Chapter 5 Chemical Reactions and Equations
Learning Objectives
Fall 2012

5.1 Chemical Reactions and Equations

- Describe what happens when a chemical reaction occurs.
- Distinguish reactant and product in a chemical reaction, and describe how they are related.
- Identify the reactant(s) and products(s) in a word or molecular-level description of a chemical reaction.

5.2 How Do We Know a Chemical Reaction Occurs?

- List some macroscopic observations that indicate that a chemical change may have occurred.
- Explain why a change in properties accompanies chemical changes.

5.3 Writing Chemical Equations

- Describe how chemical equations are symbolic representations of chemical reactions.
- Write a balanced equation, including physical state symbols, from a word description for a chemical change.
- Explain the importance of balancing a chemical equation.
- Balance an equation given a skeletal equation or a word description.

5.4 Predicting Chemical Reactions

- Describe the combustion reactions, acid-base reactions, oxidation-reduction reactions, and double displacement or precipitate chemical reactions.
- Classify a reaction from its description or its chemical equation.
- Predict products of double-displacement reactions using solubility rules (which will be given to you for use in class and on the exam).
- Predict products of acid-base neutralization reactions.
- Predict products of combustion reactions.

5.5 Representing Reactions in Aqueous Solution

- Describe various ways to represent reactions that occur in aqueous solution.
- Explain why ionic and net ionic equations are useful for representing reactions that occur in water.
- Describe the general features of a molecular equation, ionic equation, and a net ionic equation.
- Write molecular, ionic, and net ionic equations for reactions that occur in aqueous solution.
- Identify spectator ions and describe their role in solution.