

Assignment 12

Due Wednesday, December 8

Overview: This week, we will return to a discussion of atomic orbitals, and how the description of electron probability that they provide can be reconciled with the molecular shapes we observe. The orientations of the bonds within the three-dimensional molecules, as described by VSEPR, do not match the spatial orientations of the atomic orbitals for the component atoms. This observation suggests that the orbitals for atoms within molecules differ from the orbitals for free atoms. We will introduce the concept of hybridization, in which new atomic orbitals are constructed from the hydrogen-like orbitals for free atoms, to provide an orbital description of bonding that is consistent with the observations of the VSEPR model.

Reading & Problems: Zumdahl, 6th edition

Date	Lecture	Reading	Assigned Problems
Wed., 12/1	Hybrid orbitals pt. 1	Section 14.1 thru p. 668 (sp hybridization)	Ch. 14: #18, 19, 20
Fri., 12/3	Hybrid orbitals pt. 2	Sections 14.1, pp. 668 - 673	Ch. 14: #22, 24, 26, 56
Mon., 12/6	Structural isomers, MO Theory	Section 14.2	Ch. 14: #1, 4, 34 part a
Wed., 12/8	MO Theory	Section 14.3	

Challenge Problem: Zumdahl Chapter 14 #64.