



ANTI-GRAVITY WATER

See the effects of pressure and attractive forces on water.

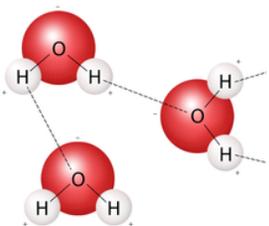
Materials

Glass or clear plastic cup

Water

Index Cards

Note: Perform this experiment over a sink or a large bowl, to catch any water that may spill.



Water is especially good at sticking to itself and other surfaces because it is polar. One end of a water molecule is slightly positive while the other is slightly negative.

Procedure

- Fill cup at least halfway with water.
- Dip a finger into the water and use it to slightly wet the rim of the cup.
- While cup is right side up, place the index card over the rim.
- Invert the cup while using the palm of your hand to hold the index card in place.
- Let the water settle for a second and make sure that the card is touching all parts of the rim before cautiously removing your hand. Observe what happens.

Results

The water stays in the cup!

Why?

The water molecules in the cup stick together because of *cohesion*, the attractive force between like particles in a liquid. The water molecules stick to the rim of the cup and the index card because of *adhesion*, or the attractive force between un-like molecules. These attractive forces pull all the water molecules in the cup together. Additionally, when the index card is held tightly to the rim of the cup, the tightly held water molecules along the surface of the water are attracted to each other by cohesion and create a "film," called surface tension. This prevents air from entering the cup and displacing the water. Air pressure is pushing on the cup from all sides. As the force of gravity pulls the water downward, the attractive forces of the water and the pressure of the air around it work to hold it in place.