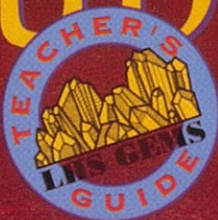




# Bubble · ology

Grades 5-8

Lawrence Hall of Science • University of California at Berkeley



# Activity 1: Bubble Technology

## What You Need

### For preparation and cleanup:

- newspapers to cover tables
- 8 oz. (240 ml) dishwashing liquid
- water
- measuring cup or graduated cylinder
- eyedropper
- 1 one-gallon container for mixing bubble solution
- glycerin (optional)

### For the class:

- at least ten different materials to use for bubble-makers, such as: strainer, small tin cans, protractors, paper, mason jar lids, string, drinking straws, tea ball, rubber stoppers with holes, flower pots, funnels, eyedroppers, turkey basters, rubber tubing, paper cups, styrofoam cups, various gauges of screen, different sized washers, rubber bands, toilet-tissue and paper-towel rolls, aluminum foil, wire of different gauges, springs, scissors, tubes of any kind, oatmeal box, and anything else you think appropriate.

Consider asking students to bring in possible bubble-maker materials from home.

### For each group of 3–4 students:

- 1 wide-mouthed, flat-bottomed pan (such as a metal pie pan, dish pan, or other container suitable for holding bubble solution)

# Activity 2: Comparing Bubble Solutions

## What You Need

### For preparation and cleanup:

- 8 oz. (240 ml) of three different brands of dishwashing liquid (include one cheap and one expensive)
- water
- 1 measuring cup or graduated cylinder
- 1 eyedropper
- 3 one-gallon containers for mixing bubble solution
- 1 roll of masking tape
- paper towels
- 2 cups vinegar
- glycerin (optional)
- squeegee (optional)

**For each pair of students:**

- 1 meter or yard stick
- 2 plastic drinking straws
- 1 one-pint container (such as a cottage cheese container) for holding bubble solution
- 1 "Bubble Solutions" data sheet (master included, page 16)
- 1 pencil
- 1 table, counter, desk, or board about 30" (75 cm) in diameter
- calculator (optional)

## *Activity 3: The Chemistry of Bigger Bubbles*

### **What You Need**

**For preparation and cleanup:**

- 8 oz. (240 ml) dishwashing liquid
- water
- measuring cup or graduated cylinder
- 1 one-gallon container for mixing bubble solution
- 1 roll of masking tape
- paper towels
- 2 cups vinegar
- 1 squeegee (optional)

**For the class:**

- several ounces of glycerin
- several eyedroppers
- several measuring cups
- several calculators (optional)
- chalkboard
- chalk

**For each pair of students:**

- 1 meter or yard stick
- 2 plastic drinking straws
- 1 one-pint container (such as a cottage cheese container) for holding bubble solution
- 1 "Experimenting with Glycerin" data sheet (master included, page 26)
- 1 graphing sheet (master included, page 27)
- 1 pencil
- 1 table, counter, desk, or board about 30" (75 cm) in diameter

**For the demonstration:**

- 1 tall, clear, drinking glass
- water
- water pitcher
- 1 eyedropper
- dishwashing soap (just 1 drop)

# Activity 4: Bernoulli's Bubbles

## What You Need

### For preparation and cleanup:

- newspapers to put under containers of bubble solution
- 8 oz. (240 ml) dishwashing liquid
- water
- 1 measuring cup or graduated cylinder
- 1 eyedropper
- 1 one-gallon container for mixing bubble solution
- glycerin (optional)

### For each group of 4–6 students:

- 1 pint-sized container (such as a cottage cheese container) for holding bubble solution

### For each student:

- 1 tube (about 7"–11" in length, 1"–2" in diameter—such as: plastic golf club covers cut in 7" lengths, cardboard paper towel rolls, polyvinylchloride pipes, or two small cans taped end-to-end with lids removed)
- 1 3"x5" index card

# Activity 5: Predict-A-Pop

## What You Need

### For preparation and cleanup:

- 8 oz. (240 ml) dishwashing liquid
- water
- 1 measuring cup or graduated cylinder
- 1 eyedropper
- 1 one-gallon container for mixing bubble solution
- several rolls of masking tape
- glycerin (optional)

### For each pair of students:

- 1 pint-sized container for holding bubble solution
- 2 plastic drinking straws
- 6 8½"x11" sheets of white paper
- 1 flat, dark surface about 18" (45 cm) in diameter
- or
- 1 cafeteria tray and black construction paper to cover the tray

# Activity 6: Longer Lasting Bubbles

## What You Need

### For preparation and cleanup:

- 8 oz. (240 ml) dishwashing liquid
- water
- 1 measuring cup or graduated cylinder
- 1 eyedropper
- 1 one-gallon container for mixing bubble solution
- glycerin (optional)

### For each pair of students:

- 2 plastic drinking straws
- 1 pint-sized container (such as a cottage cheese container) for holding bubble solution
- 1 "Long-Lived Bubbles" data sheet (master included, page 44)
- 1 pencil

### For the class:

#### Various materials such as:

- containers to blow bubbles in: clear screw-top jars—as large as possible, plastic dishpans, styrofoam egg cartons, etc.
- materials to cover containers: clear plexiglass sheets, plastic wrap, cafeteria trays, cheese cloth, aluminum foil
- humidifying materials: turkey basters, sponges, water spray bottles
- solution additives: sugar, glycerin, corn syrup, white glue, rubbing alcohol, extra dishwashing liquid
- volumetric measuring devices: measuring cups, measuring spoons, graduated cylinders, eyedroppers
- any other items you and your students deem appropriate