

CHAPTER 2

ATOMIC STRUCTURE AND INTERATOMIC BONDING

Fundamental Concepts

Electrons in Atoms

- 2.1 *Cite the difference between atomic mass and atomic weight.*
- 2.4 (a) *Cite two important quantum-mechanical concepts associated with the Bohr model of the atom.*
(b) *Cite two important additional refinements that resulted from the wave-mechanical atomic model.*
- 2.5 *Relative to electrons and electron states, what does each of the four quantum numbers specify?*
- 2.7 *Give the electron configurations for the following ions: Fe^{2+} , Al^{3+} , Cu^+ , Ba^{2+} , Br^- , and O^{2-} .*
- 2.18 (a) *Briefly cite the main differences between ionic, covalent, and metallic bonding.*
- 2.20 *Make a plot of bonding energy versus melting temperature for the metals listed in Table 2.3. Using this plot, approximate the bonding energy for copper, which has a melting temperature of $1084^\circ C$.*
- 2.23 *Explain why hydrogen fluoride (HF) has a higher boiling temperature than hydrogen chloride (HCl) (19.4 vs. $-85^\circ C$), even though HF has a lower molecular weight.*