

## POLYMER PROPERTIES PART A

### Formation of Nylon 610

#### Procedure:

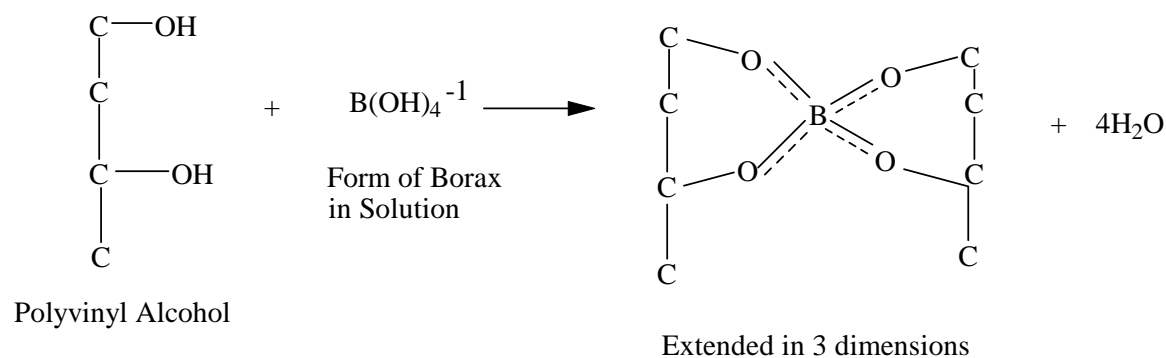
1. Pour 25 mL of the hexamethylenediamine solution provided, into a 100 mL beaker.
2. Slowly pour 25 mL of the sebacoyl chloride solution provided, onto the hexamethylenediamine solution in the 100 mL beaker. A white polymer will be formed where the two liquids are in contact.
3. Using a pair of tweezers, reach into the mixture, to the point where the 2 solutions meet, pull **slowly** on the solid film formed. Pull this film out slowly, wrap it around a wooden stick and then **slowly** turn the stick, so that the nylon wraps around the stick.
4. Continue extracting the nylon until no more is obtained.
5. Scrape the nylon into a 100 mL beaker.
6. Rinse the nylon twice with enough water to cover the nylon. Stir it around and then pour off the water into a waste beaker.
7. Rinse 3 times with enough 50% ethanol-water mixture to cover the nylon. Stir it around and then pour off the liquid into the waste beaker.
8. Scrape the nylon into a pre-weighed Petri dish, label it with your name and place it in the receptacle designated by your teacher. Leave it until next period so that it will dry. When you come to lab next time, weigh the Petri Dish with the nylon. Calculate the mass of Nylon produced by subtracting the difference between the 2 masses and include the value in your lab report.

## PART B

### Preparation of Slime-like Gel

1. Mix 50mL of a polyvinyl alcohol solution provided with 10 mL of a 4% borax solution provided, together in a polystyrene cup. Use a flat, stiff stick (such as a tongue depressor or popsicle stick) and mix vigorously until gel reaches consistency desired.
2. If desired, a food color dye can be added to the alcohol solution to give color to the gel formed.
3. The gel is not toxic and may be handled freely to observe its properties. Students, however, should wash their hands after handling the gel.

What the experiment shows:



The 4  $H_2O$  molecules appear to also be incorporated in the cross-linked network, via hydrogen bonding, because the gel is 96%  $H_2O$ .