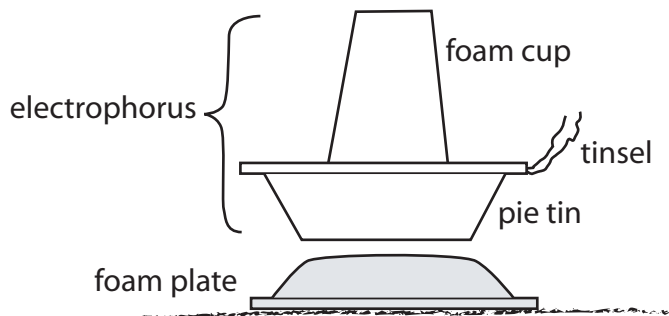


**Purpose:** To investigate charge by induction, and various situations that cause electrostatic attraction and repulsion.

### 1.) Charging the electrophorus by induction

a.) *Charge a foam plate by rubbing it with fur or cloth. Place it upside down on your bench.*

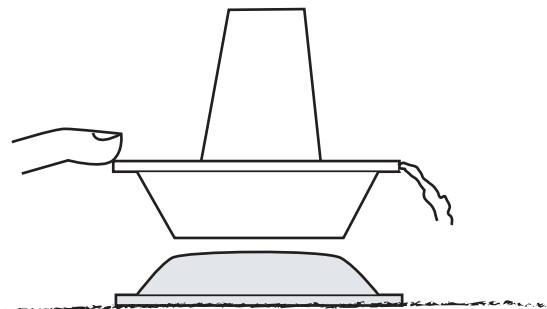
b.) *Grasp the electrophorus by the cup. Hold it just above the foam plate.* In the diagram below, draw the charges on the foam plate and the pie tin (assume the foam plate has been charged negatively.)



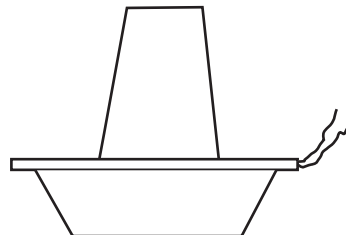
c.) *Move the electrophorus away from the plate.* Note what happened to the tinsel. What is the net charge on the pie tin?

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d.) *Move the electrophorus near the charged plate again. Momentarily touch the aluminum pie tin.* Draw the charges on the plate and the pie tin.



e.) *Pull the electrophorus away from the plate. The electrophorus now has a net charge.* Draw the charge on the pie tin.



f.) *Hang a piece of thread near the pie tin.* What do you observe?

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g.) *Hang a piece of tinsel near the pie tin.* What do you observe?

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i.) What do you observe if the tinsel touches the pie tin?

\_\_\_\_\_

j.) What do you observe if the thread touches the pie tin?

\_\_\_\_\_

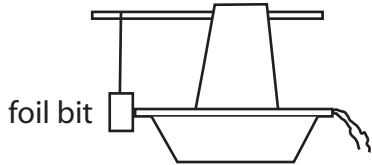
k.) Why do you think there is a difference?

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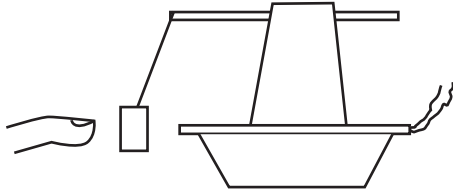
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## 2.) Charge Transport

- a.) Let the foil bit hang from the end of the straw so that it just touches the edge of the pie tin as shown below. Adjust the position of the foil bit if necessary.



- b.) **Charge the electrophorus** like you did in steps 1d and 1e. **Bring your finger near the tinfoil bit.**



- c.) What do you observe?

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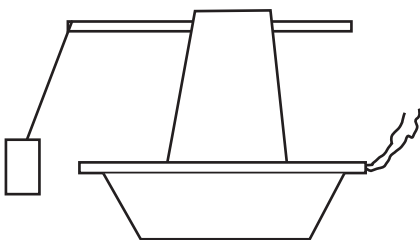
## 3.) Charge transport analysis

- a.) Why was the foil bit repelled by the pie tin after it touched it?

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- b.) Draw the charge configuration on the pie tin and foil bit below:

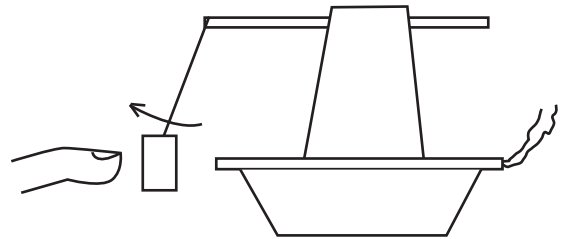


- c.) Why was the foil attracted to your finger?

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- d.) Draw the charge configuration on your finger, foil bit and pie tin below:

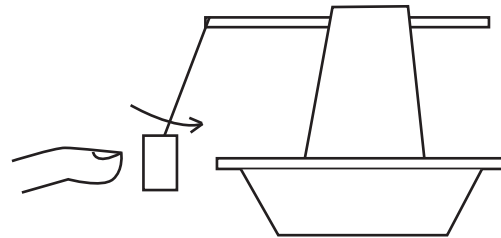


- e.) After it touched your finger, why was the foil bit attracted back to the pie tin?

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- f.) Draw the charge configuration below:



- g.) After it touches the pie tin, it is repelled. Why?

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h.) Watch the tinsel on your pie tin as the foil bounces back and forth. What do you observe?

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i.) Why do you think this is happening?

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j.) After instruction from teacher, use the neon bulb to determine the charge (+ or - ) on your electrophorus. What is the charge on the electrophorus? Explain how you know.