

Fun With Water!

Through these two experiments, we're learning more about water!

Experiment #1: Molecules on the Move

We're learning about the relationship between water and dish soap, and how dish soap breaks surface tension in water.

Materials

- Glass tray
- Water
- Pepper
- Dish soap

Experiment

1. Fill the glass tray with water.
2. Shake pepper throughout the water.
3. Drop a tiny bit of dish soap onto your finger.
4. Touch the water in the center of the tray.

Experiment #1: Molecules on the Move

The Science Behind It

A molecule is a group of atoms bonded together, forming the smallest fundamental unit of a chemical compound. In the case of water, a molecule consists of two atoms of Hydrogen (H) bonded with one atom of Oxygen (O), creating the chemical formula H_2O .

The attraction of water molecules to one another is known as surface tension. If you've ever seen a droplet of water on a leaf, you've observed surface tension. It is caused by the opposing forces of the positively charged H atoms and the negatively charged O atom in a water molecule--the molecules in a body of water are all attracted to each other, but the ones at the surface don't have any molecules above them to be attracted to, so they attract more strongly to the ones directly next to them. This creates a force at the surface that makes it more difficult for objects to pass through, and it helps explain why some objects can float on top of water.

The pepper is attracted to the water (hydrophilic) and floats due to the surface tension. As dish soap (hydrophobic) is added to the water, the surface tension of the water breaks, causing the pepper to move away from the area which the soap was dropped, then sink. This experiment shows how dish soap works--it breaks the surface tension of water so that it can squeeze into smaller cracks and behind grease and grime on your dishes. It essentially makes water more "slippery."

Experiment #2: Water on a Penny

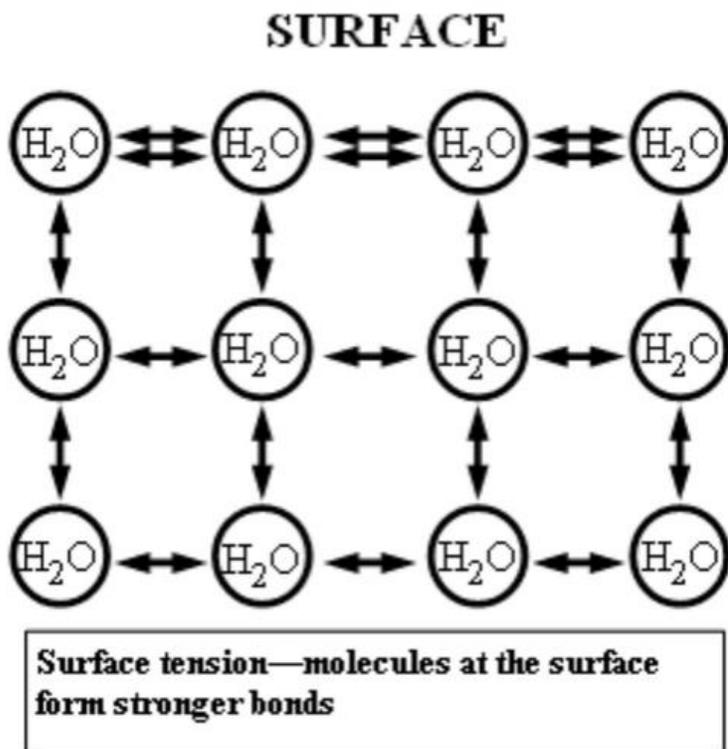
We're learning about the surface tension of water.

Materials

- Water dropper
- Water
- Paper towels
- Penny

Experiment

1. Fill a cup with water
2. Place the penny on a flat surface, with a paper towel on standby.
3. Drop as many drops of water onto the penny as you can. Count how many you can drop before the water spills over the edge.



The Science Behind It

Water is a polar molecule (one side is partially negative, the other is positive), therefore, the water molecules are able to stick together very well (cohesion). Since the water can stick together well, many drops can fit onto one tiny penny. Eventually, the number of drops of water on the penny will be too great and will overcome the force of surface tension, causing the bubble to break.