ELECTROSCOPE INVESTIGATION

In this activity, you will investigate the characteristics of static charge. There are two types of charge relevant to this investigation. Positive charge is created when there are more positive protons than negative electrons present. Negative charge is created when there are more electrons than protons. A neutral condition occurs when there are equal numbers of electrons and protons present. Only electrons can be added or removed when objects touch. Electrons can move freely through conductors, but only have limited movement in insulators. The ebony rod removes electrons from the wool cloth. The acrylic rod loses electrons to the silk cloth.

Materials per group

1 electroscope	1 ebony rod	1 acrylic rod
1 wool cloth	1 silk cloth	1 static tube

Pre Lab questions

1. Define conductors and insulators.
2. Sketch a diagram of your electroscope and label each part as a conductor or insulator.

Procedure

1. Move the ebony rod along the sides of the static tube and record your observations in your Science Notebook.
2. Repeat with the white rod.
3. Charge the ebony rod by rubbing the wool cloth on the ebony rod several times. Move the rod along the sides of the static tube. Record your observations.
4. Charge the acrylic rod by rubbing the silk cloth on the acrylic rod several times. Move the rod along the sides of the static tube. Record your observations.
5. Touch the ebony rod to the top of the electroscope. Repeat with the acrylic rod. Record your observations.
6. Charge the ebony rod and touch it to the top of the electroscope. Record your observations.
7. Touch the top of the electroscope with your finger. Record your observations.
8. Repeat steps 6 and 7 with the acrylic rod.
9. Charge the ebony rod and touch the top of the electroscope. Now charge the acrylic rod. Slowly bring it close to but not touching the top of the electroscope. Record your observations.
10. Try to charge a different object (pencil, student id, etc,). Use the electroscope to verify the object is charged.

Post Lab Questions

1. Compare the effects of the two rods on the static tube. Use your observations to support that the two rods have different charges.
2. Based on the information above, identify and explain the charge of the ebony rod.
3. Based on the information above, identify and explain the charge of the acrylic rod.
4. Based on your answer to question 2, what was the charge of the electroscope in procedure 6? Explain your answer.
5. Based on your answer to question 3, what was the charge of the electroscope in procedure 8? Explain your answer.
6. What was the charge of the electroscope in procedure 7? How was this charge achieved?