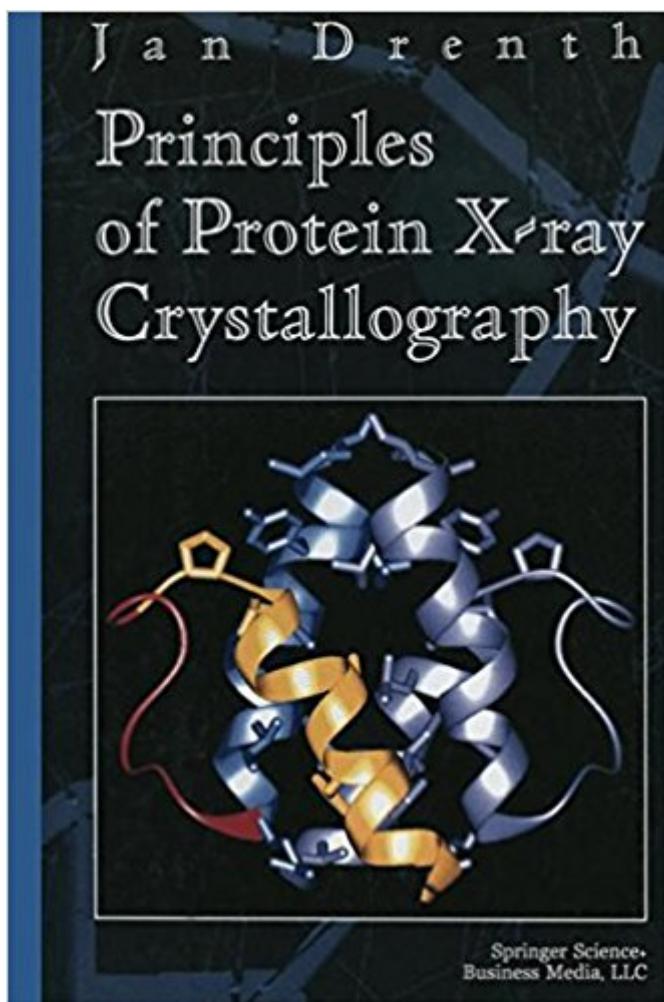


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# Principles Of Protein X-ray Crystallography (Springer Advanced Texts In Chemistry)



## Synopsis

X-ray crystallography has been a vital method for studying the structure of proteins and other macromolecules for many years. As the importance of proteins continues to grow in a wide range of research fields, more and more researchers have found a knowledge of X-ray diffraction to be an indispensable tool. Professor Drenth, recognized internationally for his numerous contributions to crystallographic research, has provided a technically rigorous introduction to the subject. This book provides the theoretical background necessary to understand how the structure of proteins is determined at atomic resolution. It is intended to be an introduction for graduate students, postdoctoral researchers, and established scientists who want to apply protein crystallography in their own endeavors, or need to understand the subject in order to critically evaluate the literature. *Principles of Protein X-Ray Crystallography* is appropriate as a textbook for courses in biochemistry and biophysics, including protein structure and function, structural biology, and macromolecular structure.

## Book Information

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## Customer Reviews

From the reviews of the third edition: "This book, *Principles of Protein X-ray Crystallography*, aims to satisfy nearly everyone; [...] The volume is well organized [...] . this is a solid book by an experienced protein crystallographer. It covers the full spectrum of subjects for a professional

structural biologist. Specialized subjects are kept in separate chapters so the book can be parsed by those interested in the big picture of the method. "it is probably the most definitive work that is currently available for structural biologists." (Jon Robertus, Journal of the American Chemical Society, Vol. 129 (17), 2007) --This text refers to an alternate Hardcover edition.

X-ray crystallography has long been a vital method for studying the structure of proteins and other macromolecules. As the importance of proteins continues to grow, in fields from biochemistry and biophysics to pharmaceutical development and biotechnology, many researchers have found that a knowledge of X-ray diffraction is an indispensable tool. In this new edition of his essential work, Dr. Jan Drenth, recognized internationally for his numerous contributions to crystallographic research, has provided an up-to-date and technically rigorous introduction to the subject. *Principles of Protein X-ray Crystallography* provides the theoretical background necessary to understand how the structure of proteins is determined at atomic resolution. It is intended to serve as an introduction for graduate students, postdoctoral researchers, and established scientists who want to use protein crystallography in their own endeavors, or need to understand the subject in order to critically evaluate the literature. New additions to the book include a section on twinning, an additional chapter on crystal growth and a discussion of single-wavelength anomalous dispersion (SAD). Reviews: "The new edition... will bring important and significant, and timely, coverage of twinning and of SAD phasing." Professor John Helliwell, Department of Chemistry, University of Manchester "a complete and up to date... single source of theory." Duncan McRee, President, ActiveSight About the Authors: Dr. Jan Drenth is a professor emeritus at the Laboratory of Biophysical Chemistry at the University of Groningen, The Netherlands. Contributing author Dr. Jeroen R. Mesters Ph.D. is a Senior Research Assistant at the Institute of Biochemistry, University of Luebeck, Germany. --This text refers to an alternate Hardcover edition.

Good!

I bought this book when I was first learning crystallography as a first year grad student. This book was ok in some parts but most of it was over my head. I could tell it had some great information but I just needed more of a background to understand the information that it offered. There are more basic crystallography textbooks out there I was referred to later by some crystallographers.

I used this text book for an introductory graduate class in X-ray Crystallography. After taking a

semester of X-ray Crystallography (which is labeled as a Chemistry and Biochemistry course), I can say that the material is mainly based on physics and mathematics. I can't say that this text helped a great deal for my course. The text does not explain relevant points such as Miller indices, symmetry elements, or space groups clearly or in much depth. Instead, it spends too much time explaining concepts mathematically and deriving equations. It also does not contain any relevant practice problems, which are needed to understand Crystallography and practice for exams. X-ray Crystallography is a very dense subject, and is not a course to take on a whim. I would not recommend taking a course on Crystallography unless you have a really intense interest in pursuing research in that area. If you are interested in this area, do not buy this text even if it is required for your course. Take a look at *Crystallography Made Crystal Clear* by Gale Rhodes. That book is much clearer, though also lacks sufficient practice problems.

Jan Drenth is an old school protein crystallographer who has seen the evolution of the field right from its inception in the 1950s to the present day. He belongs to the era when Protein Crystallography was dominated by people with serious math and physics skills like Maurice Wilkins, Rosalind Franklin, Francis Crick, Max Perutz and John Kendrew. Owing to the lack of good computers in those days, all the calculations had to be done by hand and there was no way you could solve a protein structure if you didn't know what a Fourier Transform was. The situation is very different nowadays where, thanks to computers, even a person who doesn't know how to differentiate a function can solve protein structures. Understandably, owing to the author's experiences and background, this book is an excellent one for people interested in the real math behind protein crystallography. It is much on the lines of the other classic book by Blundell and Johnson, also crystallographers belonging to the same era as Jan Drenth. It is quite full of mathematics and therefore, is not recommended for biologists or chemists with weak math skills. For such people I would recommend other introductory books on the subject written by Gale Rhodes, David Blow and Alex McPherson. A good approach would be to learn the basics from these introductory books and 'graduate' to Drenth's book later.

User reviews at 3-5 stars adequately capture a range of practical responses from thoughtful readers. Recommended for serious students of macromolecular X-ray crystallography, especially if this physical method will be a critical component of your future research.

Best introductory text for macromolecular x-ray crystallography. Simple and succinct mathematical

explanation of basic concepts. It provides enough background for students to start a research project.

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