

Static Electricity Lesson Plan and Lab

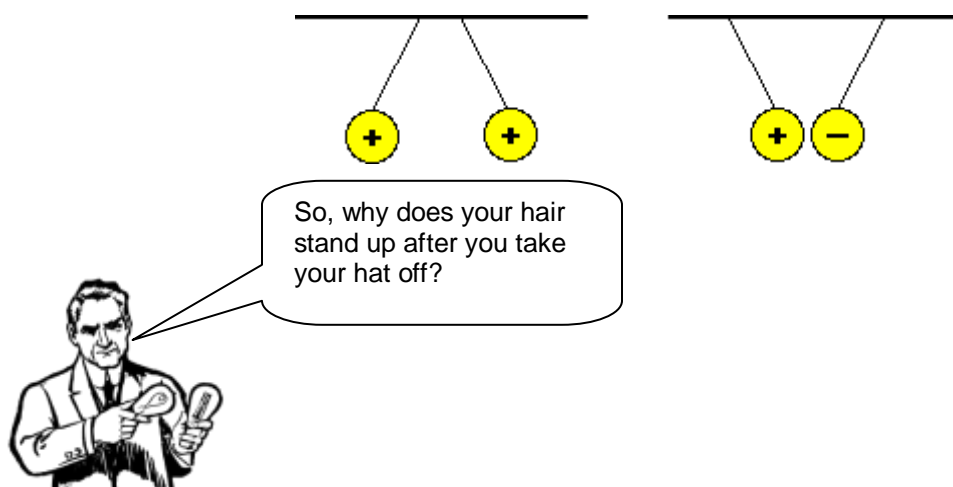
Background:

Everything we see is made up of tiny little parts called atoms. The atoms are made of even smaller parts. These are called **protons**, **electrons** and **neutrons**. They are very different from each other in many ways. One way they are different is their "charge."

- Protons have a positive (+) charge.
- Electrons have a negative (-) charge.
- Neutrons have no charge.

Usually, atoms have the same number of electrons and protons. Then the atom has no charge; it is "neutral." But if you rub things together, electrons can move from one atom to another. Some atoms get extra electrons. They have a negative charge. Other atoms lose electrons. They have a positive charge. When charges are separated like this, it is called static electricity.

If two things have **different charges**, they **attract**, or pull towards each other. If two things have the **same charge**, they **repel**, or push away from each other.

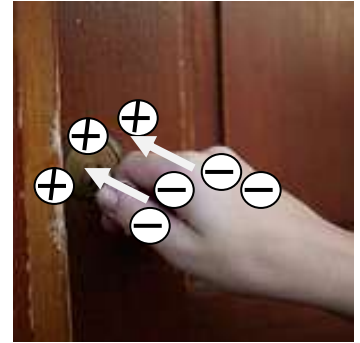


When you pull your hat off, it rubs against your hair. Electrons move from your hair to the hat. Now each of the hairs has the same positive charge. Things with the same charge repel each other. So the hairs try to move away from each other. The farthest they can get is to stand up and away from all the other hairs.



If you walk across a carpet, electrons move from the rug to you. Now you have extra electrons. Touch a doorknob and ZAP! The electrons move from you to the knob. You get a shock.

In this lab you will be using different materials to discover for yourself the behavior of static electric charges.



Materials:

- Pop cans
- Inflated balloons
- Packing peanuts in a plastic bag

- Small pieces of wool cloth
- Puffed wheat cereal
- Black plastic strips

Procedure:

Station 1:

- 1) Rub the inflated balloon vigorously back and forth across one group member's hair. What happened to the group member's hair?

- 2) Touch the balloon to the chalkboard or one of the side walls and let go of it. What happens?



- 3) Use the picture at the left and your observations to help you explain why your hair behaves this way.

Station 2:

- 1) Turn on the faucet so that the water runs out in a small, steady stream.
- 2) Charge the black plastic strip using the wool cloth.
- 3) Slowly bring the strip near the water (do not touch the water) and watch how the water behaves.

What happens?



Station 3:



- 1) Place some pieces of puffed wheat cereal on the desk. Charge your black plastic strip with a piece of wool cloth. Slowly bring the strip near the puffed wheat making sure not to touch the cereal with the black strip. What happens?

Station 4

- 1) Charge your black strip with a piece of wool cloth. Hold the black strip along the sides of the plastic bag containing the packing pieces. What happens?

Thank you for downloading. Please rate or follow at www.teacherspayteachers.com/Store/Tara-L

Station 5



- 1) Charge the balloon by either rubbing it with a piece of wool cloth or by rubbing it on your partner's hair. Using the balloon, try to make the pop can move without touching the balloon to the pop can.

Can you get the can to move? _____

How is this possible?

- 2) Now have a race with your lab partner. Line your cans up at the starting line. Using your balloon, race your cans to the finish line! Race a couple of times.

What made the winner's can move the fastest?



Thank you for downloading. Please rate or follow at www.teacherspayteachers.com/Store/Tara-L

This is a fun static electricity lab for middle school students. It can be done as stations, as a whole class, or you can just do pieces of it. These are memorable activities kids will enjoy.

- Includes:
 - Project outline
 - Project due date breakdown and scoring
 - I am here to help you and your students. Before leaving feedback, please contact me via "Ask a Question" on Teacherspayteachers, or via email (sciinthecity@gmail.com) and let me know if I can make my products better. I would appreciate the opportunity to provide the highest quality science products for your needs.
 - If you like this product, leave feedback!
 - This is designed for implementation within a middle school setting but can easily be adapted for remedial high school or higher level elementary science with scaffolding and substantial teacher facilitation.

If you would like to be notified of new listings, free items and sales on educational products, click the

“Follow Me” button at

<http://www.teacherspayteachers.com/Store/Tara-L>

www.facebook.com/Tara.Lsci

www.pinterest.com/sciinthecity

