



Organic –Chem. 221 Lab

Experiment #3

Recrystallization Purification of crude solids acetanilide.

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**Exp. date: 21-4-2021
Submission date: 22-4-2021**

Abstract: (including objectives, chemical reactions, methods used and main results)

Main Objectives:

- Make a crystallization of the material.
- acetanilide purification (impure to pure).
- Calculate the ratio of pure acetanilide.

Methods used: Recrystallization method.

Chemicals:

Acetanilide, charcoal, zinc dust.

Glassware:

Funnel, buchner funnel, Hirsch funnel, filter flask, beakers, Bunsens

Flame, filter paper, heavy-walled tubing, clamp.

Data:

Mass of filter paper and crystals= 1.07 g

Mass of filter paper = 0.32 g

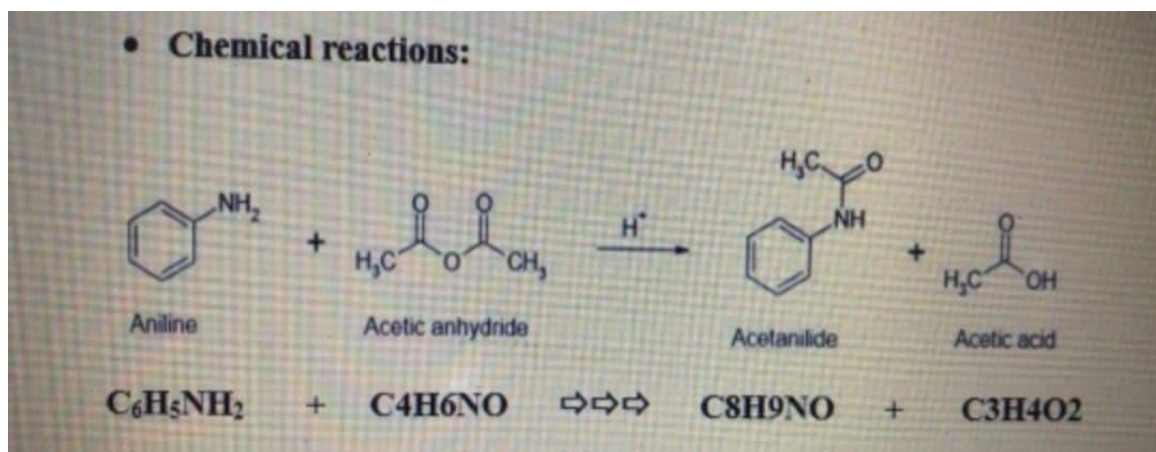
Theoretical mass of acetanilide= 1 g

Calculation and results:

$$1.07 - 0.32 = 0.75 \text{ g}$$

$$0.75 * 0.5 / 1 = 0.375 \text{ g (pure acetanilide).}$$

$$0.375 * 100\% = 37.5 \% \text{ (percent yield)}$$



Discussion & Comments:

Recrystallization used to purify impure samples of a solid compound. where the impurities are dissolved in the solvent, the solvent may not dry completely during the drying process, resulting in an increase in the total mass of crystals produced. (the mass of crystals with some water) , and adding charcoal removed colored impurities.

Summary:

The process of recrystallization involves dissolving the solid in an appropriate solvent at an elevated temperature and allowing the crystal to re-form on cooling, so that any impurities remain in solution.

Problems:

Q.2:

B, C, D
E is used in chromatography.

Q.4:

The solution will begin to crystallize, and will be left behind on the filter paper.

Q.6:

Pressure changes in the aspirator may allow water to enter the filter flask, contaminating the filtrate. A filter trap avoids this problem.