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[Book] Crystal Structure Analysis For Chemists and Biologists Methods In Stereochemical Analysis Vcn

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Crystal Structure Analysis - Alexander J. Blake - 2009-06-18

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The purpose of this book is to explain why molecular structure can be determined by single-crystal diffraction of X rays. It is not an account of the practical procedural
details, but rather an account of the underlying physical principles, and the kinds of experiments and methods of handling the experimental data that are used.

Perspectives in Crystallography - John R. Helliwell - 2015-11-16

The book is divided in two parts, to supply first the basic elements of the language, with short but complete explanations of terms, methods and theories; and then to
describe the present status of studies on the processes by which organic molecules aggregate to form observable bodies and to determine their physical and chemical
properties.

Molecular Aggregation

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One chapter is dedicated to the refinement of macromolecular structures and two short
chapters deal with structure validation (one for small molecule structures and one for macromolecules). In each of the chapters the book gives refinement examples,
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Crystallography - Takashiro Akitsu - 2019-09-04
This book reviews both current research in and several principles of crystallography, not only for natural sciences, mathematics, physics, chemistry, biology, and earth sciences but also for applied engineering such as material and medical or pharmaceutical sciences. As a review book on crystallography, this book will help with theoretical considerations and understanding the basic theory of frontier experiments, among other topics.

Science of Crystal Structures - Istrat Hargittai - 2015-09-09
A volume which includes entries on quasicrystals, icosahedral packing, other packing considerations, extended structures, data treatment and data mining is presented by luminaries from the crystallography community. Several of the contributions are from the schools of such trend-setting crystallographers as J. Desmond Bernal and Aleksand I. Zhigadovski. Internationally renowned scientists contributed such as Tom L. Blundell, Johann Jacob Burckhardt, John L. Finney, Jenny P. Gaskell, Nikolai Leshtynski, Joel R. Miller, Henry F. Schaefer, III, Per-Erik Stenhammar, Alfred W. McCack, Ewald-Prize winner David Sayre, Vladimir Shchekine, and J. Fraser Stoddart. A few frontier topics dominate the selected material. Pioneers of the direct methods technique describe the phase problem and how it was solved, including the mathematical background and the utilization of experience with gas-phase electron diffraction.

Outline of Crystallography for Biologists - Myeongkyu Lee - 2017-06-14
This informative new book describes the principles of X-ray diffraction and its applications to materials characterization. It consists of three parts. The first deals with elementary crystallography and optics, which is essential for understanding the Theory of X-ray diffraction discussed in the second section of the book. Part 2 describes how the X-ray diffraction can be applied for characterizing such various forms of materials as thin films, single crystals, and powders. The third section of the book covers applications of X-ray diffraction. The book presents a number of examples to help readers better comprehend the subject. X-Ray Diffraction for Materials Researchers by Myeongkyu Lee is a valuable reference book for researchers in the field and will work well as a good introductory book of X-ray diffraction for students in materials science, physics, and chemistry.

The Basics of Crystallography and Diffraction - Christopher Hammond - 2009-05-07
This book provides a clear introduction to topics which are essential to students in a wide range of scientific disciplines but which are otherwise only covered in specialised and mathematically detailed texts. It shows how crystal structures may be built up from simple ideas of atomic packing and co-ordination, it develops the mathematical analysis of X-ray diffraction, and it introduces the basics of crystallography, including the ways in which X-rays interact with matter and the principles and uses of X-ray diffraction. The book is aimed at students of chemistry, physics, materials science, and crystallography, and contains exercises and problems that will help illustrate the content. This book will be useful for students in a wide range of scientific disciplines including chemistry, physics, and materials science.

Crystal Structure - Damon Richards - 2018
The book will help readers (students and researchers in materials science, physics, and chemistry) understand crystallography and crystal structure from their fundamental aspects through advanced applications of X-ray and electron diffraction.

X-Ray Diffraction for Materials Researchers - Myeongkyu Lee - 2017-06-14
This book will be a valuable reference book for researchers in the field and will work well as a good introductory book of X-ray diffraction for students in materials science, physics, and chemistry.
described and also the importance of diffraction in the performance of optical instruments. The book is also of value to the general reader since it shows, by biographical and historical references, how the subject has developed and thereby indicates some of the excitement of scientific discovery.

**Structure Analysis by Electron Diffraction** - K. K. Vainshtein - 2013-10-22

Structure Analysis by Electron Diffraction focuses on the theory and practice of studying the atomic structure of crystalline substances through electron diffraction. The publication first offers information on diffraction methods in structure analysis and the geometrical theory of electron diffraction patterns. Discussions focus on the fundamental concepts of the theory of scattering and structure analysis of crystals, structure analysis by electron diffraction, formation of spot electron diffraction patterns, electron diffraction texture patterns, and polycrystalline electron diffraction patterns. The text then proceeds on intensities of reflections, including atomic scattering, temperature factor, structure amplitude, experimental measurements of intensity, and review of equations for intensities of reflections in electron diffraction patterns. The manuscript examines the Fourier methods in electron diffraction and experimental electron diffraction structure investigations. Topics include the determination of the structure of the hydrated chlorides of transition metals; structures of carbides and nitrides of certain metals and semi-conducting alloys; electron diffraction investigation of clay minerals and possibilities inherent in structure analysis by electron diffraction. The book is a helpful source of data for readers interested in structure analysis by electron diffraction.

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This text provides non-crystallographers with an intellectually satisfying explanation of the principles of how protein models are gleaned from X-ray analysis. The understanding of these concepts will foster wise use of the models, including the recognition of the strengths and weaknesses of pictures or computer graphics. Since proteins comprise the majority of the mass of macromolecules in cells and carry out biologically important tasks, the book will be of interest to biologists. Provides accessible descriptions of principles of x-ray crystallography, built on simple foundations for anyone with a basic science background. Leads the reader through clear, thorough, unimitating explanations of the mathematics behind crystallography. Explains how to read crystallography papers in research journals. If you use computer-generated models of proteins or nucleic acids for: Studying molecular interactions Designing ligands, inhibitors, or drugs Engaging new protein functions Interpreting chemical, kinetic, thermodynamic, or spectroscopic data. Studying protein folding Teaching macromolecular structure and if you want to read new structure papers intelligently; becomes a wise user of macromolecular models, and want to introduce undergraduates to the important subject of x-ray crystallography. Then this book is for you.

**Crystallography Made Crystal Clear** - Ghale Rhodes - 2012-12-02

Crystallography Made Crystal Clear is designed to meet the need for an x-ray analysis that is between brief textbook sections and complete treatments. The book provides non-crystallographers with an intellectually satisfying explanation of the principles of how protein models are gleaned from x-ray analysis. The understanding of these concepts will foster wise use of the models, including the recognition of the strengths and weaknesses of pictures or computer graphics. Since proteins comprise the majority of the mass of macromolecules in cells and carry out biologically important tasks, the book will be of interest to biologists. Provides accessible descriptions of principles of x-ray crystallography, built on simple foundations for anyone with a basic science background. Leads the reader through clear, thorough, unimitating explanations of the mathematics behind crystallography. Explains how to read crystallography papers in research journals. If you use computer-generated models of proteins or nucleic acids for: Studying molecular interactions Designing ligands, inhibitors, or drugs Engaging new protein functions Interpreting chemical, kinetic, thermodynamic, or spectroscopic data. Studying protein folding Teaching macromolecular structure and if you want to read new structure papers intelligently; becomes a wise user of macromolecular models, and want to introduce undergraduates to the important subject of x-ray crystallography. Then this book is for you.

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**The Essence Of Crystallography** - Mark Ladd - 2019-11-19

To summarise, Professor Ladd has written a highly engaging text designed to provide the underlying principles of crystal structure determination through x-ray diffraction data. This text would be most appropriate for an early stage postgraduate or researcher interested in learning both the underlying principles of crystallography and gaining some practice with structure-solving software. Contemporary Physics Designed for those who wish to understand and engage with the principles behind the process of crystal structure determination by x-ray diffraction, this title contains a comprehensive series of chapters, each of which concludes with a set of problems, for which solutions are provided. An ideal resource for senior undergraduates and early-stage postgraduates. The Essence of Crystallography has an accompanying website with programs written for the text, including an interactive simulation of crystal structure determination using prepared intensity data sets.

**The Essence Of Crystallography** - Mark Ladd - 2019-11-19

As a self-study guide, course primer or teaching aid, Borchardt-Ott's Crystallography is the perfect textbook for students and teachers alike. In fact, it can be used by crystallographers, chemists, mineralogists, geologists and physicists. Based on the author's more than 25 years of teaching experience, the book has numerous line drawings designed especially for the text and a large number of exercises - with solutions - at the end of each chapter. This 2nd edition is the translation of the fifth German edition. The heart of the book is firmly fixed in geometrical crystallography. It is from the concept of the space lattice. As a self-study guide, course primer or teaching aid, Borchardt-Ott's Crystallography is the perfect textbook for students and teachers alike. In fact, it can be used by crystallographers, chemists, mineralogists, geologists and physicists. Based on the author's more than 25 years of teaching experience, the book has numerous line drawings designed especially for the text and a large number of exercises - with solutions - at the end of each chapter. This 2nd edition is the translation of the fifth German edition. The heart of the book is firmly fixed in geometrical crystallography. It is from the concept of the space lattice.