California State University, Bakersfield Department of Chemistry

Playing with Polymers

Anthony Lim, Amandeep Sidhu, Kelsey Stout, Jagjit Singh

Introduction:

Polymers are everywhere! You can find them as plastics in cell phones, nylon in jackets, silicone in cookware, and synthetic rubber in tires. There are many types of polymers for many types of uses. We will explore the diverse nature of polymers to see how different they can be. Polymers are like long strands of noodles. When they are attached to one another, they can forms larger and larger strands. Depending on the "glue" used to attach the polymers together, the polymer can be hard, soft, slimy, or stiff and everything else in between.

Materials:

1. Safety first! Wear safety glasses, apron, and gloves
2. Borax: A type of detergent
3. Water
4. Cornstarch
5. Elmer's glue
6. Pure polyvinyl alcohol (PVA)

Safety:

- When conducting an experiment always remember to wear safety goggles and gloves
- Ask an adult for supervision; have them handle and mix the chemicals for you
- The experiment will be messy so be sure to do it in an open, easy to clean area.
- Do not eat the polymer products and be sure to wash your hands after playing with them.

Procedure:

1. Mix 2 tablespoons of water with 1 teaspoon of borax.

2a. In a separate container add 1 tablespoon of cornstarch and 1 tablespoon of Elmer's glue **–OR-**

2b. In a separate container add 3 tablespoons of cornstarch, 3 tablespoons of water, and ½ tablespoon of PVA.

3. Add 2 teaspoons of the borax/water mixture and stir vigorously.

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4. If the solution hardens, use your hands to roll it into a ball; if the solution stays liquid, continue mixing until it becomes sticky.
5. Test the product and store in a Ziploc bag.

Data and Observations:

Polymer	Shape (Can you make it round? Will it stay?)	Consistency (Sticky? Rough?)	Bounciness (A lot or not at all?)	Hardness
Elmer's Glue				
PVA				

Questions:

1. Which polymer would be best to make a ball?

2. Which polymer would be best as slime?

3. Which one is your favorite?

References:

1. Costello, K. Polymers: I've been slimed. http://www.chemistryland.com/CHM107Lab/Lab7/Slime/Lab7Slime.htm (accessed April 4, 2012).

2. Helmenstine, A. M., Make a bouncing polymer ball. http://chemistry.about.com/od/demonstrationsexperiments/ss/bounceball.htm (accessed April 4, 2012).

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