Making Science Make Sense®

MIXING IT UP... OR NOT?

MATERIALS:

- A clean glass jar or bottle with a tight lid
- Vegetable oil or baby oil
- A variety of glitter and/or sequins
- Water
- Water-based food coloring

PROCEDURE:

1. Fill the glass jar about one-third full with oil.
2. Sprinkle in a mixture of glitter and/or sequins.
3. Pour in water almost to the top of the glass jar. Stop and add a drop or two of food coloring.
4. Slowly and carefully fill the rest of the jar with water and then screw the cap on as tightly as possible.
5. Slowly turn the jar upside down, then right side up again. What happens?

WHAT THIS MEANS:

H_2O is the formula of the water **molecule**, the smallest building block of water. Molecules are made of even smaller building blocks called atoms. Every atom has an electrical charge—either positive, negative or neutral. This charge is the secret to how water behaves with oil.

A water molecule is an example of a **polar molecule**. This means that one part of the molecule has a positive charge, and another part has a negative charge. Since a positive charge is attracted to a negative charge, polar molecules are very good at sticking together. An oil molecule is an example of a **non-polar molecule**, meaning that its positive and negative charges are evenly spread out.

When you try to mix together a polar molecule and a non-polar molecule, not much happens. It doesn't work because polar molecules stick together so well that the non-polar molecules are left out.

The oil (non-polar molecule) ends up on top of the water (polar molecule) because oil is less dense than water. As a result, the oil actually floats on top of the water.

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