



Research Experience Vitalizing Science — University Program

California State University of Bakersfield, Department of Chemistry

## Balloon Skewer



### Standards:

K: 1 a- Objects can be described in terms of the materials and their physical properties  
4<sup>th</sup>: 6 d- Conduct trials to test a prediction and draw a conclusion.

### Introduction:

*Have you ever tried to push a sharp object through a balloon? It most likely popped, right? Well this experiment will show you how to push a skewer through a balloon without popping it. The rubber of the balloon is made of many long strands or chains of molecules called polymers. The elasticity of these polymer chains causes rubber to stretch. Blowing up the balloon stretches the strands of polymers. By piercing the balloon through the point where the polymer molecules were stretched out the least, will cause these polymer molecules stretch around the skewer and kept the air inside the balloon from rushing out. By pushing the lubricated skewer through the part of the balloon were the latex molecules are under the least amount of stress (where you tied the knot and the opposite end), you prevent the balloon from exploding.*

### Materials:

- Latex balloons
- Wooden skewer (app. 10 in. long)
- Cooking oil

### Safety:

- Always have an adult with you to help you during your experiment.
- Be careful while handling sharp objects.

**Procedure:**

1. Inflate the balloon about 2/3 of the way. Tie a knot at the end of the balloon.
2. Carefully examine the balloon and locate the thick area of rubber at both ends of the balloon (where you tied the knot and the opposite end).
3. Dip the tip of the wooden skewer into the cooking oil.
4. Place the sharpened tip of the skewer on any thick end of the balloon and gently push the skewer into the balloon using a little twisting motion if necessary. Do not jab yourself or the balloon with the skewer.
5. Push the skewer all the way through the balloon until the tip of the skewer touches the other thick portion of the balloon. Keep pushing until the skewer penetrates the rubber.
6. Now you have a balloon on a skewer!

**Data and Observations:**

Record your observations in this space

1. What role does the cooking oil play in this experiment?
2. What keeps the air inside of the balloon from rushing out?
3. Why does the experiment work better at the top and bottom of the balloon instead of the sides?

**References:**

Stevespanglerscience.com  
<http://stevespanglerscience.com/experiment/skewer-through-balloon>  
(accessed July 17, 2012)