

## LEARNING OBJECTIVES

### CHAPTER 2 - ATOMIC STRUCTURE AND INTERATOMIC BONDING

1. Name the two atomic models cited, and note the differences between them.
2. Describe the important quantum-mechanical principle that relates to electron energies.
3. (a) Name the four electron quantum numbers.  
(b) For a specific electron, note what each of its quantum numbers determines.
4. Write a definition of the Pauli exclusion principle.
5. Cite the general characteristics of the elements that are arrayed in each column of the periodic table.
6. Write the equation that relates energy and force.
7. (a) Schematically plot attractive, repulsive, and net energies versus interatomic separation for two atoms or ions.  
(b) Now note on this plot the equilibrium separation and the bonding energy.
8. (a) Briefly describe ionic, covalent, metallic, hydrogen, and van der Waal's bonds.  
(b) Now note what materials exhibit each of these bonding types.
9. Given the chemical formula for a material, be able to cite what bonding type(s) is (are) possible.
10. Given the electronegativities of two elements, compute the percent ionic character of the bond that forms between them.