**Purpose/Hypothesis:**

**Materials:**

* Penny
* Cotton swab
* 3 test tubes and test tube rack
* Dropper bottles
* Wax paper
* Rubbing Alcohol
* Acetone
* Water
* Oil

**Procedure:**

Test 1 (polarity):

1. Add a pipetful of oil to each of the 3 test tubes.
2. Add a 3 pipetfuls of each substance to a different test tube. Record if they mix or not.
3. Rinse out test tubes and replace them upside down on the test tube rack.

Test 2 (evaporation rate):

1. Dip a clean cotton swab into each substance. Make a 2 inch swipe of each of the three liquids on the table simultaneously (you may need to have two other people help you with this so that all three swipes are made at the same time).
2. Record the order in which they completely evaporate. Once you are down to just one wipe off the counter with a paper towel. Throw away paper towel and cotton swabs.

Test 3 (surface tension):

1. Using a pipette add droplets of each liquid onto the penny.
2. Record how many droplets you can get before the liquid spills off the surface.
3. Rinse and dry penny between substances. Throw away paper towel when done.

Test 4 (surface tension):

1. Transfer one drop of each fluid to a sheet of wax paper.
2. Observe the drop shapes. Rank them from least round to most round. (more round = higher surface tension
3. Throw away wax paper.

**Results:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Chemical** | **Test 1** | **Test 2** | **Test 3** | **Test 4** |
| **Acetone** |  |  |  |  |
| **Water** |  |  |  |  |
| **Rubbing alcohol** |  |  |  |  |

**Post Lab Questions:**

1. Classify each substance as polar or nonpolar. Explain your answer **based on your data.**
2. Which of the liquids you tested do you think will BOIL most easily and have the lowest boiling point? Explain why **based on your data.**
3. Put the chemicals in order from weakest surface tension to strongest surface tension based on Tests 3 and 4. Explain your order **based on your data.**
4. Put the chemicals in order from weakest intermolecular force to strongest intermolecular force. Explain your order **based on your data.**

**Conclusion:**