

SUMMER INSTITUTE FOR ENGINEERING AND TECHNOLOGY EDUCATION

MATERIALS ENGINEERING - STUDENT MODULE 1

SLIME

CONCEPT

Formation of a loosely crosslinked polymer gel using hydrogen bonding.

OBJECTIVES

The student will observe the formation of polymer gel and test the variability of reactions based on % reactants.

SCIENCE PROCESS SKILLS

- Identifying
- Measuring
- Observing
- Predicting
- Experimenting
- Collecting and interpreting data
- Analyzing data

MATERIALS

For Slime

- 40 ml of 4% PVA (Poly vinyl alcohol) in water (or Elmer's Glue solution)
- 4-10 ml of 4% sodium borate solution (Borax laundry powder can be substituted.)
- Small paper cups
- Wood Sticks
- Food Coloring

SAFETY CAUTIONS

- Wear protective safety glasses.
- Do not taste slime.

PROCEDURE

Creating Slime

1. Pour about 40 ml. of the 4% PVA solution into a paper cup.
2. Add about 4 ml. of the 4% sodium borate solution and stir vigorously with the wood stick.

3. Remove the "blob" from the cup and knead it. Then play with the "blob" and observe its different properties
4. Stretch the gel slowly, then try stretching quickly. Notice the different responses. Allow the gel to hang freely and note how it flows.

Wash hands when finished. (Students can handle slime but be sure that they do not eat it or feed it to anyone else! Also, they should wash their hands when finished!)

OBSERVATIONS

1. Does the food coloring affect gel formation?
2. If either ingredient is warmed or cooled, will gel formation differ?
3. Compare with other teams. Explain how changing the percentage of sodium borate amount changes the gel?
4. How long does it take for your slime to ooze out of shape when you set it down?