# Modern Chemistry Chapter Test B Chemical Bonding

Chemical Bonds **Theoretical Models of Chemical Bonding, Part 1** Theoretical Models of Chemical Bonding: Atomic hypothesis and the concept of molecular structure **Theoretical Models of Chemical Bonding The Nature of the Chemical Bond and the Structure of Molecules and Crystals The Chemical Bond** Electron Density and Chemical Bonding I **Electronic Structure and Chemical Bonding The Chemical Bond in Inorganic Chemistry Optical Spectra and Chemical Bonding in Transition Metal Complexes An Introduction to Spectroscopy, Atomic Structure and Chemical Bonding** *Chemical Bonding* Comprehensive Handbook of Chemical Bond Energies **Femtochemistry: Ultrafast Dynamics of the Chemical Bond** Chemical Bonds in Solids **Electrons and Chemical Bonding** *Femtochemistry: Ultrafast Dynamics of the Chemical Bond* **The Concept of the Chemical Bond Electron Density and Chemical Bonding II Zeitschrift Für Naturforschung** The Chemical Bond in Inorganic Chemistry The Concept of the Chemical Bond **Electron Density and Chemical Bonding II** 999 Nonquantitative Problems for FE Examination Review **Theoretical Models of Chemical Bonding Pathfinder NDA/NA National Defence Academy & Naval Academy Entrance Examination The Chemical Bond III Organic Chemistry Principles of Inorganic Chemistry** *Electron Distributions and the Chemical Bond* **Proceedings** Chemistry for Degree Students B.Sc. (Honours) Semester I **Chemical Bonding in Transition Metal Carbides** *Quantum Chemistry* **Electronic Structure and Properties of Transition Metal Compounds Electronic Structure and the Properties of Solids Molecules and Models Chemical Structure and Bonding The Amide Linkage** The Chemical Bond I

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**The Amide Linkage** Jul 28 2019 The amide linkage is one of the most fundamental and widespread chemical bonds in nature, underlying the properties of a vast array of organic molecules, polymers, and materials, including peptides and proteins. Arthur Greenberg, Curt Breneman, and Joel Liebman’s peerless text provides comprehensive coverage of the experimental, structural, and computational findings that shed light on the chemical and physical properties of the amide linkage, as well as its emerging applications in materials and biotechnology. Chapters in The Amide Linkage highlight how this chemical bond factors in the design of enzyme inhibitors, cyclic peptides, antibacterial agents, and emerging nanotechnology applications. This one-of-a-kind study also: Discusses selected aspects of chemical reactions, structure, bonding, and energetics of the amide bond, including amide rotational barriers, stereochemistry, complexation, spectroscopy, and thermochemistry Presents specific applications to supramolecular and stereospecific synthesis Discusses ke y aspects of peptide and protein chemistry–such as molecular recognition, conformation, and folding–in terms of the amide linkage Includes chapters contributed by numerous eminent chemists and biochemists Organic, medicinal, polymer, and physical chemists, as well as biochemists and materials scientists, will find The Amide Linkage to be an invaluable addition to their professional libraries.

**Theoretical Models of Chemical Bonding, Part 1** Oct 03 2022 Theoretical Models of Chemical Bonding: Atomic hypothesis and the concept of molecular structure Sep 02 2022

**The Chemical Bond III** Aug 09 2020 The series Structure and Bonding publishes critical reviews on topics of research concerned with chemical structure and bonding. The scope of the series spans the entire Periodic Table and addresses structure and bonding issues associated with all of the elements. It also focuses attention on new and developing areas of modern structural and theoretical chemistry such as nanostructures, molecular electronics, designed molecular solids, surfaces, metal clusters and supramolecular structures. Physical and spectroscopic techniques used to determine, examine and model structures fall within the purview of Structure and Bonding to the extent that the focus is on the scientific results obtained and not on specialist information concerning the techniques themselves. Issues associated with the development of bonding models and generalizations that illuminate the reactivity pathways and rates of chemical processes are also relevant. The individual volumes in the series are thematic. The goal of each volume is to give the reader, whether at a university or in industry, a comprehensive overview of an area where new insights are emerging that are of interest to a larger scientific audience. Thus each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years should be presented using selected examples to illustrate the principles discussed. A description of the physical basis of the experimental techniques that have been used to provide the primary data may also be appropriate, if it has not been covered in detail elsewhere. The coverage need not be exhaustive in data, but should rather be conceptual, concentrating on the new principles being developed that will allow the reader, who is not a specialist in the area covered, to understand the data presented. Discussion of possible future research directions in the area is welcomed. Review articles for the individual volumes are invited by the volume editors

**Theoretical Models of Chemical Bonding** Aug 01 2022 The renowned theoretical physicist Victor F. Weisskopf rightly pointed out that a real understanding of natural phenomena implies a clear distinction between the essential and the peripheral. Only when we reach such an understanding - that is to say when we are able to separate the relevant from the irrelevant, will the phenomena no longer appear complex, but intelectually transparent. This statement, which is generally valid, reflects the very essence ofmodelling in the quantum theory of matter, on the molecular level in particular. Indeed, without theoretical models one would be swamped by too many details embodied in intricate accurate molecular wavefunctions. Further, physically justified simplificqtions enable studies of the otherwise intractable systems and/or phenomena. Finally, a lack of appropriate models would leave myriads of raw experimental data totally unrelated and incomprehensible. The present series ofbooks dwells on the most important models of chemical bonding and on the variety of its manifestations. In this volume the electronic structure and properties of molecules are considered in depth. Particular attention is focused on the nature of intramolecular interactions which in turn are revealed by various types ofmolecular spectroscopy. Emphasis is put on the conceptual and interpretive aspects of the theory in line with the general philosophy adopted in the series.

**Electronic Structure and Chemical Bonding** Mar 28 2022 This book addresses the problem of teaching the Electronic Structure and Chemical Bonding of atoms and molecules to high school and university students. It presents the outcomes of thorough investigations of some teaching methods as well as an unconventional didactical approach which were developed during a seminar for further training organized by the University of Bordeaux I for teachers of the physical sciences. The text is the result of a collective effort by eleven scientists and teachers: physicists and chemists doing research at the university or at the CRNS, university professors, and science teachers at high-school or university level. While remaining wide open to the latest discoveries of science, the text also offers a large number of problems along with their solutions and is illustrated by several pedagogic suggestions. It is intended for the use of teachers and students of physics, chemistry, and of the physical sciences in general. Contents:Historical Survey:Main Events in the History of Chemical BondingTheoretical Bases for the Description of Molecular Electronic Structure and Chemical Bonding: Quantum Mechanics and Molecular Symmetry:Quantum Bases of Chemical BondingMolecular Symmetry, Its Description and ConsequencesTwo Complementary Descriptions of Chemical Bonding: Mechanical Aspect of

Chemical Bonding:BasicsApplicationsLanguage of Orbitals and Chemical Bonding: Applications and Limits:One-Electron Treatment of Many-Electron ParticlesChemical Bonding in Terms of MO LanguageBeyond the One-Electron DescriptionIndex Readership: Physicists and chemists, graduate and undergraduate students in chemical physics. keywords:
**The Concept of the Chemical Bond** May 18 2021 The state-of-the-art in contemporary theoretical chemistry is presented in this 4-volume set with numerous contributions from the most highly regarded experts in their field. It provides a concise introduction and critical evaluation of theoretical approaches in relation to experimental evidence.
The Chemical Bond in Inorganic Chemistry Feb 12 2021 The bond valence model, a description of acid-base bonding, is widely used for analysing and modelling the structures and properties of solids and liquids. Unlike other models of inorganic chemical bonding, the bond valence model is simple, intuitive, and predictive, and is accessible to anyone with a pocket calculator and a secondary school command of chemistry and physics. This new edition of 'The Chemical Bond in Inorganic Chemistry: The Bond Valence Model' shows how chemical properties arise naturally from the conflict between the constraints of chemistry and those of three-dimensional space. The book derives the rules of the bond valence model, as well as those of the traditional covalent, ionic and popular VSEPR models, by identifying the chemical bond with the electrostatic flux linking the bonded atoms. Most of the new edition is devoted to showing how to apply these ideas to real materials including crystals, liquids, glasses and surfaces. The work includes detailed examples of applications, and the final chapter explores the relationship between the flux and quantum theories of the bond.
**The Nature of the Chemical Bond and the Structure of Molecules and Crystals** Jun 30 2022 Thorough discussion of the various types of bonds, their relative natures, and the structure of molecules and crystals
**Chemical Bonding in Transition Metal Carbides** Feb 01 2020 This book presents a mainly qualitative understanding of this family of materials which ranges from simple NaCl type compounds to complex chromium carbides.
**Electron Density and Chemical Bonding II** Apr 16 2021 T. Koritsanszky, A. Volkov, M. Chodkiewicz: New Directions in Pseudoatom-Based X-Ray Charge Density Analysis.- B. Dittrich, D. Jayatilaka: Reliable Measurements of Dipole Moments from Single-Crystal Diffraction Data and Assessment of an In-Crystal Enhancement.- B. Engels, Th. C. Schmidt, C. Gatti, T. Schirmeister, R.F. Fink: Challenging Problems in Charge Density Determination: Polar Bonds and Influence of the Environment.- S. Fux, M. Reiher: Electron Density in Quantum Theory.- K. Meindl, J.Henn: Residual Density Analysis.- C. Gatti: The Source Function Descriptor as a Tool to Extract Chemical Information from Theoretical and Experimental Electron Densities.
*Femtochemistry: Ultrafast Dynamics of the Chemical Bond* Jun 18 2021 0Keywords: “This two-volume set provides an excellent source of information on the state of the art in femtosecond spectroscopy. It is an invaluable reference for experts in the field as well as those interested in mastering the experimental and theoretical aspects of ultrafast time-resolved spectroscopy.” J Am Chem Soc.
**Proceedings** Apr 04 2020
The Concept of the Chemical Bond Jan 14 2021 The state-of-the-art in contemporary theoretical chemistry is presented in this 4-volume set with numerous contributions from the most highly regarded experts in their field. It provides a concise introduction and critical evaluation of theoretical approaches in relation to experimental evidence.
**Organic Chemistry** Jul 08 2020
999 Nonquantitative Problems for FE Examination Review Nov 11 2020 Nonquantitative problems on the exam don't require numerical calculations, but rather an understanding of theory and principle. It's essential that you answer these questions fast, leaving yourself more time to work on solutions for the quantitative problems. 999 Nonquantitative Problems for FE Examination Review will bring you up to speed on the concepts you need to know. Answers are included. After working through 999 Nonquantitative Problems, you'll be prepared to handle FE/EIT exam concepts swiftly and confidently. This book is part of PPI's Legacy Series--products developed for the former pencil-and-paper version of the NCEES FE exam, which is now delivered as a computer-based-test (CBT). Some of the content may appear in PPI's current CBT FE exam products.
Chemistry for Degree Students B.Sc. (Honours) Semester I Mar 04 2020 This textbook has been designed to meet the needs of B. Sc. (Honours) First Semester students of Chemistry as per the UGC Choice Based Credit System (CBCS). Maintaining the traditional approach to the subject, this textbook lucidly explains the basics of Inorganic and Physical Chemistry. Important topics such as atomic structure, periodicity of elements, chemical bonding and oxidation- reduction reactions, gaseous state, liquid state, solid state and ionic equilibrium are aptly discussed to give an overview of inorganic and physical chemistry. Laboratory work has also been included to help students achieve solid conceptual understanding and learn experimental procedures.
Electron Density and Chemical Bonding I Apr 28 2022 D. Stalke, U. Flierler: More than Just Distances from Electron Density Studies.- A.O. Madsen: Modeling and Analysis of Hydrogen Atoms.- B.B. Iversen/J. Overgaard: Charge Density Methods in Hydrogen Bond Studies.- U. Flierler, D. Stalke: Some Main Group Chemical Perceptions in the Light of Experimental Charge Density Investigations.- D. Leusser: Electronic Structure and Chemical Properties of Lithium Organics Seen Through the Glasses of Charge Density.- L. J. Farrugia, P. Macchi: Bond Orders in Metal–Metal Interactions Through Electron Density Analysis.- W. Scherer, V. Herz, Ch. Hauf: On the Nature of β-Agostic Interactions: A Comparison Between the Molecular Orbital and Charge Density Picture.
**Theoretical Models of Chemical Bonding** Oct 11 2020 The state-of-the-art in contemporary theoretical chemistry is presented in this 4-volume set with numerous contributions from the most highly regarded experts in their field. It provides a concise introduction and critical evaluation of theoretical approaches in relation to experimental evidence.
**Pathfinder NDA/NA National Defence Academy & Naval Academy Entrance Examination** Sep 09 2020 1. Pathfinder NDA/NA Entrance Examination - prescribed under UPSC Guidelines. 2. The Self Study Guide divides the entire syllabus in 4 Major Sections 3. Provides 5 Previous Years' Solved Papers for practice 4. More than 8000 MCQs for quick revision of topics 5. Chapterwise division of Previous Years' Questions. 6. Gives deep insight of the paper pattern, its types and weightage in the exam. Mark Twain once said, “Patriotism is supporting your country all time and government when it deserves it”. The Union services commission or UPSC has released the notification of about 413 seats for the NDA/NA exam 2022. Here comes the updated edition of the Pathfinder series “NDA/NA Entrance Examination” comprehensively complete syllabus of entrance examination as prescribed by UPSC. The book has been divided into chapters that are categorized under 4 major subjects; Mathematics, General English, General Science, General Studies providing a complete coverage. Each chapter of every section has been well explained with proper theories for better understanding. More than 8000 MCQs and Previous Years’ Solved Papers are providing a deep insight for examination patterns and types of questions asked in the exam. Chapterwise Division of Previous Years’ Solved Papers are provided with well detailed answers to clarify all the doubts. This book a must have for those who aim to score high for upcoming NDA/NA Exam. TOC NDA/NA Solved Paper 2021 – 2017 (I & II), , General English, General Science, General Studies.
**Molecules and Models** Sep 29 2019 This book describes the structures of molecules, i.e. their shape and size, as determined by experiments or advanced theoretical calculations, and gives an introduction to the simple concepts that chemists use to interpret these structures.
**Electron Density and Chemical Bonding II** Dec 13 2020 T. Koritsanszky, A. Volkov, M. Chodkiewicz: New Directions in Pseudoatom-Based X-Ray Charge Density Analysis.- B. Dittrich, D. Jayatilaka: Reliable Measurements of Dipole Moments from Single-Crystal Diffraction Data and Assessment of an In-Crystal Enhancement.- B. Engels, Th. C. Schmidt, C. Gatti, T. Schirmeister, R.F. Fink: Challenging Problems in Charge Density Determination: Polar Bonds and Influence of the Environment.- S. Fux, M. Reiher: Electron Density in Quantum Theory.- K. Meindl, J.Henn: Residual Density Analysis.- C. Gatti: The Source Function Descriptor as a Tool to Extract Chemical Information from Theoretical and Experimental Electron Densities.
**The Chemical Bond** May 30 2022 A unique overview of the different kinds of chemical bonds that can be found in the periodic table, from the main-group elements to transition elements, lanthanides and actinides. It takes into account the many developments that have taken place in the field over the past few decades due to the rapid advances in quantum chemical models and faster computers. This is the perfect complement to "Chemical Bonding - Fundamentals and Models" by the same editors, who are two of the top scientists working on this topic, each with extensive experience and important connections within the community.
**Electronic Structure and Properties of Transition Metal Compounds** Dec 01 2019 Covering all the latest developments, and

applying the theory of electronic structure to problem solving at every opportunity, Electronic Structure and Properties of Transition Metal Compounds places the reader at the cutting edge of this important field of research. The book focuses on the electronic structure and related properties of coordination compounds, essentially treating chemical bonding as an electronic phenomenon. It also covers the central concepts of quantum chemistry and atomic states, examines theories of electronic structure and vibronic coupling, and explores physical methods of investigation. The applications of the theory to stereochemistry and crystal chemistry, electron transfer and electron-conformational effects, and reactivity and catalytic action are also discussed.

*Electron Distributions and the Chemical Bond* May 06 2020 This book represents the proceedings of a symposium held at the Spring 1981 ACS meeting in Atlanta. The symposium brought together Theoretical Chemists, Solid State Physicists, Experimen tal Chemists and Crystallographers. One of its major aims was to increase interaction between these diverse groups which often use very different languages to describe similar concepts. The devel opment of a common language, or at least the acquisition of a multilingual capability, is a necessity if the field is to prosper. Much depends in this field on the interplay between theory and experiment. Accordingly this volume begins with two introduc tory chapters, one theoretical and the other experimental, which contain much of the background material needed for a through under standing of the field. The remaining sections describe a wide variety of applications and illustrate, we believe, the central role of charge densities in the understanding of chemical bonding. We are most indebted to the Divisions of Inorganic and Phy sical Chemistry of the American Chemical Society, which provided the stimulus for the symposium and gave generous financial support. We also gratefully acknowledge financial support from the Special Educational Opportunities Program of the Petroleum Research Fund administered by the American Chemical Society, which made exten sive participation by speakers from abroad possible.

**Zeitschrift Für Naturforschung** Mar 16 2021

Chemical Bonds Nov 04 2022 This profusely illustrated book, by a world-renowned chemist and award-winning chemistry teacher, provides science students with an introduction to atomic and molecular structure and bonding. (This is a reprint of a book first published by Benjamin/Cummings, 1973.)

*Chemical Bonding* Nov 23 2021 Contents: Chemical Bonding-I : Basic Concepts, Chemical Bonding-II : Additional Aspects, Intermolecular Force and Crystal Structures.

**Chemical Structure and Bonding** Aug 28 2019

*Quantum Chemistry* Jan 02 2020 This book is a presentation of a qualitative theory of chemical bonding stressing the physical processes which occur on bond formation. It differs from most (if not all) other books in that it does not seek to ?rationalize? the phenomena of bonding by a series of mnemonic rules. A principal feature is a unified and consistent treatment across all types of bonding in organic, physical and inorganic chemistry.

Chemical Bonds in Solids Aug 21 2021 The present four volumes, published under the collective title of "Chemical Bonds in Solids," are the translation of the two Russian books "Chemical Bonds in Crystals" and "Chemical Bonds in Semiconductors." These contain the papers presented at the Conference on Chemical Bonds held in Minsk between May 28 and June 3, 1967, together with a few other papers (denoted by an asterisk) which have been specially incorporated. Earlier collections (also published by the Nauka i Tekhnika Press of the Belorussian Academy of Sciences) were entitled "Chemical Bonds in Semiconductors and Solids" (1965) and "Chemical Bonds in Semiconductors and Thermody namics" (1966) and are available in English editions from Consultants Bureau, New York (pub lished in 1967 and 1968, respectively). The subject of chemical bonds in crystals, including semiconductors, has recently become highly topical and has attracted the interest of a wide circle of physicists, chemists, and engineers. Until recently, the most successful description of the properties of solids (including semi conductors) has been provided by the band theory, which still dominates the physics of solids. Nevertheless, it is clear that the most universal approach is that based on the general theory of chemical bonds in crystals, in which details of the electron distributions between atoms and of the wave functions appear quite explicitly.

**The Chemical Bond in Inorganic Chemistry** Feb 24 2022 The bond valence model is a recently developed model of the chemical bond in inorganic chemistry that complements the bond model widely used in organic chemistry. It is simple, quantitative, intuitive, and predictive - no more than a pocket calculator is needed to calculate it. This book focuses on the theory that underlies the model, and shows how it has been used in physics, materials science, chemistry, mineralogy, soil science, and molecular biology.

**Femtochemistry: Ultrafast Dynamics of the Chemical Bond** Sep 21 2021 0Keywords: “This two-volume set provides an excellent source of information on the state of the art in femtosecond spectroscopy. It is an invaluable reference for experts in the field as well as those interested in mastering the experimental and theoretical aspects of ultrafast time-resolved spectroscopy.” J Am Chem Soc.

**Electrons and Chemical Bonding** Jul 20 2021

The Chemical Bond I Jun 26 2019 The series Structure and Bonding publishes critical reviews on topics of research concerned with chemical structure and bonding. The scope of the series spans the entire Periodic Table and addresses structure and bonding issues associated with all of the elements. It also focuses attention on new and developing areas of modern structural and theoretical chemistry such as nanostructures, molecular electronics, designed molecular solids, surfaces, metal clusters and supramolecular structures. Physical and spectroscopic techniques used to determine, examine and model structures fall within the purview of Structure and Bonding to the extent that the focus is on the scientific results obtained and not on specialist information concerning the techniques themselves. Issues associated with the development of bonding models and generalizations that illuminate the reactivity pathways and rates of chemical processes are also relevant. The individual volumes in the series are thematic. The goal of each volume is to give the reader, whether at a university or in industry, a comprehensive overview of an area where new insights are emerging that are of interest to a larger scientific audience. Thus each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years should be presented using selected examples to illustrate the principles discussed. A description of the physical basis of the experimental techniques that have been used to provide the primary data may also be appropriate, if it has not been covered in detail elsewhere. The coverage need not be exhaustive in data, but should rather be conceptual, concentrating on the new principles being developed that will allow the reader, who is not a specialist in the area covered, to understand the data presented. Discussion of possible future research directions in the area is welcomed. Review articles for the individual volumes are invited by the volume editors

**Electronic Structure and the Properties of Solids** Oct 30 2019 "Should be widely read by practicing physicists, chemists and materials scientists." — Philosophical Magazine In this comprehensive and innovative text, Professor Harrison (Stanford University) offers a basic understanding of the electronic structure of covalent and ionic solids, simple metals, transition metals, and their compounds. The book illuminates the relationships of the electronic structures of these materials and shows how to calculate dielectric, conducting, and bonding properties for each. Also described are various methods of approximating electronic structure, providing insight and even quantitative results from the comparisons. Dr. Harrison has also included an especially helpful "Solid State Table of the Elements" that provides all the parameters needed to estimate almost any property of any solid, with a hand-held calculator, using the techniques developed in the book. Designed for graduate or advanced undergraduate students who have completed an undergraduate course in quantum mechanics or atomic and modern physics, the text treats the relation between structure and properties comprehensively for all solids rather than for small classes of solids. This makes it an indispensable reference for all who make use of approximative methods for electronic-structure engineering, semiconductor development and materials science. The problems at the ends of the chapters are an important aspect of the book. They clearly show that the calculations for systems and properties of genuine and current interest are actually quite elementary. Prefaces. Problems. Tables. Appendixes. Solid State Table of the Elements. Bibliography. Author and Subject Indexes. "Will doubtless exert a lasting influence on the solid-state physics literature." — Physics Today

Comprehensive Handbook of Chemical Bond Energies Oct 23 2021 Understanding the energy it takes to build or break chemical bonds is essential for scientists and engineers in a wide range of innovative fields, including catalysis, nanomaterials, bioengineering, environmental chemistry, and space science. Reflecting the frequent additions and updates of bond dissociation energy (BDE) data throughout the literat

**Optical Spectra and Chemical Bonding in Transition Metal Complexes** Jan 26 2022 With contributions by numerous experts

**An Introduction to Spectroscopy, Atomic Structure and Chemical Bonding** Dec 25 2021 An Introduction to Spectroscopy presents the most fundamental concepts of inorganic chemistry at a level appropriate for first year students and in a manner comprehensible to them. This is true even of 'difficult' topics such as the wave mechanical atom, symmetry elements and symmetry operations, and the ligand group orbital approach to bonding, The book contains many useful diagrams illustrating (among other things) the angular dependence of atomic wave functions the derivation of energy level diagrams for polyatomic molecules; close packed lattices and ionic crystal structures. The diagrams of the periodic variation of atomic and molecular properties, showing trends across periods and down groups simultaneously, are especially instructive. Spectroscopy is presented mainly as a tool for the elucidation of atomic and molecular structures. Each chapter begins with a clear and concise statement of "What Every First-year Student Should Know About . . ." outlining the background knowledge that the student is assumed to have from previous courses and thus pointing out what topics might need to be reviewed. There are also detailed statements of the objectives of each chapter, a number of worked examples interspersed in the text, and a comprehensive set of problems and exercises to test the student's understanding. Tables of data throughout the text and appendices at the end provide much valuable information.

**Principles of Inorganic Chemistry** Jun 06 2020 Aimed at senior undergraduates and first-year graduate students, this book offers a principles-based approach to inorganic chemistry that, unlike other texts, uses chemical applications of group theory and molecular orbital theory throughout as an underlying framework. This highly physical approach allows students to derive the greatest benefit of topics such as molecular orbital acid-base theory, band theory of solids, and inorganic photochemistry, to name a few. Takes a principles-based, group and molecular orbital theory approach to inorganic chemistry The first inorganic chemistry textbook to provide a thorough treatment of group theory, a topic usually relegated to only one or two chapters of texts, giving it only a cursory overview Covers atomic and molecular term symbols, symmetry coordinates in vibrational spectroscopy using the projection operator method, polyatomic MO theory, band theory, and Tanabe-Sugano diagrams Includes a heavy dose of group theory in the primary inorganic textbook, most of the pedagogical benefits of integration and reinforcement of this material in the treatment of other topics, such as frontier MO acid--base theory, band theory of solids, inorganic photochemistry, the Jahn-Teller effect, and Wade's rules are fully realized Very physical in nature compare to other textbooks in the field, taking the time to go through mathematical derivations and to compare and contrast different theories of bonding in order to allow for a more rigorous treatment of their application to molecular structure, bonding, and spectroscopy Informal and engaging writing style; worked examples throughout the text; unanswered problems in every chapter; contains a generous use of informative, colorful illustrations