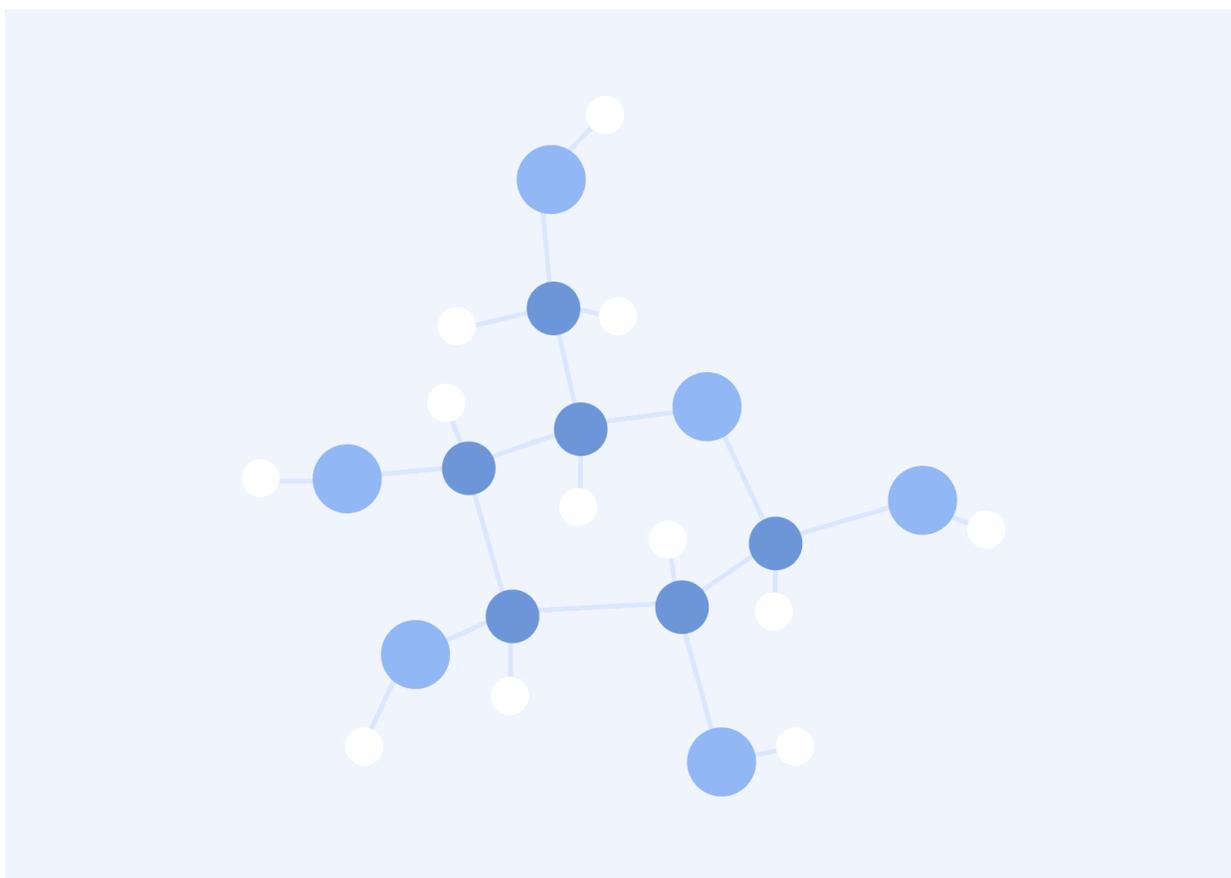


Experiment 2: Purification of impure Acetanilide by Crystallization



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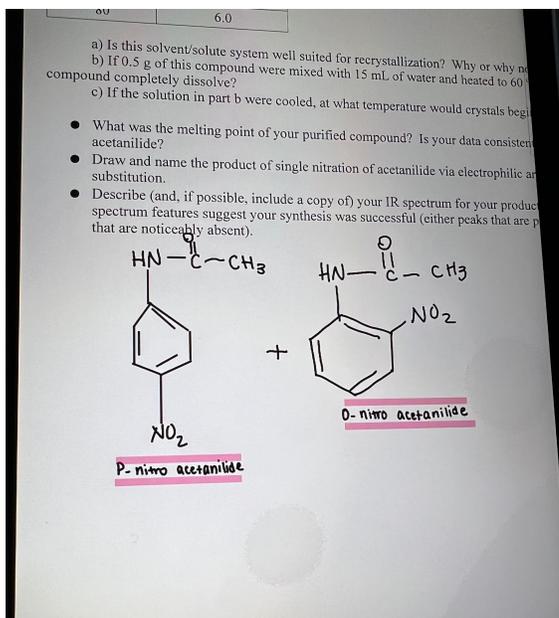
Purpose: The purpose of this experiment is to use the protocol of recrystallization in water to purify acetanilide and collect crystals.

RESULTS:

The amount of dried samples of the crystals weighed 0.030 grams.

Questions:

1. What was your crude yield before today's lab in grams and percent? **2 grams and 2%.**
2. What was your final yield (after drying your product)? **0.030g and 0.03%.**
3. Is the solvent/solute system well-suited for recrystallization? Why or why not? **Yes, it is because as the temperature increases, the solubility of the solvent increases as well, so upon cooling the solvent/solute system will begin the recrystallization process.**
4. If 0.5g of this compound were mixed with 15 mL of water and heated to 60 C, would the compound completely dissolve? **Yes, because $0.5\text{g} / 15\text{ ml} = 0.033\text{g/ml}$ which is less than 0.050g/ml ; because of this, it takes less heat to dissolve which means the compound of (0.5g) will completely dissolve when heated to 60 C.**
5. If the solution in part b were cooled, at what temperature would crystals begin to appear? **Crystals will begin to form at 35 C. $0.5 - 0.495 = 0.05\text{g}$. $3.3\text{g}/100\text{ml} = 0.495\text{g} / 15\text{ml}$.**
6. What was the melting point of your purified compound? Is your data consistent with acetanilide? **The melting point of our compound was 45 degrees celsius which is consistent with the melting point of acetanilide.**
7. Draw and name the product of single nitration of acetanilide via electrophilic aromatic substitution.



8. Describe the IR spectrum for your product. What spectrum features suggest your synthesis was successful? The IR spectrum peak is noted at 1550-1475 cm, a peak is present confirming that our synthesized compound was successful.

CONCLUSION: By using the standard protocol for recrystallization, and using various filtration techniques we were able to purify the solute system and obtain a solution of crystals, which we then weighed and obtained a weight of 0.030g and the final yield of 0.03%. We were also able to compare the solubility of our product and the solubility of acetanilide.