

**Assignment 12****Due:** *In Lab*, Thursday, February 23/Friday, February 24

1. In Lab 4, you will be compression-molding your materials in molds that will shape your samples into dogbone-shaped tensile specimens. There are a number of other possible methods that you might use to form your plastics, however. Jack Avery's *Injection Molding Alternatives* has good descriptions of some polymer molding techniques.

Match each plastic consumer good on the left with the molding technique on the right that would best be used to fabricate it.

*Consumer good*

Seamless water bottle
Model airplane pieces
Flat rubber gasket
Gasoline can (with hollow handle)
Disposable drink cup

*Molding technique*

Compression molding
Injection molding
Thermoforming
Blow molding
Rotational molding

2. Tensile testing is just one type of mechanical test done on polymer materials. As you might imagine, in addition to stretching, a polymer sample can be compressed, twisted, torn, impacted, or otherwise stressed to test the response of the material. Many of these tests say different sorts of things about a material.

Instron (the manufacturer of the testing instrument you will be using) describes a number of different mechanical tests, and the instruments used to perform those tests, on their website (<http://www.instron.us/wa/applications/>). Describe (any) one test other than tension that you might perform on the polymers you synthesized in lab. What data would you collect from this test, and what physical constants (if any) could you determine from this data?