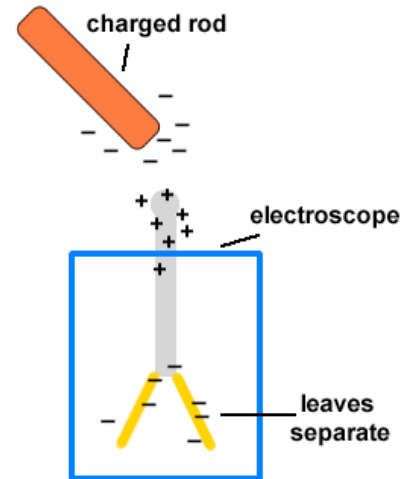


Charge Detective Lab

Purpose: To investigate the charge of various items using an electroscope

Background:

Electroscope, an instrument used for detecting electric charges or for measuring small electric voltages or currents. It is used in the laboratory—for experiments and demonstrations—and in industry, where it is connected to meters and other sensing devices. It is constructed of varying materials, but always has two strips of a conductive material hanging within the scope. The hang straight down when they are not charged. When a charged body is brought near the metal knob, both strips acquire a like charge (that is, they both become negative or both become positive). As a result, they repel each other and spread apart to form an inverted V. The electroscope is then charged. If an oppositely charged body is brought close to the knob, the charge on the strips is neutralized, and they again hang straight down. The electroscope is discharged.



Materials

Cardstock

Beaker

Aluminum Foil

Safety Pin

Procedure

PART 1: Charging by Conduction

- 1) Touch the metal knob of the electroscope with your hand to ground any surplus charge that the electroscope may have. Do the same with the ebonite rod. They are now both neutral.
- 2) Touch the ebonite rod to the metal knob of the electroscope and record what you observed in Table 1.
- 3) Rub the ebonite rod with the fur and then touch it to the metal knob of the electroscope. Record what you observed in Table 1.

Table 1

Experiment	Observation (Be specific!)
Contact with a neutral rod	
Contact with a charged rod	

PART 2: Charging by Induction

1) Touch the metal knob of the electroscope with your hand to ground any surplus charge that the electroscope may have. Do the same with the ebonite rod. They are now both neutral.

2) Place the ebonite rod near the metal knob of the electroscope (DO NOT TOUCH THE KNOB) and record what you observed in Table 2.

3) Rub the ebonite rod with the fur and then place the ebonite rod very close to the metal knob of the electroscope (DO NOT TOUCH THE KNOB). Record what you observed in Table 2.

Table 2

Experiment	Observation (Be specific!)
Induction with a neutral rod	
Induction with a charged rod	

Discussion

Answer these questions in several paragraphs. Be as specific as possible in your explanations!!

1. What charge was obtained on the rod when it was rubbed with the fur and why? What type of charging is this?
2. Explain in detail both results for PART A and then both for PART B (i.e. why did each happen). Use a diagram to help explain each observation (four in total). Draw the diagrams on pages 3 and 4. Make them large and clear. Include both positive and negative charges. Show the movement of charges if any.