

CHAPTER OVERVIEW

1: STRUCTURE AND BONDING

CHAPTER OBJECTIVES

This chapter provides a review of material covered in a standard freshman general-chemistry course through a discussion of the following topics:

- the differences between organic and inorganic chemistry.
- the shapes and significance of atomic orbitals.
- electron configurations.
- ionic and covalent bonding.
- molecular orbital theory.
- hybridization.
- the structure and geometry of the compounds methane, ethane, ethylene and acetylene.

[1.0: Introduction to Organic Chemistry](#)

[1.1: Atomic Structure - The Nucleus](#)

[1.2: Atomic Structure - Orbitals](#)

[1.3: Atomic Structure - Electron Configurations](#)

[1.4: Development of Chemical Bonding Theory](#)

[1.5: Describing Chemical Bonds - Valence Bond Theory](#)

[1.6: \$sp^3\$ Hybrid Orbitals and the Structure of Methane](#)

[1.7: \$sp^3\$ Hybrid Orbitals and the Structure of Ethane](#)

[1.8: \$sp^2\$ Hybrid Orbitals and the Structure of Ethylene](#)

[1.9: \$sp\$ Hybrid Orbitals and the Structure of Acetylene](#)

[1.10: Hybridization of Nitrogen, Oxygen, Phosphorus and Sulfur](#)

[1.11: Describing Chemical Bonds - Molecular Orbital Theory](#)

[1.12: Drawing Chemical Structures](#)

[1.S: Structure and Bonding \(Summary\)](#)

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