# Chem 220 Organic Chemistry I Fall 2024 - Ilana Berlin/Assignments/Week 2. Recrystallization 2 and IR/Recrystallization Worksheet 2

Paul Gladen - Sep 05, 2024, 12:32 PM CDT

## Assignment #5 - Recrystallization Worksheet

You cannot edit this entry after it is graded.

| | |
|---|---|
| Description | Complete observations while in lab. Due at 5:00 pm the day following your lab section. |
| I worked in a group with | |
| The work for this assignment is in | My notebook |

**Grade** **10 / 10**

Graded on Sep 05, 2024, 12:32 PM CDT

Ilana Berlin - Sep 03, 2024, 2:31 PM CDT

# Solvent Selection and Recrystallization of your impure solid

**Name of your solid:** 2-iodobenzoic acid

**literature mp of your solid (°C):** 160 - 164°C

**Describe the original appearance of the solid:**

opaque dull white powder

**Table of Observations for Solubility Tests**

| solvent | bp of solvent, °C | rt | hot | re-cooled |
|---|---|---|---|---|
| water | 100°C | ins | ins | ins |
| methanol | 65°C | sol | N/A | N/A |

| | | | | |
|---|---|---|---|---|
| ethanol | 78°C | sol | N/A | N/A |
| ethyl acetate | 77°C | sol | N/A | N/A |
| toluene | 110.6C | ins | sol | ins |
| hexane | 69°C | ins | ins | ins |
| solvent pair: | NA | ins | sol | ins |

table abbreviations: sol = soluble; ins = insoluble; sl sol = slightly soluble (do not substitute)

**Solvents that could be used:** Methanol, Ethanol, Ethyl Acetate, Toluene

**Solvent or solvent pair chosen and explain choice:** Toluene, the only solvent that dissolved at BP instead of at room temperature. This will allow for recrystallization.

**Mass of compound before recrystallization (mg):** 110 mg

**Approximate amount of solvents:** 1.2 mL

**Describe the appearance after recrystallization:**

Small opaque dull white flakes that formed at the bottom of the tube and along the wooden stirring stick

**Mass of compound after recrystallization (mg):** 65.0

**Percent Recovery:** 59.0%

**Observed mp (°C):** 154.5 - 156.8 °C

## Short Answer Questions:

**Thinking back over both recrystallization part 1 and part 2 please complete the following short answer questions.**

**1. What is the purpose of recrystallization?**

Recrystallization helps purify a compound.

**2. At the end of recrystallization, where should the impurities be located?**

The impurities should remain in the solvent.

**3. Explain how the following items would adversely affect the percent recovery or purity of a recrystallization:**

**a. An unnecessarily large volume of solvent is used to dissolve the crude solid**

Less of the solid will recrystallize out of the solution if too much solvent is used. This will decrease the percent recovery but will not effect the purity.

**b. The crystals obtained after filtration are not washed with fresh cold solvent before drying**

If the crystal are washed with solvent but the solvent is not cold them some of the crystals may redissolve, decreasing the percent recovery.

If the crystals are not washed at all then it may be harder to collect the crystals, decreasing the percent recovery.

**c. The crystals obtained after filtration are washed with fresh hot solvent**

The crystals will redissolve in the solvent and percent recovery will decrease.

**d. Crystallization is accelerated by immediately placing the flask of hot solution in an ice bath**

Cooling the sample too quickly then the impurities may also solidify, reducing the purity.

Erica Schultz - Aug 16, 2021, 1:12 PM CDT

## Annotated IR spectra

Ilana Berlin - Sep 03, 2024, 2:50 PM CDT