Surface Tension

In this lab, you perform an experiment to gather evidence about the structure of substances at a large scale. This will allow you to infer the strength of electrical forces between the particles that make up these substances. Review the topic of surface tension in the textbook, focusing on the part that discusses electrostatic attraction.

Materials:

- 4 pennies
- 4 droppers
- Water
- Acetone
- Vegetable oil
- Rubbing alcohol
- Paper towels

Note: Other fluids can be added or substituted.

Procedure:

1. Place a penny, heads up, on a paper towel.
2. Hold a dropper about 2 cm above the penny, and add drops onto the penny's surface until they spill over the edge.
3. Record the names of the fluids you are using. We list three below, but you can experiment with others, such as the acetone listed above. Record the number of drops of fluid you managed to fit on the penny. Repeat this experiment three times for each fluid being tested, and add rows to the table as needed.
4. For each fluid, compute the average for your three data runs and then graph the averages.

	Number of droplets till overflow			
Name of fluid	Run 1	Run 2	Run 3	Average
Fluid #1: Water				
Fluid #2: Oil				
Fluid #3: Alcohol				

Analyze:

The droplets with more surface tension will cling to one another and to the penny, allowing more droplets to be added until they overflow. Can you rank the fluids, from most surface tension to least surface tension? What does this experiment tell you about the electrostatic force between the molecules that make up each fluid, relative to the other fluids you tested?