Name:_____Date:_____ Per._____

Lab 5: Attractions Between Molecules

Purpose: To observe the response of certain liquids to an electrical charge and the behavior of the same liquids as droplets.

Materials:

- Water (H_2O)
- Vinegar (CH_3COOH)
- 2 Methyl Propanol ($C_4H_{10}O$)
- Isopropanol (C_3H_8O)
- Hexanes (C_6H_{14})
- Ethanol (C_2H_5OH)
- Methanol (CH_3OH)
- Witch Hazel
- Burette
- Charged Plastic Wand
- Wax Paper
- 100 mL Beaker

Pre-Lab Questions:

1. What happens when oppositely charge materials (positive and negative) get close to one another?

2. What happens when materials with the same charge (positive and positive or negative and negative) get close to one another?

3. What would happen if a charged substance gets close to something that isn't charged?

Independent Variable:_____

Dependent Variable:_____

Procedure:

1. Charge plastic wand by rubbing it on a piece of cloth.
2. Open stopcock to allow steady stream of liquid.
3. Place wand next to stream WITHOUT touching the liquid and record observations.
4. Place drop of liquid on wax paper and record behavior.
5. Repeat for all liquids available.

Data:

Compound	Effect of Charged Wand	Behavior on Waxed Paper

Analysis:

1. Draw the structural formulas for all of the molecules that you tested (except witch hazel).

2. What evidence do you have that some of the molecules that you just tested have a charge on them?

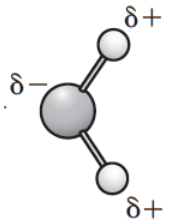
3. Using your data table, list all of the molecules that were affected by the charged wand.

4. Looking at the structural formulas in #1, what is similar about all the molecules that were affected by the charged wand?

5. How do you explain any liquids that are not attracted to the charged wand?

6. How is the behavior of the droplets related to the charged wand in the experiment?

7. If water molecules are carrying a partial charge, as shown, how do you think a group of water molecules would behave toward each other? To illustrate your thinking, draw a picture of several (more than 3) water molecules interacting. EXPLAIN your drawing.



A single water molecule.

Conclusion: Write a conclusion for this lab below.