CHM 110
Chapter 2 Study Guide

Chapter 2 in OpenStax covers basic atomic theory (the makeup of matter) and chemical nomenclature (how to name chemical compounds and write chemical formulas). You may be familiar with some of this material from a high school chemistry class, but even then you'll still need to study this chapter, since chemical nomenclature in particular is easy to forget if you don't use it often.

It's important that you learn **nomenclature** and how to write chemical equations. The symbols and formulas for chemical compounds are the "words" we use to describe chemistry, and chemical equations are the "sentences". You're learning a new language - the language of chemistry.

After completing chapter 2 in the textbook, you should be able to:

[Terminology]
- Describe Dalton's atomic theory - the postulates and associated terms (atom, element, compound, chemical reaction).
- Define terms related to modern atomic theory - atomic number, mass number, nuclide, isotope, atomic weight, proton (p), neutron (n), and electron (e^-).
- Define terms related to the periodic table of the elements - periods, groups, metals, nonmetals, metalloids.
- Explain the difference between molecular compounds/formulas and ionic compounds/formulas (ionic compounds are written using empirical formulas).
- Define terms for ionic compounds - ion, cation, anion.
- Define terms related to chemical reactions - chemical equation, reactant, product.

[Atomic structure]
- Describe the differences between early atomic theory and modern atomic theory.
- Describe Rutherford's gold foil experiment and discuss the implications of the results on modern atomic theory.
- Draw a simple diagram of an atom with a certain number of p, n, and e^-.

[The periodic table]
- Find information about an element in the periodic table – atomic symbol, atomic mass/weight, atomic number, period, and group.
- Describe the properties of metals, nonmetals, and metalloids/semiconductors.
- Describe where metals, nonmetals, and metalloids are located on the periodic table.
- Identify an element as a metal, nonmetal, or metalloid based on periodic table position.

[Nomenclature]

- Use the chart of common polyatomic ions to find their names and charges (see Table 2.5 on pages 100-101).
- Use Greek prefixes to name binary molecular compounds (See Table 2.10 on page 109).
- Differentiate between molecular and ionic compounds based on their formula or the elements in the compounds.
- Write the formula of an ionic or binary molecular compound given the name.
- Write the name of an ionic or binary molecular compound given the formula.
- Write the formula of an ionic compound given the elements or ions it contains.
- Write the formulas and names of common binary acids and oxyacids.

[Suggested Chapter 2 review problems]

- 1, 5, 7, 11, 15, 19, 37, 41, 45, 47, 49, 51, 53, 55, 57, 59