

Soapy Liquid Bubbles

Grade Level: 7th and/or 8th grade
Time allotted to unit: 40 min period

Goals and Objectives

Goals:

- Data Collection
- Measurement
- Graphing
- Interpret Data
- Understand how liquid crystals relate to other phases of matter (liquid, solid, gas)
- Observe that liquid crystals reflect many different colors of light

Objectives: SWBAT:

- Organize Data
- Graph Data
- Make Prediction
- Use models and explanations to predict actions and events in the natural world
- Use the major ideas of atomic theory and molecular theory to describe physical and chemical interactions among substances, including solids, liquids, and gases
- Participate effectively in discussion

Materials:

- 4 kinds of liquid dishwasher detergent such as Joy, Ivory, Dawn, Palmolive
- Commercial bubble liquid
- Water
- Rulers
- Straws
- Containers
- Watches

NJCCCS: 5.6.8.A.2, 5.7.8 in Science,
4.5.8.C.3, 4.5.8.C.4 in Mathematics

Activities and Procedures:

1. Introduction: Liquid Crystal (LC) is a Phase of Matter.

Have students brainstorm the properties of three major states of matter: liquids, solids,

and gases. Have students arrange the phases of matter based on randomness at the atomic level. Note that liquid crystal is a special phase of matter and have students brainstorm its properties based on the discussion of liquids and solids.

2. Bubble Activity: LCs Reflect Different Colors of Light.

Blow bubbles. This is lyotropic type of LC. Make observations about how their colors change from when they were brand new to right before they pop.

3. Talk about my research: liquid crystals and ferrofluids.

4. Discuss liquid crystals and ferrofluids applications.

5. Compare whether commercial bubble liquid is any better than homemade bubble liquid.

- Hand in the students worksheet.
- Students work in groups of 3 to complete the worksheet.
- Go over the worksheet.
- Obtain conclusions.

Accommodations:

For SLD explain each activity step by step. Arrange heterogeneous group assignments. For ELL give some vocabulary the day before so they can prepare with another student or look up in dictionary, or specifically translate some words for them.

Assessment:

Walk around the room; classroom discussion; collect worksheets.

Name _____

Date _____



Soapy Liquid Bubbles Worksheet

1. Mix the bubble liquid using 1 part detergent to 10 parts water for each liquid dishwasher detergent in separate container. Keep the commercial bubble liquid in a separate container.
2. Slowly blow bubble from each soapy liquid using a straw.
3. Time the duration of the bubbles.
4. Using a ruler, measure the diameter and height of the largest bubbles.

	Commercial Bubble Liquid	Liquid 1 Yellow	Liquid 2 Orange	Liquid 3 Green	Liquid 4 Blue
TIME					
DIAMETER					
HEIGHT					

5. Make a bar graph for each measurement.
 - o One bar graph for detergent names and duration of bubbles
 - o One bar graph for detergent names and diameters
 - o One bar graph for detergent names and heights



6. Explain how the homemade liquid compared to the commercial liquid.

7. Blow bubbles. This is lyotropic type of Liquid Crystals. Make observations about how their colors change from when they were brand new to right before they pop.

