

A Disappearing Coffee Cup

Purpose

To demonstrate the apparent “melting” of polystyrene.

Materials

large Petri dish

acetone

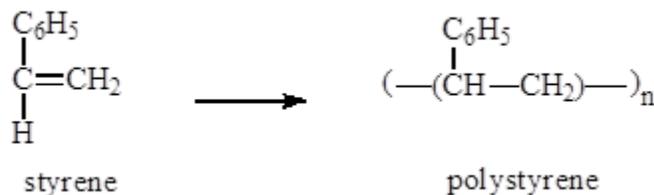
coffee cup

Procedure

1. Pour acetone in a large Petri dish until it is about $\frac{3}{4}$ full.
2. Place an empty polystyrene coffee cup into the center of the dish and observe.

Additional Information

1. Some solvents actually dissolve the polymer material. Others break certain bonds that give the cup its shape.
2. With acetone, the “glob” of material can be reclaimed after the cup disappears.
3. Polystyrene is one of the most common polymers. It consists of repeating units of the styrene molecule:



4. Polymers like polystyrene are thermoplastic, which means that they soften when heated. In this soften state, it can be molded into cups, trays, etc.
5. This plastic is chemically stable and does not conduct heat very well, thus making it ideal for an insulating material.
6. Reclaim the sticky residue from the cup. It will eventually harden again.

Question for the Students

Is the coffee cup dissolving? How can you tell?

Disposal

Whatever remains of the cup can be thrown away after the demo.

Reference

Summerlin, L., Borgford, C., Ealy, J. Chemical Demonstrations, Volume II, 1987.