



## Lesson Extension

### Physics 7: The Force of Static Electricity

#### Introduction:

In our lesson we learned about static electricity forces, which is caused by the buildup of an electrical charge on the surface of an object. It is called “static” because the charges remain in one place for a while, rather than flowing to another area, as in current electricity. We see static electricity every day. It can even build up on us! You might have experienced it when, after shuffling your feet over a carpet, you touched a doorknob and got zapped!

#### Activity: Electrostatic bubbles

You will experiment with bubbles and static electricity!

#### Materials:

- A smooth surface (like a laminated table top)
- Straw
- A container to mix dish soap and water
- Dish soap
- Water
- Empty plastic bottle
- Your hair

#### Procedure:

1. Mix some dish soap with water.
2. Coat the smooth surface with the soapy water.
3. To blow a bubble, suck up some soapy water with the straw (**NOT all the way! Don't drink it!**) and then blow it gently onto the smooth surface.
4. Charge the empty plastic bottle by rubbing it with your hair, and then bring the side of the bottle near the soap bubble. Observe what happens.
5. Blow a smaller bubble inside the bigger bubble, and see what happens when you place the charged plastic bottle near them.

#### What do you think is going on here?

The soap bubble is electrically neutral (it has the same number of positive protons and negative electrons), but it also contains “impurities” that are ions, particles that are either charged positively or negatively, and that can move around. Thus, when you bring a negatively charged object (charged plastic bottle) near the bubble, the negative electrons in the bottle attract the positively charged ions within the bubble—remember, opposite charges attract—and the bubble moves towards the bottle. The smaller bubble inside the bigger bubble doesn't move, because it is not attracted to the bottle. The bigger bubble isolates the smaller bubble from the electric charges outside.

#### Additional Resources:

Fun videos to watch:

- Soap and electrostatic experiment: <https://www.youtube.com/watch?v=aySWX55-xX4>
- You can perform other fun experiments with electrostatics, check this link: <https://www.youtube.com/watch?v=sxG-z4i4ZQc>