

Chapter 11 Theories of Covalent Bonding

This chapter details a successful model of covalent bonding that employs hybridization. It also describes an electron orbital of how covalent bonds form, including sigma and pi orbitals. In a covalent bond, the greater the amount of atomic orbital overlap and/or formation of multiple molecular (sigma and pi) orbitals, the stronger the bond. In this chapter, you will find a comparison of ethane, ethylene, and acetylene (properly named ethane, ethene, and ethyne) in terms of hybridization on the carbon atom as well as subsequent formation of sigma and pi bonds. Both of these concepts are included in the AP curriculum. Section 11.3 of this chapter discusses more detailed molecular orbital (MO) theory, which is not part of the AP curriculum.