Electroscope

Sent in by:
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Feeling static? Get charged!

Materials Needed

- balloon
- foam plate
- foam cup
- drinking straw
- glue
- aluminum pie pan
- thread
- aluminum foil
- masking tape
- wool scarf
- comb
- plastic ruler

Instructions

1. Check with an adult before you begin.
2. In the ZOOMscis, Static Electricity, Electric Gelatin and Snap, Crackle, Jump, you can use static electricity to move different substances. Now, make an Electroscope to test the presence of static electricity in an object.
3. Make two holes near the bottom of a Styrofoam cup on opposite sides.
4. Push a plastic straw through the holes in the cup.
5. Turn the cup upside down and glue it onto the bottom of an aluminum pie pan. Make sure that the cup is right at the edge so that the straw sticks out over it. If you don't want to wait for the glue to dry, tape the cup to the pan.
6. Cut a piece of thread about 8 inches long and tie a few knots in one end of the thread.
7. Cut a one-inch square of aluminum foil. Use it to make a ball around the knots in the thread. The ball should be about the size of a marble. It should be just tight enough so it doesn't fall off the thread.
8. Tape the end of the thread to the straw so that the ball of foil hangs straight down from the straw, right next to the edge of the pan.
9. Tape the straw to the cup so it doesn't move around when you use the Electroscope.
10. To test the Electroscope, create some static electricity. An easy way to create static is by rubbing a balloon on a Styrofoam plate. When you do this, you "charge" the plate, which means you cause a buildup of electrons on one side. Even though the plate is charged, the electrons don't move because Styrofoam doesn't conduct electrons.
11. Once you've created some static electricity, place the Electroscope on top of the Styrofoam plate. Be sure to hold the electroscope by the foam cup and not the aluminum pan, otherwise it won't work. Electrons move easily through metal, so when you put the pie pan onto the foam plate, the

electrons travel into the pan and the foil ball. When the electroscope detects static electricity, the foil ball pushes out from the pan.

12. Try charging different objects, like a comb or ruler, with static electricity. Test them on the Electroscope and compare your results. Which objects hold an electric charge? Which don't? Be sure to send your findings to ZOOM!

Are you charged up for the science scoop? Because electrons have a negative charge, the foil ball and the pie pan both become negatively charged after touching a staticky object. When two things have the same charge, they repel, or push away from one another, which is what the foil ball does when it moves away from the pie pan. If you put your finger towards the foil ball, the foil ball will move towards it. If you let the ball touch your finger, your finger takes electrons from the ball and the ball bounces back and forth between your finger and the pan. If you touch anything metal, like the pan or the foil ball, you'll pick up the charged electrons with your fingers. This is why you need to hold the Electroscope by the cup and not the pan.

Try adding more foil balls to your Electroscope or experiment with two Electroscopes at the same time. If you come up with any discoveries, send them to ZOOM.