Polymer Chemistry

Bouncing Polymer Ball

From (http://chemistry.about.com/od/demonstrationsexperiments/ss/bounceball.htm)

The bouncing ball in this activity is made from a polymer. Polymers are molecules made up of repeating chemical units. Glue contains the polymer polyvinyl acetate (PVA), which cross-links to itself when reacted with borax.

Materials:

- Sodium borate(borax)
- Cornstarch
- White glue
- Warm water
- Food coloring (optional)
- Measuring devices
- Stirring Rod
- 2 small plastic cups or other containers for mixing
- Marking pen
- Zip-Lock plastic baggie

Procedure

1. Label one cup 'Sodium borate Solution' and the other cup 'Ball Mixture'.

2. Pour 2 tablespoons warm water and 1/2 teaspoon borax powder into the cup labeled 'Sodium borate Solution'. Stir the mixture to dissolve the borax. Add food coloring, if desired.

3. Pour 1 tablespoon of glue into the cup labeled 'Ball Mixture'. Add 1/2 teaspoon of the Sodium borate solution you just made and 1 tablespoon of cornstarch. Do not stir. Allow the ingredients to interact on their own for **10-15 seconds** and then stir them together to fully mix. Once the mixture becomes impossible to stir, take it out of the cup and start molding the ball with your hands.

4. The ball will start out sticky and messy, but will solidify as you knead it.

5. Once the ball is less sticky, go ahead and bounce it!

6. You can store your plastic ball in a sealed ziploc bag when you are finished playing with it.

7. Don't eat the materials used to make the ball or the ball itself. Wash your work area, utensils, and hands when you have completed this activity.