

STRUCTURAL CRYSTALLOGRAPHY IN CHEMISTRY AND BIOLOGY

Jenny P. Glusker

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Structural Crystallography In Chemistry And Biology

Keith Moffat, Eaton E. Lattman

Structural Crystallography In Chemistry And Biology:

Structural Crystallography in Chemistry and Biology Jenny Pickworth Glusker, 1981 Crystal Structure Analysis for Chemists and Biologists Jenny P. Glusker, Mitchell Lewis, Miriam Rossi, 1996-12-17 The fields of structural chemistry and biochemistry have blossomed in the last seventy years since X ray diffraction was discovered in 1912 Dorothy Hodgkin who obtained a Nobel Prize in 1965 for her X ray diffraction work wrote a great advantage of X ray analysis as a method of chemical structure analysis is its power to show some totally unexpected and surprising structure with at the same time complete certainty The results of all X ray diffraction studies are used by chemists and buiochemists but these scientists need to be able to appreciate the significance and extent to which these results may be used A number of books written for practicing crystallographers cover the theory and applications of X ray diffraction but few are of real practical use to non specialists In Crystal Structure Analysis for Biologists and Chemists the general principles of crystal structure are presented in a highly readable way The book of Glusker who is internationally renowned provides good coverage of theory including data and understanding their significance **Dynamics and Kinetics in Structural Biology** Keith Moffat, Eaton E. Lattman, 2023-11-06 Dynamics and Kinetics in Structural Biology Understand the latest experimental tools in structural biology with this pioneering work Structural biology seeks to understand the chemical mechanisms and functions of biological molecules such as proteins based on their atomic structures Until recently these structures have been studied only statically using procedures which deliberately freeze atomic motion However freezing eliminates the rapid structural motions so essential to biological activity and function the molecules are inactive But with the recent development of X ray free electron laser XFEL sources efforts to conduct dynamic experiments have expanded using the principles of dynamics and kinetics to capture active biological molecules as they function Dynamics and Kinetics in Structural Biology promotes the development of these experiments and their successful application It grounds readers in the foundational principles of dynamics and kinetics proceeds through extended discussions of experimental procedures and data analysis techniques and explores experimental frontiers in structural dynamics. The book will aid researchers to gather and interpret cutting edge data on the dynamic structure of biological molecules under conditions where they retain their biological functions Dynamics and Kinetics in Structural Biology offers readers Authorship by founding figures in the field In depth presentation of time resolved X ray crystallography solution scattering and more A pioneering contribution to a rapidly developing field of study Dynamics and Kinetics in Structural Biology is essential reading for graduate students scientists researchers and industry professionals engaged in structural studies of biological systems Industry professionals considering dynamic studies in the development of new product lines will also benefit Crystal Structure Analysis Jenny Pickworth Glusker, Kenneth N. Trueblood, 2010-05-27 This book aims to explain how and why the detailed three dimensional architecture of molecules can be determined by an analysis of the diffraction patterns obtained when X rays or neutrons are scattered by the atoms in

single crystals Part 1 deals with the nature of the crystalline state diffraction generally and diffraction by crystals in particular and briefly the experimental procedures that are used Part II examines the problem of converting the experimentally obtained data into a model of the atomic arrangement that scattered these beams Part III is concerned with the techniques for refining the approximate structure to the degree warranted by the experimental data It also describes the many types of information that can be learned by modern crystal structure analysis. There is a glossary of terms used and several appendixes to which most of the mathematical details have been relegated Structure of Crystals Boris K. Vainshtein, Vladimir M. Friedkin, Vladimir L. Indenbom, 2013-03-14 Modern Crystallography provides an encyclopedic exposition of the field in four volumes written by Russian scientists Structures of Crystals describes the ideal and real atomic structure of crystals as well as their electronic structures. The fundamentals of chemical bonding between atoms are given and geometric representations in the theory of crystal structure and crystal chemistry as well as lattice energy are considered The important classes of crystal structures in inorganic compounds as well as the structure polymers liquid crystals biological crystals and macromolecules are treated This second edition is complemented with recent data on many types of crystal structures fullerenes high temperature superconductors minerals liquid crystals etc Physics Michael P. Marder, 2010-11-17 Now updated the leading single volume introduction to solid state and soft condensed matter physics This Second Edition of the unified treatment of condensed matter physics keeps the best of the first providing a basic foundation in the subject while addressing many recent discoveries Comprehensive and authoritative it consolidates the critical advances of the past fifty years bringing together an exciting collection of new and classic topics dozens of new figures and new experimental data This updated edition offers a thorough treatment of such basic topics as band theory transport theory and semiconductor physics as well as more modern areas such as quasicrystals dynamics of phase separation granular materials quantum dots Berry phases the quantum Hall effect and Luttinger liquids In addition to careful study of electron dynamics electronics and superconductivity there is much material drawn from soft matter physics including liquid crystals polymers and fluid dynamics Provides frequent comparison of theory and experiment both when they agree and when problems are still unsolved Incorporates many new images from experiments Provides end of chapter problems including computational exercises Includes more than fifty data tables and a detailed forty page index Offers a solutions manual for instructors Featuring 370 figures and more than 1 000 recent and historically significant references this volume serves as a valuable resource for graduate and undergraduate students in physics physics professionals engineers applied mathematicians materials scientists and researchers in other fields who want to learn about the quantum and atomic underpinnings of materials science from a modern point of view Structural Biology in Drug Discovery Jean-Paul Renaud, 2020-02-05 With the most comprehensive and up to date overview of structure based drug discovery covering both experimental and computational approaches Structural Biology in Drug Discovery Methods Techniques and Practices

describes principles methods applications and emerging paradigms of structural biology as a tool for more efficient drug development Coverage includes successful examples academic and industry insights novel concepts and advances in a rapidly evolving field The combined chapters by authors writing from the frontlines of structural biology and drug discovery give readers a valuable reference and resource that Presents the benefits limitations and potentiality of major techniques in the field such as X ray crystallography NMR neutron crystallography cryo EM mass spectrometry and other biophysical techniques and computational structural biology Includes detailed chapters on druggability allostery complementary use of thermodynamic and kinetic information and powerful approaches such as structural chemogenomics and fragment based drug design Emphasizes the need for the in depth biophysical characterization of protein targets as well as of therapeutic proteins and for a thorough quality assessment of experimental structures Illustrates advances in the field of established therapeutic targets like kinases serine proteinases GPCRs and epigenetic proteins and of more challenging ones like protein protein interactions and intrinsically disordered proteins World Directory of Crystallographers Allan L. Bednowitz, Armin P. Segmüller, 2013-04-17 A brief historical account of the background leading to the publication of the first four editions of the World Directory of Crystallographers was presented by G Boom in his preface to the Fourth Edition published late in 1971 That edition was produced by traditional typesetting methods from compilations of biographical data prepared by national Sub Editors The major effort required to produce a directory by manual methods provided the impetus to use computer techniques for the Fifth Edition The account of the production of the first computer assisted Directory was described by S C Abrahams in the preface of the Fifth Edition Computer composition which required a machine readable data base offered several major advantages The choice of typeface and range of characters was flexible Corrections and additions to the data base were rapid and once established it was hoped updating for future editions would be simple and inexpensive The data base was put to other Union uses such as preparation of mailing labels and formulation of lists of crystallographers with specified common fields of interest The Fifth Edition of the World Directory of Crystallographers was published in June of 1977 the Sixth in May of 1981 The Subject Indexes for the Fifth and Sixth Editions were printed in 1978 and 1981 respectively both having a limited distribution World Directory of Crystallographers, 2013-11-11 Frontiers ,1994

Research and Highlights Argonne National Laboratory,1996 Transmission Electron Microscopy Techniques
Kaushal Dhawan,2025-02-20 Transmission Electron Microscopy Techniques is a comprehensive guide that explores the use of transmission electron microscopes TEM to study materials at the atomic level TEMs use electrons instead of light to magnify objects achieving resolutions millions of times greater than light microscopes We cover all aspects of TEM from the basic principles of how it works to the latest advancements in the field This book includes practical information on using a TEM and troubleshooting potential issues Complex concepts are explained clearly and simply making them accessible to those new to TEM The book features many diagrams micrographs and schematics to help visualize the discussed concepts We explore

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Biomedical Index to PHS-supported Research, 1990

World Directory of Crystallographers Yves Epelboin, 2013-04-17 The 10th edition of the World Directory of Crystallographers and of Other Scientists Employing Crystallographic Methods is a revised and up to date edition of the World Directory and contains the current addresses academic status and research interests of over 8000 scientists in 74 countries It is produced directly from the regularly updated electronic World Directory database which is accessible via the World Wide Web Full details of the database are given in an Annex to the printed edition Research Awards Index ,1989

Whispering the Secrets of Language: An Mental Quest through Structural Crystallography In Chemistry And Biology

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