# CHAPTER HIGHLIGHTS

## Aqueous Solutions and the Concept of pH

**Vocabulary**

self-ionization of water
pH
pOH

- Pure water undergoes self-ionization to give $1.0 \times 10^{-7}$ M $H_3O^+$ and $1.0 \times 10^{-7}$ M $OH^-$ at 25°C.
- $pH = -\log[H_3O^+]$; $pOH = -\log[OH^-]$; at 25°C, $pH + pOH = 14.0$.
- At 25°C, acids have a pH of less than 7, bases have a pH of greater than 7, and neutral solutions have a pH of 7.
- If a solution contains a strong acid or a strong base, the $[H_3O^+]$, $[OH^-]$, and pH can be calculated from the molarity of the solution. If a solution contains a weak acid or a weak base, the $[H_3O^+]$ and the $[OH^-]$ must be calculated from an experimentally measured pH.

## Determining pH and Titrations

**Vocabulary**

acid-base indicators
transition interval
pH meter
titration
equivalence point
end point
standard solution
primary standard

- The pH of a solution can be measured using either a pH meter or acid-base indicators.
- Titration uses a solution of known concentration to determine the concentration of a solution of unknown concentration.
- To determine the end point of a titration, one should choose indicators that change color over ranges that include the pH of the equivalence point.
- When the molarity and volume of a known solution used in a titration are known, then the molarity of a given volume of an unknown solution can be found.