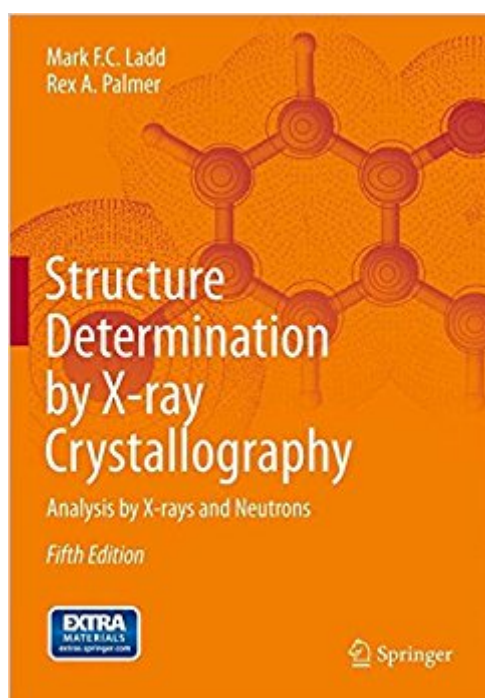


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# Structure Determination By X-ray Crystallography: Analysis By X-rays And Neutrons



## Synopsis

The advances in and applications of x-ray and neutron crystallography form the essence of this new edition of this classic textbook, while maintaining the overall plan of the book that has been well received in the academic community since the first edition in 1977. X-ray crystallography is a universal tool for studying molecular structure, and the complementary nature of neutron diffraction crystallography permits the location of atomic species in crystals which are not easily revealed by X-ray techniques alone, such as hydrogen atoms or other light atoms in the presence of heavier atoms. Thus, a chapter discussing the practice of neutron diffraction techniques, with examples, broadens the scope of the text in a highly desirable way. As with previous editions, the book contains problems to illustrate the work of each chapter, and detailed solutions are provided. Mathematical procedures related to the material of the main body of the book are not discussed in detail, but are quoted where needed with references to standard mathematical texts. To address the computational aspect of crystallography, the suite of computer programs from the fourth edition has been revised and expanded. The programs enable the reader to participate fully in many of the aspects of x-ray crystallography discussed in the book. In particular, the program system XRAY\* is interactive, and enables the reader to follow through, at the monitor screen, the computational techniques involved in single-crystal structure determination, albeit in two dimensions, with the data sets provided. Exercises for students can be found in the book, and solutions are available to instructors.

## Book Information

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## Customer Reviews

Structure Determination by X-ray Crystallography has been received with acclaim by teachers, researchers and students of crystallography throughout the world since its first edition in 1977. The fifth edition is fully updated, and builds on past successes by presenting up-to-the-minute information on a variety of new topics. The new material includes sections on fullerenes and icosahedral, black and white, and colour symmetry; modern methods of data collection and measurement; new treatment on bioinformatics and energy minimization; extensive revisions and updates on macromolecular crystallography to parallel advances in the field; a new chapter on neutron diffraction and neutron facilities; mathematical appendices and tailored computer programs presented as web material; many new problems with checked solutions; and numerous references and web site addresses of crystallographic importance. From the Foreword to the 5th Edition

“I am privileged to write the Foreword to this fifth edition of Ladd and Palmer’s Structure Determination by X-ray Crystallography, a textbook that is now world renowned and that has helped educate two generations of crystallographers in the theory and practice of modern crystallography, myself included. . . . For the interdisciplinary students of today seeking a thorough and detailed understanding of the principles and methods of modern crystallography, Ladd and Palmer remains as essential and relevant today as when it first appeared some 35 years ago. . . . Extending the scope of this classic text beyond the purely X-ray Crystallography of its title to include diffraction of other radiations acknowledges some of the new frontiers and ever increasing impact of crystallographic analysis in structural sciences. As has been the case for the last 35 years, Ladd and Palmer is set to educate and equip the students of today to drive and inspire the developments of tomorrow!”

Dean A. A. Myles, Neutron Sciences Directorate, Oak Ridge National

Laboratory

From the Foreword to the 4th Edition

“Now there are many books on crystallography and structure determination out there, but Ladd & Palmer is probably unique in being the most thorough treatment you are going to find. The book takes you right through from simple beginnings up to the most recent ideas in macromolecular crystallography. This Fourth Edition is a substantial and scholarly work that deserves to be on the shelves of anyone wishing to determine crystal structures. I am very pleased to have had the opportunity to recommend it to you.”

A.M. Glazer, Clarendon Laboratory, Oxford

Mark Ladd is a professor at the University of Surrey. Rex Palmer is a professor at the University of London.

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