

Assignment 1

Due: *In Lecture*, Wednesday, January 25

Polymeric materials exhibit a phenomenal range of chemical and physical properties, and these properties are determined largely by the chemical structures of the polymer molecules that comprise the material. Because we can synthesize polymers with tailored structures, we can control polymer properties to a remarkable extent. As a result of this control, polymeric materials are ubiquitous in our world.

What sort of properties might you want in a polymer? What unique properties can polymers have? In this in-class exercise, you will examine samples of some commodity polymers and discuss similarities and differences in the polymers' properties. You won't know the chemical characteristics of the polymers, and there is no need to use polymer terminology to describe your observations. First, join a group of four students; make sure your group includes someone you don't know. Then, for each of your polymer samples, answer the following two questions:

- (a) What properties are unique to this sample compared to the others? Or, in what way does each material act superlative to the others? (E.g., does it break most easily? Is it optically the clearest? etc.)
- (b) In what way would these superlative properties be useful? What products could you make out of these materials?