Boiling Water with an Ice Cube

Purpose

This demo is used to show gas laws, specifically vapor pressure.

Materials

750 mL Florence flask	Ring stand with ring
Stopper	2-3 Ice cubes
Hot plate	Hot glove

Procedure

1. Put 300 mL of water into the Florence flask
2. Heat the flask on the hot plate in front of the students and let it reach a vigorous boil
3. Remove the flask from the hotplate with the heat glove and immediately stopper flask
4. Let the water cool for at most a minute, then invert and place in ring on ring stand
5. With the ice cubes, continuously rub the bottom of the flask
6. The water will soon (15-30 seconds) boil vigorously
7. Remove the ice cubes and the water will stop boiling. The process can be repeated for up to 10 minutes.

Additional Information

1. The Gas above the solution is cooled, causing the vapor pressure to reduce until it equals that of the hot water, thus causing the boiling.

Disposal

Pry the stopper out of the flask and pour the water down the drain.