

Post Lab Questions

1.) What is the reason for using activated carbon during crystallization?

Activated charcoal is used to decolorize crystalline compounds. Sometimes, impure compounds have small amounts of colored compounds, and filtering the hot filtrate through an amount of activated charcoal will remove these compounds.

2.) If a little activated charcoal does a good job removing impurities in a crystallization, why not use a larger quantity?

If more of this material cannot discriminate between impurities and the desired product very readily.

3.) Under which circumstances is it wise to use a mixture of solvents to carry out crystallization?

It is common for a compound to not exhibit a large range of solubility in one solvent. Therefore, we must use mixtures of solvents to help tune the solubility of the compound. For example, a compound can be completely soluble in one solvent and insoluble in the other. If the two solvents are mixed together then the compound can be dissolved in a mixture of the two at a high temperature but will crystallize out at a lower temperature in the same mixture.

4.) Why is gravity filtration and not suction filtration used to remove suspended impurities and charcoal from a hot solution?

In gravity filtration, fluted filter paper is used. There is efficiency of filtration increases because of the high surface area. Suction filtration pressure gradient is used, thus making it easier for impurities and charcoal to pass through the filter paper.

5.) Why is a fluted filter paper used in gravity filtration?

It has a high surface area which makes it better for filtration purposes.

6.) Why are stemless funnels used instead of long-stem funnels to filter hot solutions through fluted filter paper?

With a long-stem funnel the air must push up against the solvent coming down the thin funnel, which would slow down the filtration process and cause turbulence in the liquid. A stemless funnel prevents this problem.

Another point to add is that the funnel is probably cooler than the filtration liquid so if the solvent has to come down a long tube the solvent may cool off causing the compound to recrystallize early in the tube. A stemless funnel prevents this problem as well