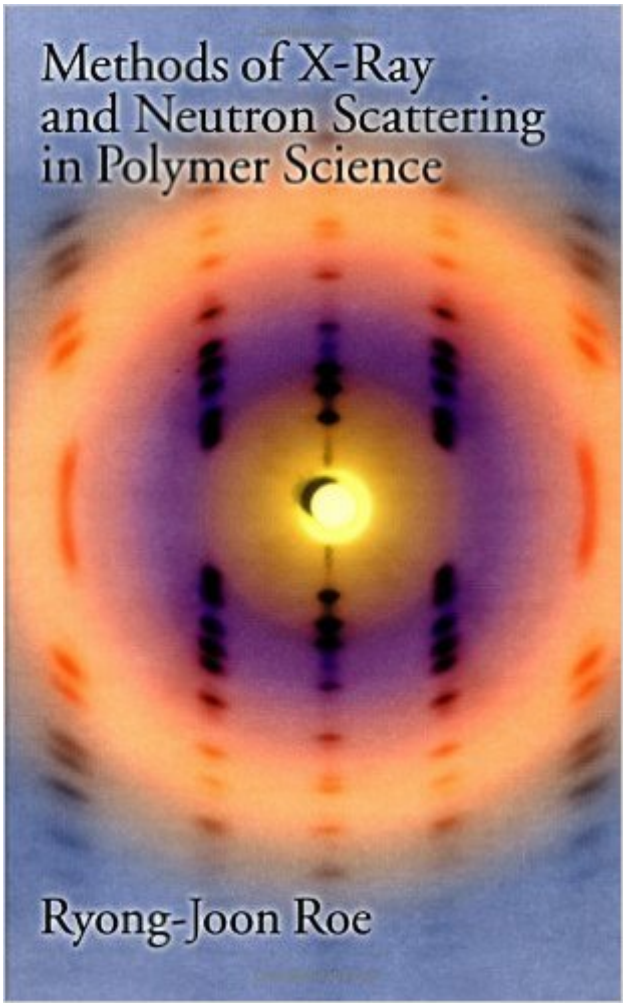
Methods Of X-ray And Neutron Scattering In Polymer Science (Topics In Polymer Science)



Synopsis

Methods of X-ray and Neutron Scattering in Polymer Science presents the basic theories underlying x-ray and neutron scattering--two of the most powerful tools for characterizing materials--and also covers the various techniques that have been developed for their application to the study of polymers. While there is a great deal of similarity between the x-ray and neutron scattering methods, the two were developed in different time periods by different groups of scientists, and as a result very distinct terminologies evolved to explain the same phenomena. In this unique text the two are presented together from the very beginning, with a consistent set of symbols and terminologies, so that students can become equally familiar with both from the outset. Also, to help students gain a unified view of diffraction, the distinction between wide-angle diffraction and small-angle scattering is postponed until late in the text. Methods of X-ray and Neutron Scattering in Polymer Science emphasizes basic concepts rather than details of specific techniques and derives relationships from first premises wherever possible. Beginning with coverage of the basic properties of x-rays and neutrons and their scattering from matter, it goes on to discuss methods of studying specific types of samples or properties. Topics covered include single-component crystalline and amorphous polymers; the small-angle scattering technique; binary, single-phase systems such as polymer blend and polymer solution; the technique of reflectivity measurement; and polymer dynamics by means of inelastic neutron scattering. A perfect introductory textbook for graduate and advanced undergraduate students in polymer science,Methods of X-ray and Neutron Scattering in Polymer Science also serves as a helpful self-study tool for polymer scientists seeking an introduction to scattering techniques. Further reading lists at the end of each chapter encourage readers to explore more advanced topics on their own.

Book Information

Series: Topics in Polymer Science
Hardcover: 352 pages
Publisher: Oxford University Press; 1 edition (January 6, 2000)
Language: English
ISBN-10: 0195113217
ISBN-13: 978-0195113211
Product Dimensions: 9.2 x 0.9 x 6.2 inches
Shipping Weight: 1.4 pounds (View shipping rates and policies)
Average Customer Review: 5.0 out of 5 starsÂ Â See all reviewsÂ (4 customer reviews)

Best Sellers Rank: #927,706 in Books (See Top 100 in Books) #21 inÂ Books > Science & Math > Chemistry > Polymers & Macromolecules #178 inÂ Books > Science & Math > Chemistry > Inorganic #201 inÂ Books > Engineering & Transportation > Engineering > Materials & Material Science > Polymers & Textiles

Customer Reviews

Ryoung-Joon Roe presents a handy reference and introduction to x-ray and neutron scattering, where emphasis is placed on using a terminology that helps the reader learn about both the techniques simultaenously. Scattering has served as one of the most important characterization tools for polymer community. This book outlines the basic mathematics and experimental details required to understand the structure and properties as revealed by these scattering methods in: crystalline and amorphous polymers, polymer solutions and blends, polymer dynamics and block copolymers. While emphasis is placed on demonstrating how all scattering shares similar theories and philosophy, the choice of several examples and applications of either techniques is used to remark on aspects peculiar to either X-ray studies or Neutron Scattering.Since most serious students of polymer science are familiar with light scattering, the book would appeal them as perfect guide to familiarize themselves with limits and use of neutron and X-ray scattering. A more detailed discussion on Polymers and Neutron Scattering is found in the classic text by Julia S. Higgins and Henry C. Beno^it, while for Light Scatttering texts by Pecora & Berne and by Wyn Brown are essential references. Compared to those classic references, Roe’s text will appear as more accessible to people seeking introduction to scattering methods. By the same token, it contains only the essence, the flavor of aspects of polymer behavior, say crystallization, surface studies or dynamics, and one will need to delve into the other texts if he seeks exhaustive discussion.

If you want to learn the basics of scattering then this is a great book to have on your shelf and is very readable - unlike some other books on scattering. This book is essentially about scattering from polymers, which it does well, but my favorite aspect of the book is its coverage of the generic scattering theory which it does in my opinion very nicely. I use this book regularly and often dip into it as a good reference source.

The book is essential for many Small Angle Scatterer. I ordered it used for half price. The quality of the book was almost like new.

The author provides a detailed description about application of X-ray and neutron scattering techniques in polymer science.

Methods of X-ray and Neutron Scattering in Polymer Science (Topics in Polymer Science) Polymers and Neutron Scattering (Oxford Series on Neutron Scattering in Condensed Matter) Neutron, X-rays and Light. Scattering Methods Applied to Soft Condensed Matter (North-Holland Delta Series) Handbook of Optics, Third Edition Volume V: Atmospheric Optics, Modulators, Fiber Optics, X-Ray and Neutron Optics International Workshop on X-Ray and Neutron Phase Imaging with Gratings (AIP Conference Proceedings) A Practical Guide for the Preparation of Specimens for X-Ray Fluorescence and X-Ray Diffraction Analysis Ray Tracing: The Rest Of Your Life (Ray Tracing Minibooks Book 3) V-Ray My Way: A Practical Designer's Guide to Creating Realistic Imagery Using V-Ray & 3ds Max Functional Polymer Coatings: Principles, Methods, and Applications (Wiley Series on Polymer Engineering and Technology) Structures and Properties of Rubberlike Networks (Topics in Polymer Science) Carbon Nanotubes: Advanced Topics in the Synthesis, Structure, Properties and Applications (Topics in Applied Physics) 240 Writing Topics with Sample Essays: How to Write Essays (120 Writing Topics) Dense Objects: Neutron Stars Neutron Diffraction High Throughput Screening: Methods and Protocols (Methods in Molecular Biology) (Methods in Molecular Biology, 190) Radiative Transfer in Scattering and Absorbing Atmospheres: Standard Computational Procedures (Studies in geophysical optics and remote sensing) Light Scattering, Size Exclusion Chromatography and Asymmetric Flow Field Flow Fractionation: Powerful Tools for the Characterization of Polymers, Proteins and Nanoparticles Molecular Light Scattering and Optical Activity Molecular Light Scattering and Opitical Activity Absorption and Scattering of Light by Small Particles