



Understanding Solids: The Science of Materials

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Wiley, 2004. Book Condition: New. Brand New, Unread Copy in Perfect Condition. A+ Customer Service! Summary: PREFACE. PART 1. STRUCTURES AND MICROSTRUCTURES. CHAPTER 1. THE ELECTRON STRUCTURE OF ATOMS. ATOMS. THE HYDROGEN ATOM. The quantum mechanical description of a hydrogen atom. The energy of the electron. The location of the electron. Orbital shapes. MANY ELECTRON ATOMS. The orbital approximation. Electron spin and electron configuration. The Periodic Table. ATOMIC ENERGY LEVELS. Electron energy levels. The vector model. Terms and term schemes. Answers to introductory questions. Further reading. Problems and exercises. Quick Quiz. Calculations and Questions. Appendix 1.1. Chemical equations and units. Appendix 1.2. The electron configuration of the lighter atoms. Appendix 1.3. The 3d transition metals. Appendix 1.4. The lanthanides. Appendix 1.5. Energy levels and term schemes of many electron atoms. Appendix 1.6. The ground state term of an atom. CHAPTER 2. CHEMICAL BONDING. IONIC BONDING. Ions. Ionic bonding. Madelung energy. Repulsive energy. Lattice energy. The formulae and structures of ionic compounds. Ionic size and shape. Ionic structures. COVALENT BONDING. Molecular orbitals. The energies of molecular orbitals in diatomic molecules. Bonding between unlike atoms. Electronegativity. Bond strength and direction. Orbital hybridisation. Multiple bonds. Resonance. METALLIC BONDING. Bonding in metals. Chemical bonding....



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