Bubbling Lava Lamps
Create a swirling, bubbling lava lamp while learning about the states of matter, density, and physical and chemical changes.

Suitable for: Preschool – Middle School Ages

Materials:
- Vegetable Oil
- Water
- Funnel
- Food Coloring
- Measuring Cup
- Clean 16 oz Soda Bottle
- Alka Seltzer
- Flashlight

Vocabulary:
- Matter
- Solid
- Sink
- Density
- Liquid
- Float
- Physical Change
- Gas
- Hydrophobic
- Chemical Change
- Chemistry
- Molecule

Directions:
1. Safety first! Put on your safety goggles!
2. Place your empty soda bottle on a table. You may want to put a tray or disposable tablecloth down as this experiment can be messy!
3. Use the funnel to fill the bottle 1/3 full with water.
4. Add a few drops of food coloring of your choice to the water. Swirl the bottle to mix them.
5. Use the funnel to fill the remaining 2/3 of the bottle with vegetable oil. Leave about 1 inch empty at the top.
6. Break a tablet of Alka Seltzer into pieces. Do not ingest Alka Seltzer and have parent supervision as it is medicine.
7. Add the pieces of Alka Seltzer to the bottle one piece at a time.
8. Observe what happens when the Alka Seltzer and water mix. Notice the bubbles that rise through the liquids and make them swirl.

The Science Behind the Experiment:
This is a great example of a physical and chemical change, differences in density, the concept of hydrophobia, and an experiment with the different states of matter! A physical change is when you change the way something looks but don’t actually change what it is. A chemical change is when you make something new and cannot go back to the original substance. In this experiment, the physical change occurs when you dye the water and the chemical change occurs when the water and Alka Seltzer mix and form carbon dioxide gas! You also work with the three states of matter: solid (Alka Seltzer), liquid (water) and gas (carbon dioxide). Density is how much matter is packed into a space. Matter is anything that has mass and takes up space. Water and vegetable oil have different densities. This means they will not mix and the water will always sink below the vegetable oil forming two layers. The other reason the two liquids do not mix is that vegetable oil molecules are hydrophobic- meaning they are afraid of water and will not mix with them.

Make it Awesome:
Make it bigger! Instead of using a 16 oz. bottle, try using a 2-liter bottle. This means you can use more supplies to create an even BIGGER reaction! You can also turn out the lights and shine a flashlight through your lava lamp for a fun effect.

Extensions:
1. What happens when you change the amount of vegetable oil, water and/or Alka Seltzer?
2. What happens if you use a smaller or larger bottle?
3. What other changes can you come up with for this experiment?

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