DEHYDRATION OF AN ALCOHOL

READING

Zubrick, Chs. 5 and 20

PROCEDURE

As you are performing a chemical reaction, be sure to include a reaction table and mechanism as part of your pre-lab preparation. Your hazard preparation must also include hazards for the product(s).

Set up a microscale distillation apparatus for collection of the products. Place 2 mL of 3-methyl-3-pentanol in a 5-mL conical vial. Add 10-12 drops of concentrated sulfuric acid and a spin vane. Fit with a Hickman still and heat in an aluminum block, adjusting the heating so that the temperature of the block (measured with a thermometer) is 120-125ºC. Heat the reaction for about 30 minutes; as the Hickman collar fills with product, remove it with a Pasteur pipet, quickly replacing the side cap and sealing the product in a small vial as you collect it [**CAUTION—product is very volatile!**]. Dry the product over sodium sulfate as it is being collected. Filter the liquid through a filter pipet to a clean vial for weighing.

Obtain the GC of the product mixture to determine the percent composition. Be sure that you use the nonpolar (**B**) column, that the detector is set on negative polarity, and that the oven temperature is below 45°C. Calculate the percent yield of the reaction (note all isomers have the same molecular weight, so you can still perform the calculation even though different products are formed). If possible, obtain the IR of the product (product is volatile, so this may be difficult).