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Descriptive Inorganic Chemistry
Electrons, Atoms, and Molecules in Inorganic Chemistry

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Solid State Chemistry Oxford University Press, USA

Organizations are a defining feature of the modern world, and the study of organizations (Organization Studies) has become well established in both sociology departments and professional schools, most notably business and management schools. Organization Studies has long drawn inspiration from foundational work in sociology. The sociological lens affords depth of insight into the technological, economic, cultural, and political forces that shape organizations from both within and without. In particular, "classical" works in sociology have long energized organizational research, primarily by suggesting ways of making sense of the ever-accelerating pace of social change. In recent decades, however, the field has lost interest in these sociology classics. This trend reflects and reinforces an increasingly academic focus of contemporary Organization Studies. Not only does this trend weaken Organization Studies' engagement with the big social issues of our time, but it isolates the field from the broader field of the social sciences. The aim of this Handbook is to re-assert the importance of classical sociology to the future of Organization Studies. Alongside several thematic chapters, the volume includes chapters on each of nearly two dozen major European and American theorists, each of these chapters addressing: (a) the ideas and their context, (b) the impact of these ideas on the field of Organization Studies, and (c) the potential future research these ideas might inspire. The goal is not reverential exegesis, but rather to examine how the classics can energize organizational research. This wide-ranging Handbook, with contributions from leading American and European scholars, will be a vital, informative, and stimulating resource for anybody undertaking research in, teaching, or interested in learning more about Organization Studies today. About the Series Oxford Handbooks in Business & Management bring together the world's leading scholars on the subject to discuss current research and the latest thinking in a range of interrelated topics including Strategy, Organizational Behavior, Public Management, International Business, and many others. Containing completely new essays with extensive referencing to further reading and key ideas, the volumes, in hardback or paperback, serve as both a thorough introduction to a topic and a useful desk reference for scholars and advanced students alike.

Molecular Symmetry and Group Theory University Science Books

For lower-division courses with an equal balance of description and theory.

Chemical Binding and Structure John Wiley & Sons

Inorganic Chemistry in Aqueous Solution reviews the chemistry of the elements in all their oxidation states in an aqueous environment. The nature of ions in solution is described in some detail and enthalpies and entropies of hydration of many ions are defined and recalculated from the best data available. These values are used to provide an understanding of the periodicities of standard reduction potentials. Standard reduction potential data for all of the elements, group-by-group,

covering the s and p, d and f blocks of the Periodic Table is also included. Major sections are devoted to the acid/base behaviour and the solubilities of inorganic compounds in water. Inorganic Chemistry in Aqueous Solution is aimed at undergraduate chemistry students but will also be welcomed by geologists interested in this field. Ideal for the needs of undergraduate chemistry students, Tutorial Chemistry Texts is a major series consisting of short, single topic or modular texts concentrating on the fundamental areas of chemistry taught in undergraduate science courses. Each book provides a concise account of the basic principles underlying a given subject, embodying an independent-learning philosophy and including worked examples.

Advanced Inorganic Chemistry Elsevier

The authors have correlated many experimental observations and theoretical discussions from the scientific literature on water. Topics covered include the water molecule and forces between water molecules; the thermodynamic properties of steam; the structures of the ices; the thermodynamic, electrical, spectroscopic, and transport properties of the ices and of liquid water; hydrogen bonding in ice and water; and models for liquid water. The main emphasis of the book is on relating the properties of ice and water to their structures. Some background material in physical chemistry has been included in order to ensure that the material is accessible to readers in fields such as biology, biochemistry, and geology, as well as to chemists and physicists.

Problems in Structural Inorganic Chemistry Springer Science & Business Media

Valence Shell Electron Pair Repulsion (VSEPR) theory is a simple technique for predicting the geometry of atomic centers in small molecules and molecular ions. This authoritative reference was written by Istvan Hartigai and the developer of VSEPR theory, Ronald J. Gillespie. In addition to its value as a text for courses in molecular geometry and chemistry, it constitutes a classic reference for professionals. Starting with coverage of the broader aspects of VSEPR, this volume narrows its focus to a succinct survey of the methods of structural determination. Additional topics include the applications of the VSEPR model and its theoretical basis. Helpful data on molecular geometries, bond lengths, and bond angles appear in tables and other graphics.

Descriptive Inorganic Chemistry Oxford University Press

Inorganic Chemistry, Second Edition, provides essential information for students of inorganic chemistry or for chemists pursuing self-study. The presentation of topics is made with an effort to be clear and concise so that the book is portable and user friendly. The text emphasizes fundamental principles—including molecular structure, acid-base chemistry, coordination chemistry, ligand field theory, and solid state chemistry. It is organized into five major themes (structure, condensed phases, solution chemistry, main group and coordination compounds) with several chapters in each. There is a logical progression from atomic structure to molecular structure to properties of substances based on molecular structures, to behavior of solids, etc. The textbook contains a balance of topics in theoretical and descriptive chemistry. For example, the hard-soft interaction principle is used to explain hydrogen bond strengths, strengths of acids and bases, stability of coordination compounds, etc. Discussion of elements begins with survey chapters focused on the

main groups, while later chapters cover the elements in greater detail. Each chapter opens with narrative introductions and includes figures, tables, and end-of-chapter problem sets. This new edition features new and improved illustrations, including symmetry and 3D molecular orbital representations; expanded coverage of spectroscopy, instrumental techniques, organometallic and bio-inorganic chemistry; and more in-text worked-out examples to encourage active learning and to prepare students for their exams. This text is ideal for advanced undergraduate and graduate-level students enrolled in the Inorganic Chemistry course. This core course serves Chemistry and other science majors. The book may also be suitable for biochemistry, medicinal chemistry, and other professionals who wish to learn more about this subject area. - Concise coverage maximizes student understanding and minimizes the inclusion of details students are unlikely to use - Discussion of elements begins with survey chapters focused on the main groups, while later chapters cover the elements in greater detail - Each chapter opens with narrative introductions and includes figures, tables, and end-of-chapter problem sets

Molecule-Based Materials Oxford University Press, USA

This book is a revised and updated English edition of a textbook that has grown out of several years of teaching. The term "inorganic" is used in a broad sense as the book covers the structural chemistry of representative elements (including carbon) in the periodic table, organometallics, coordination polymers, host-guest systems and supramolecular assemblies. Part I of the book reviews the basic bonding theories, including a chapter on computational chemistry. Part II introduces point groups and space groups and their chemical applications. Part III comprises a succinct account of the structural chemistry of the elements in the periodic table. It presents structure and bonding, generalizations of structural trends, crystallographic data, as well as highlights from the recent literature.

Chemical Reactions in Inorganic Chemistry Elsevier

The fifth edition of this widely acclaimed work has been reissued as part of the Oxford Classic Texts series. The book includes a clear exposition of general topics concerning the structures of solids, and a systematic description of the structural chemistry of elements and their compounds. The book is divided into two parts. Part I deals with a number of general topics, including the properties of polyhedra, the nature and symmetry of repeating patterns, and the ways in which spheres, of the same or different sizes, can be packed together. In Part II the structural chemistry of the elements is described systematically, arranged according to the groups of the Periodic Table.

Descriptive Inorganic Chemistry, Third Edition Academic Press

The book "Chemical Reactions in Inorganic Chemistry" describes an overview of chemical reagents used in inorganic chemical reactions for the synthesis of different compounds including coordination, transition metal, organometallic, cluster, bioinorganic, and solid-state compounds. This book will be helpful for the graduate students, teachers, and researchers, and chemistry professionals who are interested to fortify and expand their knowledge about sol-gel preparation and application, porphyrin and phthalocyanine, carbon nanotube nanohybrids, triple bond between arsenic and group 13 elements, and N-heterocyclic carbene and its heavier analogues. It comprises a total of five chapters from multiple contributors around the world including China, India, and Taiwan.

Inorganic and Bio-Inorganic Chemistry - Volume II Academic Press

Presents the entire inorganic field as a logical development of basic ideas, incorporating significant early contributions, factual data, and the resulting modern ideas involving the scope and significance of inorganic chemistry. Proceeds sensibly from the origins of the elements through atomic structure, molecular structure, bonding and properties related to bonding, and reactions considered by types, conditions, and mechanisms.

Inorganic Chemistry in Aqueous Solution Courier Corporation

Electrons, Atoms, and Molecules in Inorganic Chemistry: A Worked Examples Approach builds from fundamental units into molecules, to provide the reader with a full understanding of inorganic chemistry concepts through worked examples and full color illustrations. The book uniquely discusses failures as well as research success stories. Worked problems include a variety of types of chemical and physical data, illustrating the interdependence of issues. This text contains a bibliography providing access to important review articles and papers of relevance, as well as summaries of leading articles and reviews at the end of each chapter so interested readers can readily consult the original literature. Suitable as a professional reference for researchers in a variety of fields, as well as course use and self-study. The book offers valuable information to fill an important gap in the field. - Incorporates questions and answers to assist readers in understanding a variety of problem types - Includes detailed explanations and developed practical approaches for solving real chemical problems - Includes a range of example levels, from classic and simple for basic concepts to complex questions for more sophisticated topics - Covers the full range of topics in inorganic chemistry: electrons and wave-particle duality, electrons in atoms, chemical binding, molecular symmetry, theories of bonding, valence bond theory, VSEPR theory, orbital hybridization, molecular orbital theory, crystal field theory, ligand field theory, electronic spectroscopy, vibrational and rotational spectroscopy

Inorganic Chemistry Oxford University Press, USA

Part A.: Overviews of biological inorganic chemistry : 1. Bioinorganic chemistry and the biogeochemical cycles -- 2. Metal ions and proteins: binding, stability, and folding -- 3. Special cofactors and metal clusters -- 4. Transport and storage of metal ions in biology -- 5. Biominerals and biomineralization -- 6. Metals in medicine. -- Part B.: Metal ion containing biological systems : 1. Metal ion transport and storage -- 2. Hydrolytic chemistry -- 3. Electron transfer, respiration, and photosynthesis -- 4. Oxygen metabolism -- 5. Hydrogen, carbon, and sulfur metabolism -- 6. Metalloenzymes with radical intermediates -- 7. Metal ion receptors and signaling. -- Cell biology, biochemistry, and evolution: Tutorial I. -- Fundamentals of coordination chemistry: Tutorial II.

Chemistry of the Elements John Wiley & Sons

Leading the reader from the fundamental principles of inorganic chemistry, right through to cutting-edge research at the forefront of the subject, *Inorganic Chemistry, Seventh Edition* is the ideal course companion for the duration of a student's degree. The authors have drawn upon their extensive teaching and research experience to update this text; the seventh edition retains the much-praised clarity of style and layout from previous editions, while offering an enhanced section on 'expanding our horizons'. The latest innovative applications of green chemistry have been added, to clearly illustrate the real-world significance of the subject. This edition also sees a greater use of learning features, including substantial updates to the problem solving questions, additional self-

tests and walk through explanations which enable students to check their understanding of key concepts and develop problem-solving skills. Providing comprehensive coverage of inorganic chemistry, while placing it in context, this text will enable the reader to fully master this important subject. Online Resources: Inorganic Chemistry, Seventh Edition is accompanied by a range of online resources: For registered adopters of the text: DT Figures, marginal structures, and tables of data ready to download DT Test bank For students: DT Answers to self-tests and exercises from the book DT Tables for group theory DT Web links DT Links to interactive structures and other resources on www.chemtube3d.com

Principles of Inorganic Materials Design Springer

Structure and Bonding covers introductory atomic and molecular theory as given in first and second year undergraduate courses at university level. This book explains in non-mathematical terms where possible, the factors that govern covalent bond formation, the lengths and strengths of bonds and molecular shapes. Throughout the book, theoretical concepts and experimental evidence are integrated. An introductory chapter summarizes the principles on which the Periodic Table is established, and describes the periodicity of various atomic properties which are relevant to chemical bonding. Symmetry and group theory are introduced to serve as the basis of all molecular orbital treatments of molecules. This basis is then applied to a variety of covalent molecules with discussions of bond lengths and angles and hence molecular shapes. Extensive comparisons of valence bond theory and VSEPR theory with molecular orbital theory are included. Metallic bonding is related to electrical conduction and semi-conduction. The energetics of ionic bond formation and the transition from ionic to covalent bonding is also covered. Ideal for the needs of undergraduate chemistry students, Tutorial Chemistry Texts is a major series consisting of short, single topic or modular texts concentrating on the fundamental areas of chemistry taught in undergraduate science courses. Each book provides a concise account of the basic principles underlying a given subject, embodying an independent-learning philosophy and including worked examples.

Shriver and Atkins' Inorganic Chemistry John Wiley & Sons

For more than a quarter century, Cotton and Wilkinson's Advanced Inorganic Chemistry has been the source that students and professional chemists have turned to for the background needed to understand current research literature in inorganic chemistry and aspects of organometallic chemistry. Like its predecessors, this updated Sixth Edition is organized around the periodic table of elements and provides a systematic treatment of the chemistry of all chemical elements and their compounds. It incorporates important recent developments with an emphasis on advances in the interpretation of structure, bonding, and reactivity. From the reviews of the Fifth Edition: "The first place to go when seeking general information about the chemistry of a particular element, especially when up-to-date, authoritative information is desired." —Journal of the American Chemical Society "Every student with a serious interest in inorganic chemistry should have [this book]." —Journal of Chemical Education "A mine of information . . . an invaluable guide." —Nature "The standard by which all other inorganic chemistry books are judged." —Nouveau Journal de Chimie "A masterly overview of the chemistry of the elements." —The Times of London Higher Education Supplement "A bonanza of information on important results and developments which could otherwise easily be overlooked in the general deluge of publications." —Angewandte Chemie

The Structure and Properties of Water Oxford Handbooks Online

The properties of a material depend not only on the specific atoms and molecules it contains, but also on the arrangement of these in space. Many of these three-dimensional arrangements are described as "3D-nets" or "3D-networks". Molecule-Based Materials: The Structural Network Approach is about the synthesis, description, nomenclature and analysis of such nets and the relation of the nets to the physical properties of the materials. It introduces the mathematics, and includes a short guide to programs useful for retrieving, analysing and naming nets. Complete with illustrations and examples of coordination polymer and hydrogen bonded nets, this unique easy-to-read book examines all aspects of 3D nets and will undeniably prove itself valuable to newcomers, well-seasoned students and researchers working in crystallography, inorganic or organic chemistry.* Covers all aspects of molecule-based 3D nets, complete with 3D illustrations * Contains summary tables of all nets* Easy reading eliminates the need for background knowledge in crystallography or mathematics

Inorganic Chemistry BoD – Books on Demand

Intended for first- and second-year undergraduates, this introduction to solid-state chemistry includes practical examples of applications and modern developments to offer students the opportunity to apply their knowledge in real-life situations. It aims to provide students with a thorough understanding of the traditional knowledge of crystal structures: lattices, unit cells, close packing, and octahedral and tetrahedral holes and their occupation by various ions in the well-known crystal structures. This descriptive work is augmented by free-electron and band theory. Links to other branches of chemistry and practical examples are emphasized, as are the links back to band theory and crystal structures. For this second edition, the book has been updated throughout and has two new chapters, one on X-ray diffraction techniques and another on solid-state preparative methods, as well as new sections on symmetry and ferroelectrics.

The Oxford Handbook of Structural Transformation John Wiley & Sons

This volume consists of over 400 problems and their solutions in structural inorganic chemistry at the senior undergraduate and beginning graduate level.

The Chemical Bond in Inorganic Chemistry EOLSS Publications

This substantially revised and expanded new edition of the bestselling textbook, addresses the difficulties that can arise with the mathematics that underpins the study of symmetry, and acknowledges that group theory can be a complex concept for students to grasp. Written in a clear, concise manner, the author introduces a series of programmes that help students learn at their own pace and enable them to understand the subject fully. Readers are taken through a series of carefully constructed exercises, designed to simplify the mathematics and give them a full understanding of how this relates to the chemistry. This second edition contains a new chapter on the projection operator method. This is used to calculate the form of the normal modes of vibration of a molecule and the normalised wave functions of hybrid orbitals or molecular orbitals. The features of this book include: * A concise, gentle introduction to symmetry and group theory * Takes a programmed learning approach * New material on projection operators, and the calculation of normal modes of vibration and normalised wave functions of orbitals This book is suitable for all students of chemistry taking a first course in symmetry and group theory.

Concise Inorganic Chemistry, 5th Ed Macmillan

Electron microscopy has revolutionized our understanding the extraordinary intellectual demands required of the materials by completing the processing-structure-property relationship in order to do the job properly: crystallography, links down to atomic levels. It now is even possible diffraction, image contrast, inelastic scattering events, and to tailor the microstructure (and meso structure) of materials spectroscopy. Remember, these used to be fields in themselves to achieve specific sets of properties; the extraordinary abilities. Today, one has to understand the fundamentals of modern transmission electron microscopy-TEM of all of these areas before one can hope to tackle significant instruments to provide almost all of the structural, phase, and other problems in materials

science. TEM is a technique of and crystallographic data allow us to accomplish this feat. characterizing materials down to the atomic limits. It must therefore, it is obvious that any curriculum in modern materials must be used with care and attention, in many cases involving interdisciplinary education must include suitable courses in electron microscopy teams of experts from different venues. The fundamentals of microscopy. It is also essential that suitable texts be available are, of course, based in physics, so aspiring materials scientists for the preparation of the students and researchers who must be well advised to have prior exposure to, for carry out electron microscopy properly and quantitatively.

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