PRE-LAB for the Esterification lab—PLKE 53

The specifics for the prelab: Write in your lab notebook—photocopy and turn-in before you begin lab. This pre-lab will be worth 15 points.

Before you begin you must determine what carboxylic acid and alcohol you will use to make your ester (see pg 502 of PLKE). For the acid you can use acetic acid or propanoic acid.

You do not have to write a ‘purpose’ for this reaction—the reaction equation is considered the ‘purpose’. (you do not need to write the arrow pushing mechanism—just the reactants and products). Use the acid and alcohol that you chose in the reaction equation and clearly show the ester that they will produce.

--Create a reagent table for this reaction. The table should include names of starting materials, MW, moles, grams and volume* to be used and theoretical yield (in grams) of the final Ester product. Be sure to state in the reagent table which compounds is the ‘Limiting Reagent.’

*If you use acetic acid use 7 mL, if you use propanoic acid use 8 mL. Additional alcohol you could use that are not in the text: Alcohols: octanol and heptanol

--Sketch the reaction set-up that you will be using.

--State in your pre-lab that you will run an IR and NMR of you product (for NMR place 2-3 drops of your ester in 0,7 mL of CDCl3)

Lab Changes: You do NOT have to do the distillation or GC or your products. You also do NOT have to use a drying tube packed with calcium chloride on the of the reflux apparatus (this is optional—helps to keep down smells)

Use of the Separatory funnel. Doing the ‘work-up’ (purification) of your ester you will be using a separatory funnel --For a more detailed discussion: https://www.youtube.com/watch?t=624&v=QAZGvFx0rIY

Pre lab questions:

1) In this reaction which reagent do you have in molar excess?

2. What is the purpose of having the starting reagent listed in question #1 in excess (why not have an equimolar reaction?).

3. What is the purpose of the ‘water cooled reflux condenser’

4. What is the purpose of extracting the product mixture with 5% sodium bicarbonate? Give a reaction equation that pertains to this and explain its relevance.

5. During the extractions, which layer will be your Ester product (upper or lower)?