

2. Consider a crystallization of sulfanilamide in which 10 mL of hot 95% ethyl alcohol is added to 0.10 g of impure sulfanilamide. After the solid has dissolved, the solution is cooled to room temperature and then placed in an ice-water bath. No crystals formed, even after scratching with a glass rod. Explain why this crystallization failed. What would you have to do at this point to make the crystallization work?
3. Benzyl alcohol (bp 205°C) was selected by a student to crystallize fluorenone (mp 153-154°C) because the solubility characteristics of this solvent were appropriate. However, this solvent is not a good choice. Explain.
4. A student performs a crystallization on an impure sample of biphenyl. The sample weighs 0.5 g and contains about 5% impurity. Based on his knowledge of solubility, the student decides to use benzene as the solvent. After crystallization, the crystals are dried and the final weight is found to be 0.02 g. Assume that all steps in the crystallization are performed correctly; there are no spills, and the student lost very little solid on any glassware or in any of the transfers. Why is the recovery so low?