

DIY LAVA LAMP

What is a lava lamp?

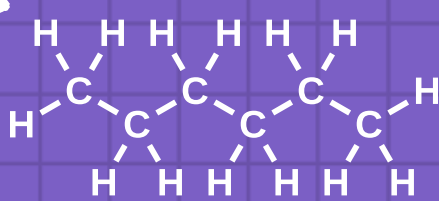
A lava lamp is a mixture of oil and water that has little balls of water and carbon dioxide floating through the oil. This demonstrates the hydrophobic properties of oil in water.



Why is oil hydrophobic?

Oil is made up of hydrocarbons, which are long strings of carbon atoms attached to hydrogens. Hydrocarbons are nonpolar, which means they are neutral and don't have a charge. Water is a polar molecule that has a partial positive and negative charge. Because of these different chemical properties, oil is hydrophobic (scared of water). So, water forms gas-filled balls instead of mixing with the oil.

Oil hydrocarbon



Water molecule



Materials

- water
- canola or vegetable oil
- food coloring
- mason jar, plastic water bottle, or tall glass
- alka-seltzer tablets

Procedure

Fill your jar/glass with oil until it is about two-thirds (2/3) full.

Then add a quarter (1/4) cup of water. There should be about 2 to 3 inches between the liquid and the top of the glass once you fill it up.

Notice how the oil and water stay separated because of their different densities.

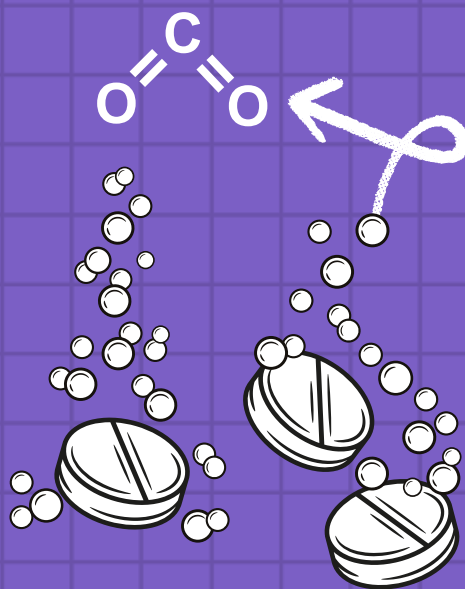
What's next?

Add 7 to 8 drops of food coloring.

Add an alka-seltzer tablet to the cup, and watch the chemical reaction occur. **If you can, put a lid or cap on your glass to prevent any liquid from spilling.**

You now have your very own lava lamp!

Carbon Dioxide (CO₂)



What's happening here?

The alka-seltzer tablet produces carbon dioxide gas bubbles that rise to the surface, making the oil move around. The denser water sinks back to the bottom of the jar after the bubbles pop.

