

Background: At this point in the course you have probably used the phrase, “Modern atomic theory states...” a few times in casual conversation. I bet your dinner party reservations are through the roof.

Electron configuration gives us a pretty good idea of what the electronic structure of an atom is, and our job now becomes how to translate that into atomic and molecular properties. The atomic structure of atoms in the same column have similar chemical properties, which accounts for the periodic properties that gives the table its name.

We will explore a couple properties with some level of interest: ionization energy and atomic radius. The ionization energy is the amount of energy that is required to remove the most loosely held electron from a gas phase atom. The atomic radius is the distance between the nucleus and the outer edge of the electron cloud. Unsurprisingly, there are trends for these properties across and down the period table.

We will translate this to chemical bonding, and start to look at molecules. This will include ionic and covalent compounds, but there will be a more intentional focus on covalent compounds. They are just more interesting.

Objectives:

1. Determine the electron configuration of any atom in the first five rows of the periodic table.
2. Describe similarities in chemical properties based on electron configuration.
3. Describe trends in ionization energy.
4. Describe trends in atomic radii.
5. Draw Lewis Dot Diagrams for individual atoms.

Reading: Zumdahl Chapter 11