Post-lab for Experiment 3

Name:
Date:
Lab day:

1. Draw the full, *balanced*, equation of the reaction you performed.

2. *p*-aminobenzoic acid used: _____ g, _____ mmol

3. Theoretical yield of benzocaine: _____ g

   Isolated amount: _____ g, _____ mmol, _____ % yield

4. lit. m.p. of benzocaine:

   source:

   actual m.p.:

5. Draw the structure of benzocaine, and label the protons. Then, construct a table of the NMR peaks below it. For each peak, give the chemical shift, integration, multiplicity, and peak assignment.

6. List the important IR peak frequencies of benzocaine, and assign to bond vibrations.

Attach the ^{1}H NMR spectrum with the structure of the compound and all peak assignments.

Staple the carbon copies of your lab notebook to the lab report.

Questions

1. Following the mechanism in the lab manual, draw the structure of all products, and place a star on the hydrogen in the product that was originally part of ethanol.

2. Occasionally, the reaction does not go to completion, but instead results in a mixture of the carboxylic acid starting material and the ethyl ester product. In this case, the carboxylic acid can be separated and recovered using an acid-base extraction. Explain how (you may wish to consult your lab text).

3. At the end of the reaction the solution is very acidic. At this point, the product is soluble in water. After neutralization, the product is no longer soluble in water. Why?