PROCEDURE

1. Obtain and wear goggles.
2. Connect a Gas Pressure Sensor to Channel 1 and a Temperature Probe to Channel 2 of the data-collection interface.
3. Connect the plastic tubing to the Gas Pressure Sensor.
4. Prepare a water bath for the yeast. A water bath is simply a large beaker of water at a certain temperature. This ensures that the yeast will remain at a constant and controlled temperature. To prepare the water bath, obtain some warm and cool water. Combine the warm and cool water into the 1 liter beaker until it reaches 38–40°C. The beaker should be filled with about 800–900 mL of water. Secure the Temperature Probe in the water bath with a utility clamp and ring stand as shown in Figure 1.
5. Using a pipette or graduated cylinder, place 2.0 mL of the glucose solution into a clean 18 × 150 mm test tube.
6. Obtain the yeast suspension. Gently swirl the yeast suspension to mix the yeast that settles to the bottom. Using a pipette or graduated cylinder, transfer 2.0 mL of yeast suspension into the test tube. Gently mix the yeast into the sugar solution.

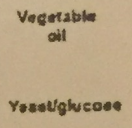

Figure 2

7. Place enough vegetable oil into the test tube to completely cover the surface of the yeast/glucose mixture as shown in Figure 2. Be careful to not get oil on the inside wall of the test tube.
8. Insert the single-holed rubber-stopper into the test tube. **Note:** *Firmly* twist the stopper for an *airtight* fit. Secure the test tube in the water bath with a utility clamp as shown in Figure 1.
9. Incubate the test tube for 10 minutes in the water bath. Be sure to keep the temperature of the water bath constant. If you need to add more hot or cold water, first remove about as much water as you will be adding, or the beaker may overflow. Use a basting bulb to remove excess water.

   Note: Be sure that most of the test tube is covered by the water in the water bath. The temperature of the gases in the tube must be constant for this experiment to work well.
10. When incubation has finished, connect the free end of the plastic tubing to the connector in the rubber stopper as shown in Figure 3.
11. Collect pressure data.
    a. Begin data collection.
    b. Maintain the temperature of the water bath in the 38–40 C range during the course of the experiment.
    c. **Note:** If the pressure exceeds 130 kPa, the pressure inside the tube will be too great and the rubber stopper is likely to pop off. Disconnect the plastic tubing from the Gas Pressure Sensor if the pressure exceeds 130 kPa.
    d. Stop data collection after 100 seconds have elapsed.

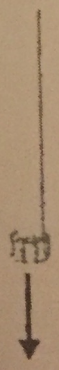
Figure 3