

**CHM 110: Chapter 8 Study Guide / Learning Objectives**

Chapter 8 in the textbook deals with the electron configuration of atoms and how this electron configuration relates to the properties of the elements.

**At the end of this chapter, you should be able to:**

*[Definitions]*

- Define terms related to the electron configuration of atoms: Pauli Exclusion Principle, orbital diagram, valence electron, noble gas core.
- Define terms related to the periodic table: periods, groups, main-group elements, transition elements.
- Define terms related to periodic trends: atomic radius, ionization energy, electron affinity.

*[Electron configuration]*

- Write an electron configuration for any element or monatomic ion given a periodic table.
- Write an electron configuration using the noble gas core notation.
- List the valence electrons of an atom or ion.
- Draw an orbital diagram for an element or monatomic ion.

*[Periodic trends]*

- Given two elements, be able to discuss their relative atomic radius, ionization energy, or electron affinity.
- Describe the periodic trends using a periodic table.
- Explain, using what you know about the arrangement of electrons around an atom, why ionization energy decreases as you go down a group and increases as you go across a period.
- Explain, using what you know about the arrangement of electrons around an atom, why atomic radius increases as you go down a group and decreases as you go across a period.

*[The main-group elements]*

- Describe the properties of a given group: valence electron configuration, reactivity, oxides, and unique characteristics.
- List the names of the groups which have common names: Alkali metals, alkaline metals, chalcogens, halogens, noble gases.

*[Practice problems from the text]*

- 8.39, 8.43, 8.47, 8.51, 8.57, 8.61, 8.63, 8.65