

Part 2 – Due (BBd dropbox) on the first day of class

This part of the assignment is meant primarily to provide “baseline” information about your understanding, which you can use in your e-portfolio. With that in mind, don’t worry if you don’t have a lot to say, just do your best to show your current knowledge.

- 1. Choose one (or more) of the following 3 questions.** You may want to take a look at your e-portfolio to determine which of these areas you need to expand upon.
 - A. Scientific language:** In a paragraph, explain in your own words as many of the following terms as possible and describe how they are related to one another. Include examples where possible.
electronegativity polar bond non-polar bond polar molecule
non-polar molecule intermolecular forces physical properties
 - B. Synthesis:** This course is meant to link the concepts of chemistry to biological phenomena. In a short paragraph, describe your understanding of the connections between chemical and biological science. What concepts that you have learned in past classes (especially Chem 511 and Bio 501) do you think can be linked together or synthesized to provide a more complete “big picture”?
- 2. Enduring Understandings.** These are the six Enduring Understandings for the course are listed. Choose **two or three** and write short paragraphs (just a few sentences each) for each describing your current understanding of the statement. You may want to give examples if you know of any, and/or explain why the concept is important in chemical or biological science.

- A. Application:** Why is molecular shape important, in terms of real-world or everyday phenomena (biological or not)? Give any reasons or examples you can think of.
- A. The study of chemistry can be summarized as the study of electrostatic attractions and repulsions between charged objects. The strengths of these forces depend on both the size of the charges involved and on the distance between them.**

There is a net force between two or more objects when the forces of all objects in a given situation are accounted for. The net force depends on both the size/mass of the objects and the distance between them.

- B. Learning and communicating about chemistry is highly dependent on understanding chemical symbolism and ways of representing ideas. Molecules can be represented in many ways, and each representation has its own strengths and weaknesses.**

C. Living organisms are complex systems composed of interdependent chemical structures and processes, and therefore can be understood at a molecular level using the same chemical principles that apply to non-living objects.

D. The bonding within a molecule determines its shape and polarity and therefore its interactions with other molecules, which determine its physical properties.

The manner in which atoms bond determine the molecule's shape, and the shape of a molecule is a physical property of the molecule. Atoms bond differently with other atoms, which determines the polarity of a molecule. For example, the shape of a molecule made of two atoms differs from another shape of a molecule that is made of three atoms.

E. The bonding within a molecule also determines its stability (and therefore its chemical properties.) Chemical reactions often can be understood by analyzing energetic stability of the reactants and products.

The more stable a molecule is, the less reactive it is, and the more unstable a molecule is, the more energetic it is because it is "ready to react" with other atoms or atoms of other molecules. By analyzing a molecules energetic stability, one can determine the chemical reactions of various molecules.

F. Biological chemistry is a very new science, and is constantly advancing. Advances in technology and new theoretical insights have pushed the science forward rapidly over the past 50 years, but there is still much we don't know about the chemical processes of living things.