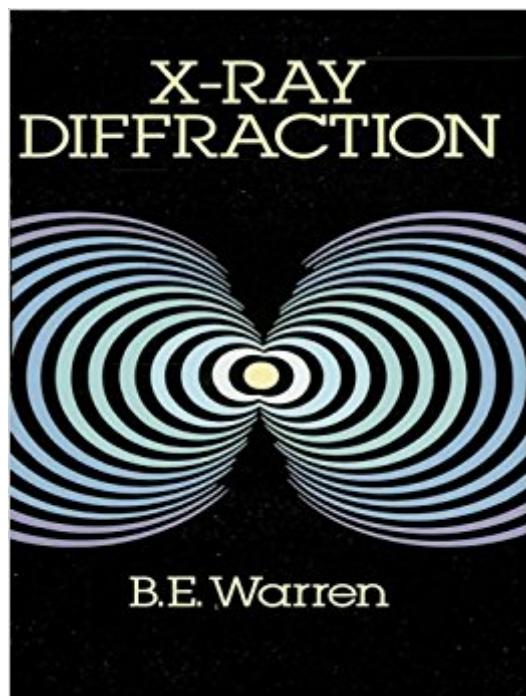


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# X-Ray Diffraction (Dover Books On Physics)



## **Synopsis**

Basic diffraction theory has numerous important applications in solid-state physics and physical metallurgy, and this graduate-level text is the ideal introduction to the fundamentals of the discipline. Development is rigorous (throughout the book, the treatment is carried far enough to relate to experimentally observable quantities) and stress is placed on modern applications to nonstructural problems such as temperature vibration effects, order-disorder phenomena, crystal imperfections, the structure of amorphous materials, and the diffraction of x-rays in perfect crystals. Carefully selected problems have been included at the end of each chapter to help the student test his or her grasp of the material. Professor Warren, a recognized authority on the use of x-rays to probe the structure of matter, is Professor Emeritus of Physics, Massachusetts Institute of Technology.

## **Book Information**

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## **Customer Reviews**

Warren is the expert on X-ray diffraction, no doubt about it. However, this book is not intended for neophytes or people who are new to the field of x-ray diffraction. He immediately jumps into the

Ewald Sphere for deriving scattering, and works with a lot of vector calculus, so if you're not familiar with XRD most of this book will go over your head. He does a good job of describing how different deviations from Bragg's law - such as a sample displacement, finite particle size, and crystal strain - play a role in changing the diffraction pattern and how the different two-theta dependence, such as the sine dependence on stress, come about. But again, you'll be working with a lot of vector calculus to get there. If you have a good understanding of XRD and want to learn the math and physics behind the technique, this book is a good supplement for your understanding. It would be a good choice for graduate students or people with PhDs.

This book is a valuable reference for its discussions of imperfect crystals, including peak broadening from nanocrystals; temperature vibration effects that might factor into in-situ XRD; and especially the discussion on order-disorder. Even its discussion of Fourier methods (pre-PC) and diffraction theory are useful. At less than \$20, anyone routinely using XRD to analyze inorganic samples should buy this book. After losing my old copy, I felt compelled to immediately buy a new copy. This book functions poorly as an introductory text to diffraction or crystallography and is out-dated with respect to discussing instrumentation. This book is of limited use regarding soft-matter samples.

As it may be clear from the one-line summary given above...it is quite difficult to evaluate this book. I personally like this book, however, I would not recommend anyone to try to learn x-ray diffraction by reading it. This book elegantly shows the theory behind a broad range of experimental observations one can accomplish using x-ray diffraction by going into the broader theory of scattering. Hence it is basically a book on scattering as applied to x-rays. The use of space group determination and Structure determination are given only a superficial attention, which I think must be discussed in detail in a book on x-ray diffraction. However, the chapter on x-ray studies on order-disorder is outstanding (it is Prof. Warren's personal area of interest). In other words, this is a rather advanced and quasi-theoretical treatment of a very applied method indeed. Therefore, in my opinion, it is of limited use to the solid state science community in general. However, it is a very nicely written book (though quite abstract) hence I'd rather give 4 stars instead of 3. Get this book if you really have a very specialized interest in x-ray diffraction...otherwise you can live without it.

Even if a little old, covers all the basics in an excellent manner. The math, while sometimes involved is not that complex and is very educational. The plus side of it being several decades old is that everything is presented in a rather fundamental and easy to grasp way. One does need to spend a

little time going through the equations, but it definitely makes understanding the matter easier.

There are some typos.

Filled with value at a bargain price, Warren's fundamental work continues to impress for its elegance and the advances that it brought forth. Still not as used as it should be for nano-crystalline metals and ceramics for example. For experienced and willing to understand advanced-diffractionists.

Very classic XRD book. The book condition is good.

This book must be on your shelf if you are interested x ray diffraction. got this book for a class but i kept it because it was so helpful

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