CHAPTER HIGHLIGHTS

Compounds in Aqueous Solutions

Vocabulary

dissociation
net ionic equation
spectator ions
ionization
hydronium ion
strong electrolyte
weak electrolyte

- The separation of ions that occurs when an ionic solid dissolves is called *dissociation.*
- When two different ionic solutions are mixed, a precipitate may form if ions from the two solutions react to form an insoluble compound.
- A net ionic equation for a reaction in aqueous solution includes only compounds and ions that change chemically in the reaction. Spectator ions are ions that do not take part in such a reaction.
- Formation of ions from molecular compounds is called *ionization.* A molecular compound may ionize in an aqueous solution if the attraction of the polar water molecules is strong enough to break the polar-covalent bonds of the solute molecules.
- An H_3O^+ ion is called a *hydronium ion.*
- All, or almost all, of a dissolved strong electrolyte exists as ions in an aqueous solution, whereas a relatively small amount of a dissolved weak electrolyte exists as ions in an aqueous solution.

Colligative Properties of Solutions

Vocabulary

colligative properties
nonvolatile substance
molal freezing-point constant, K_f
freezing-point depression, Δt_f
molal boiling-point constant, K_b
boiling-point elevation, Δt_b
semipermeable membrane
osmosis
osmotic pressure

- Colligative properties of solutions depend only on the total number of solute particles present. Boiling-point elevation, freezing-point depression, vapor-pressure lowering, and osmotic pressure are colligative properties.
- The molal boiling-point and freezing-point constants are used to calculate boiling-point elevations and freezing-point depressions of solvents containing nonvolatile solutes.
- Electrolytes have a greater effect on the freezing and boiling points of solvents than nonelectrolytes do.
- Except in very dilute solutions, the values of colligative properties of electrolyte solutions are less than expected because of the attraction between ions in solution.