Electrophilic Aromatic Substitution

The equipment setup for this lab will require the use of the following glassware:

Nitration	Relative Rates
	
Students will setup the microscale reflux assembly. Remember to use the metal hose clamps and water goes in at the bottom and out at the top.	Students should label each tube such that they can easily remember which tube contains which substituted arene.

Procedure

Nitration of Bromobenzene

1. In the 5 mL conical vial, place the rice stir bar and add 0.5 mL of concentrated nitric acid.
2. **Slowly add** 0.5 mL concentrated sulfuric acid to the nitric acid.
3. Place the conical vial in the appropriate hole in the aluminum heating block and turn the hot plate on to about 50 ºC.
4. Attach the conical vial to the micro-jacketed condenser. You don't need to attach the water hoses to the condenser.
5. **Slowly add** 0.5 mL of bromobenzene **dropwise** through the top of the condenser.
6. Let the reaction stir for 15 minutes.
7. Pour the reaction into a small beaker containing ~5 mL of water.
8. Filter the solid product and wash with a few mLs of water.
9. Recrystallize in Ethanol.
10. Collect the MP and % Yield.

Relative Rates of Bromination

1. Obtain 5 disposable glass test tubes and label them in such a way that you know what compound is being tested in each.
2. Place the tubes in a beaker so as to keep them all upright and together.
3. Add 1.5 mL of each substrate to be tested to the appropriately labeled test tube.
4. Add 1.5 mL of bromine solution to each test tube.
5. Note which test tubes change from orange back to colorless in what order.
6. Two of the substrates react very quickly so you may want to time each of the reactions even though we are only interested in the relative rate and not the absolute rate.