



## SCIENCE FESTIVAL FAMILY EXPERIMENT GUIDE: BUBBLING LAVA LAMP

**Instructions:**

**Adult:** Help your student draw a line  $\frac{1}{4}$  of the way from the bottom of the bottle.

**Student:** Pour water into the bottle up to the  $\frac{1}{4}$  line.

**Student:** Pour vegetable oil until the bottle is nearly full. Leave at least 1 inch of space at the top.

**Student:** Add about 10 drops of food coloring to the bottle. Choose whatever color you like or try mixing two colors!

**Adult or student:** Break an effervescent antacid tablet into several pieces and drop one into the bottle. Close the cap tightly and flip the bottle over. When the bubbling stops flip it over and add another piece.

**Questions for after:****K-2<sup>nd</sup> Grade:**

- Why do you think that happened?
- Which direction did the bubbles go?
- What happened when the 'fizzy' tablet was added?

**3<sup>rd</sup>-5<sup>th</sup> Grade:**

- What direction were the bubbles traveling, why?
- What happens to the colored water once the bubbles stop?
- What else did you see happening, can you explain what happened when the tablet was added?

**How It Works:**

Oil and water do not mix. The oil and water separate in the bottle, with oil on top because it has a lower density than water. The food coloring falls through the oil and mixes with the water at the bottom. The antacid "fizzy" tablet creates bubbles of carbon dioxide which is a gas and is less dense than both oil and water so it will move to the top and bring some of the colored water with it.

**Vocabulary:**

**Intermolecular polarity:** Water molecules are attracted to other water molecules; oil molecules are attracted to other oil molecules. The structures of the two molecules do not allow them to bond together.

**Density:** Describes how much space an object or substance takes up (its volume) in relation to the amount of matter in that object or substance (its mass). If an object is heavy and compact, it has a high density. If an object is light and takes up a lot of space, it has a low density.

**Real-World Application:**

When oil spills in the ocean, it floats on water, spreads out and forms a "slick." This oil slick can coat and damage birds who dive for food, as well as destroy beaches and other homes for coastal animals. Understanding density and polarity is essential for people who help clean up oil spills and care for the animals.

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