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Nota di contenuto	Cover; Contents; Preface; Acknowledgements; Chapter 1 The Composition of Matter; 1.1 Early Descriptions of Matter; 1.2 Visualizing Atoms; 1.3 The Periodic Table; 1.4 The Standard Model; Exercises; Bibliography; Chapter 2 The Structure of the Nucleus; 2.1 The Nucleus; 2.2 Nuclear Binding Energies; 2.3 Nuclear Reactions: Fusion and Fission; 2.4 Radioactive Decay and the Band of Stability; 2.5 The Shell Model of the Nucleus; 2.6 The Origin of the Elements; Exercises; Bibliography; Chapter 3 A Brief Review of Quantum Theory; 3.1 The Wavelike Properties of Light 3.2 Problems with the Classical Model of the Atom 3.3 The Bohr Model of the Atom; 3.4 Implications of Wave-Particle Duality; 3.5 Postulates of Quantum Mechanics; 3.6 The Schrodinger Equation; 3.7 The Particle in a Box Problem; 3.8 The Harmonic Oscillator Problem; Exercises; Bibliography; Chapter 4 Atomic Structure; 4.1 The Hydrogen Atom; 4.1.1 The Radial Wave Functions; 4.1.2 The Angular Wave Functions; 4.2 Polyelectronic Atoms; 4.3 Electron Spin and the Pauli Principle; 4.4 Electron Configurations and the Periodic Table; 4.5 Atomic Term Symbols 4.5.1 Extracting Term Symbols Using Russell-Saunders Coupling 4.5.2

Extracting Term Symbols Using jj Coupling; 4.5.3 Correlation Between RS (LS) Coupling and jj Coupling; 4.6 Shielding and Effective Nuclear Charge; Exercises; Bibliography; Chapter 5 Periodic Properties of the Elements; 5.1 The Modern Periodic Table; 5.2 Radius; 5.3 Ionization Energy; 5.4 Electron Affinity; 5.5 The Uniqueness Principle; 5.6 Diagonal Properties; 5.7 The Metal-Nonmetal Line; 5.8 Standard Reduction Potentials; 5.9 The Inert-Pair Effect; 5.10 Relativistic Effects; 5.11 Electronegativity; Exercises; Bibliography
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8.2 Symmetry Groups 8.3 Molecular Point Groups; 8.4 Representations; 8.5 Character Tables; 8.6 Direct Products; 8.7 Reducible Representations; Exercises; Bibliography; Chapter 9 Vibrational Spectroscopy; 9.1 Overview of Vibrational Spectroscopy; 9.2 Selection Rules for IR and Raman-Active Vibrational Modes; 9.3 Determining the Symmetries of the Normal Modes of Vibration; 9.4 Generating Symmetry Coordinates Using the Projection Operator Method; 9.5 Resonance Raman Spectroscopy; Exercises; Bibliography; Chapter 10 Covalent Bonding; 10.1 Valence Bond Theory
10.2 Molecular Orbital Theory: Diatomics

Sommario/riassunto

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 textboo
