Required Training

UC Lab Safety Fundamentals

Required PPE

Lab coat, safety glasses/goggles

Equipment

500 mL Erlenmeyer flask, double-walled

Chemicals

100 mL water

Hot plate

Ice bath

Rubber stopper, size 7

Boiling chips

Wood Block

Thermally insulated gloves

Optional—hard-boiled egg

Procedure:

1. Pour the water into the flask and add a few boiling chips.
2. Set the flask on the hot plate and heat at the hottest setting for quickest set-up time.
3. Once the water is boiling, stopper the flask and move it off the heat and on to the wood block.
4. Allow the water to cool until it stops boiling (usually about a minute).
5. Cool the flask in the ice bath by placing it sideways and rotating it constantly.
6. Watch the water boil again.

Discussion:
This is a simple demonstration of gas laws. As we cool the hot water vapor in the air space above the water, it condenses and lowers the pressure of the system. At a lower pressure, the water has enough heat to boil again.

**Hazards:**

Be cautious as straying from the above sizes has not been thoroughly tested. Varying the sizes used may produce a vacuum high enough to implode the glass. The boiling water is hot enough to burn and the flask containing it is equally hot—use leather gloves or other thermally insulated PPE.

**SOP**

N/A

**Disposal (by Storeroom)**

This demonstration should not produce any waste. If the glass should break, clean it up as a physical hazard.