CHAPTER OVERVIEW

4: Atomic Orbitals

Valence atomic orbitals on neighboring atoms combine to form bonding, non-bonding and antibonding molecular orbitals. In Section 1 the Schrödinger equation for the motion of a single electron moving about a nucleus of charge Z was explicitly solved. The energies of these orbitals relative to an electron infinitely far from the nucleus with zero kinetic energy were found to depend strongly on Z and on the principal quantum number n, as were the radial "sizes" of these hydrogenic orbitals. Closed analytical expressions for the r,θ, and ϕ dependence of these orbitals are given in Appendix B. The reader is advised to also review this material before undertaking study of this section.
