Make a Balloon Ec-Static

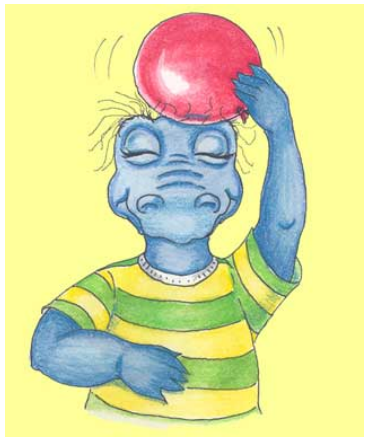
Rubbing a balloon on your hair or on your shirt or sweater can produce static electricity. Let's experiment with a balloon to see if you can pick up some good information about static electricity.

Materials:

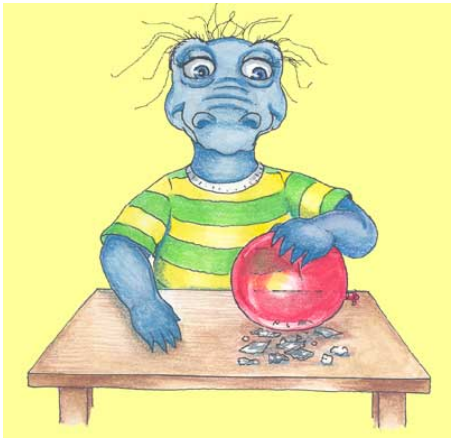
- Balloon
- Paper
- Aluminum foil
- Small piece of Styrofoam
- Child-safe scissors

Procedures:

1. Use your scissors to cut out 5-10 small squares of paper about 1 centimeter on each side. Lay them out near each other on a table.
2. You or your adult partner should blow up a balloon and tie it. Rub the balloon back and forth quickly on your hair, shirt, or sweater.



3. Bring the balloon close to the paper squares but do not touch them. What do you notice?
4. Cut out some small pieces of aluminum foil and Styrofoam. Lay the pieces out on a table.
5. Again, rub the balloon back and forth quickly on your hair, shirt, or sweater. Bring the balloon close to the aluminum foil and Styrofoam pieces. What happens?



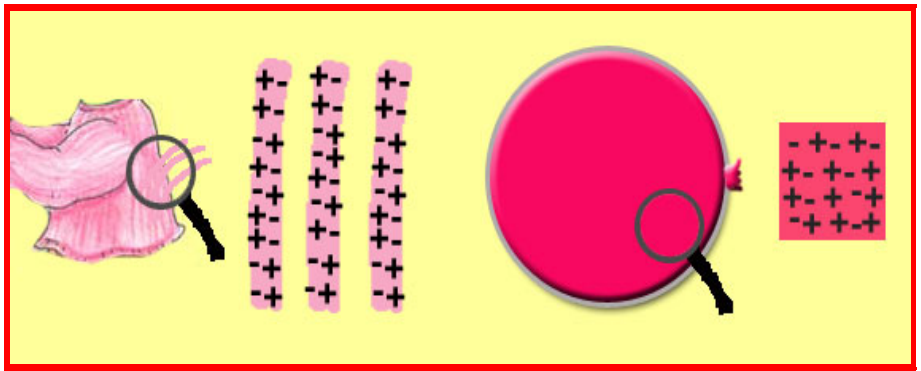
Think about this ...

When you rub a balloon on your hair, shirt, or sweater, you can use the balloon to attract things toward it. You can also make the balloon stick to the wall. Do you think this is caused by the same thing that makes the pieces of paper, foil, and Styrofoam jump to the balloon?

Where's the Chemistry?

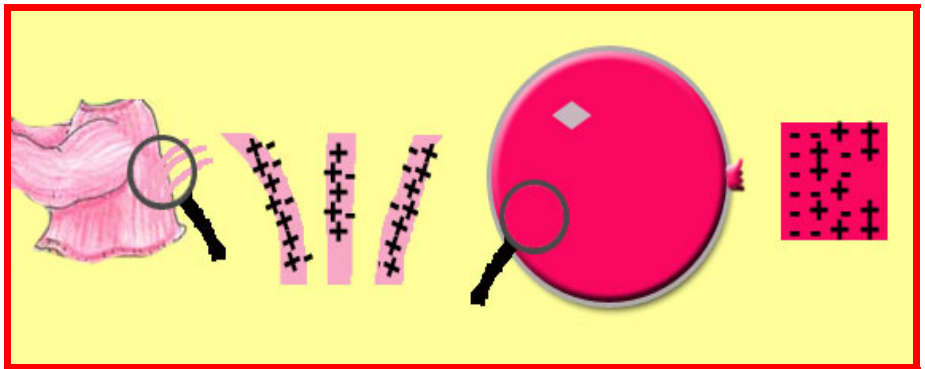
Everything is made up of atoms. Atoms are made up of extraordinarily tiny particles called protons, neutrons, and electrons. The protons and neutrons are in the middle of the atom and the electrons, which are much smaller, zoom around the outside. Protons have a positive electric charge, electrons have a negative electric charge, and neutrons have no charge at all.

The fibers in a sweater and the rubber in a balloon are normally neutral having the same number of protons and electrons.



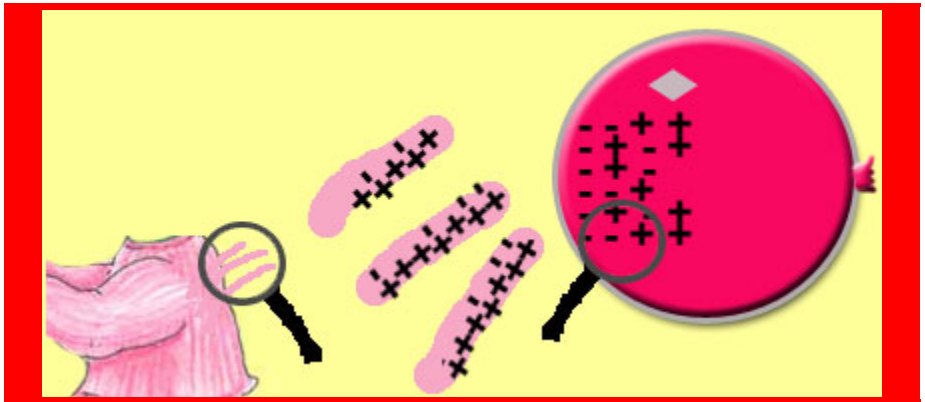
The fibers in a sweater and the rubber in a balloon are normally neutral having the same number of protons and electrons.

When you rub a balloon on a sweater, for example, some electrons come off and end up on the balloon.



The fibers have lost electrons giving them a positive charge. The rubber gained electrons giving it a negative charge.

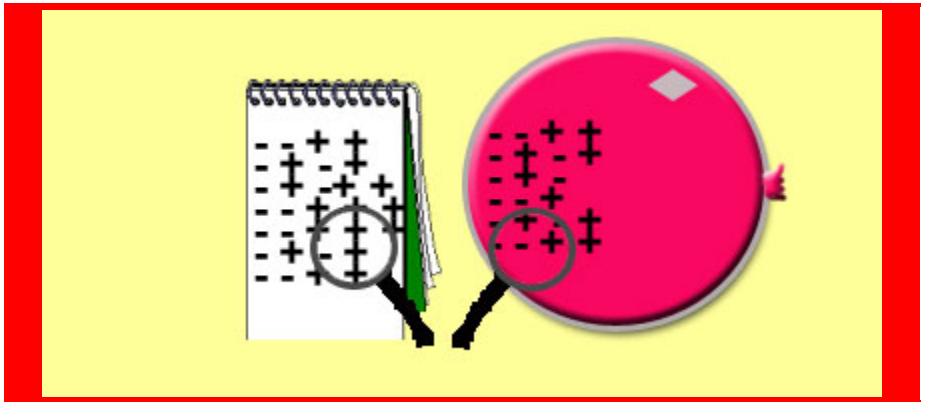
The fibers have lost electrons giving them a positive charge. The rubber gained electrons giving it a negative charge.
Since electrons have a negative charge, the balloon now has a negative charge. But the sweater fibers lost some of their electrons, so now the fibers have a positive charge (they have more protons than electrons). Positive and negative attract so if you bring the balloon near the fibers, they move toward the balloon.



The positively charged fibers are now attracted to the negatively charged balloon.

The positively charged fibers are now attracted to the negatively charged balloon.

When you bring the balloon near a little piece of paper, the negative balloon repels the electrons in the paper so part of the paper near the balloon is positive. Since positive and negative attract, the paper moves toward the balloon. The negatively charged balloon attracts the paper.



The negatively charged balloon attracts the paper.

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The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

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Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

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