

SNC1D

**Lab: Introduction to Electrostatics****Part 1: Understanding the Laws of Electrostatics**

6 marks

**Objective**

- To observe the effects of friction on Styrofoam and to understand the laws of electrostatics by making observations

**Apparatus**

- two Styrofoam plates
- wool or fur
- masking tape

**Procedure**

- Suspend one Styrofoam plate in some convenient place with the rounded side facing out towards you. Use a piece of masking tape to hang the plate so that it will be able to swing forward and back easily.
- Rub the rounded side of the suspended plate with a piece of wool or fur.
- Bring your piece of wool or fur **close but not touching** to the suspended Styrofoam plate.
- What happened? Record your observation for step 3 in the space provided below. This is OBSERVATION #1.
- Rub the second Styrofoam plate with either your wool or fur and bring this second plate close to but not touching the suspended one.
- What happened? Record your observation for step 5 in the space below. This is OBSERVATION #2.

**Observations**

#1	#2
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**Analysis** (fill in the blanks)

Assume that after the Styrofoam is rubbed with wool or fur, the Styrofoam is found to have a negative charge.

- What would be the charge on the wool or fur after it is rubbed on the Styrofoam? \_\_\_\_\_
- Since the Styrofoam became negatively charged and the wool/fur became \_\_\_\_\_ charged, electrons must have moved from the \_\_\_\_\_ to the \_\_\_\_\_.
- Since the negatively-charged Styrofoam was \_\_\_\_\_ to the \_\_\_\_\_ charged wool/fur, we can conclude that the positive and negative objects will \_\_\_\_\_
- Since the negatively-charged Styrofoam plates \_\_\_\_\_ each other, we can conclude that two negative objects will \_\_\_\_\_ each other.

## Part 2: Understanding the Laws of Electrostatics

15 marks

### Objective

- to determine the type of charges on various common materials

### Apparatus

- the same two Styrofoam plates and wool/fur from the previous experiment, set up in the same way
- ebonite rod
- glass rod
- polystyrene rod
- acetate strip
- plastic comb
- plastic (polyethylene) bag

### Procedure

- Knowing the Styrofoam plate is negatively charged, determine the charges on the materials as given in the observation table. If the charge on the plate is dissipating, recharge it by rubbing the plate with the wool/fur.

### Observations

Material whose charged state is to be tested	Ebonite rod (not charged)	Glass rod (not charged)	Polystyrene rod (not charged)	Acetate strip (not charged)	Plastic comb (not charged)	Your hand (not charged)
Observed force (attraction or repulsion)						
What is the charge of the material? (+, -, or 0)						

Material whose charged state is to be tested	Ebonite rod (charged by rubbing with wool/fur)	Glass rod (charged by rubbing with plastic bag)	Polystyrene rod (charged by rubbing with plastic bag)	Acetate strip (charged by rubbing with plastic bag)	Plastic comb (charged by rubbing with wool/fur)	Your hand (charged with rubbing with wool/fur)
Observed force (attraction or repelling)						
What is the charge of the material? (+, -, or 0)						

### Analysis (fill in the blanks)

- If the Styrofoam is approached by an object that is positively charged, then the Styrofoam will \_\_\_\_\_.
- If the Styrofoam is approached by an object that is negatively charged, then the Styrofoam will \_\_\_\_\_.
- If the Styrofoam is approached by an object that is neutral, then the Styrofoam will \_\_\_\_\_.