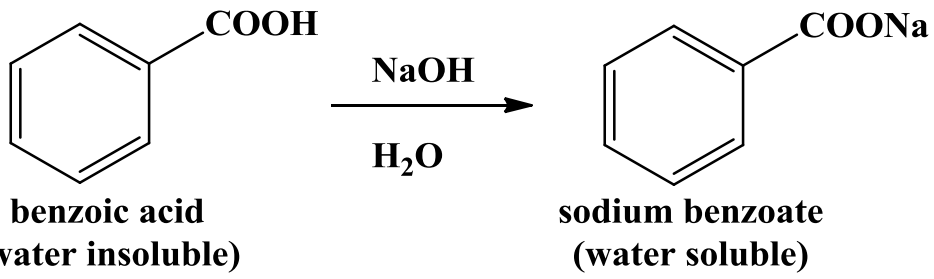
Experiment name / Solution and Filtration

when a solid or a liquid dissolves the structural units -ions or molecules become separated from separated from each other and the solvent molecules occupy the space between them.

The solubility of organic compounds can be divided into two major types:

1- solubility in which the chemical reaction is the driving force for example acid-base reactions:



2- solubility in which only simple miscibility is involved for example ethyl ether in carbon tetrachloride.

The first type is used to identify the functional groups involved in the compound while the second type is used to determine solvents for recrystallization and chemical reactions.

The filtration is an important procedure after completing the reaction either to separate the solid product (precipitate) or to get rid of insoluble impurities or reaction materials. The desired soluble compound is recovered from the filtrate by evaporating the solvent .

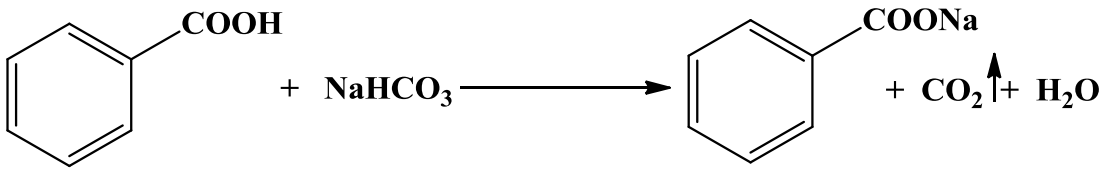
The liquid is poured into a filter paper fitted in a funnel and either the precipitate is collected or the filtrate that contains the desired soluble compound is collected.

In this method we take the advantage that one compound in the mixture is readily soluble in a given solvent whereas the remainder of the mixture may be relatively insoluble.

Procedure

An impure mixture containing about 0.5 gm of benzoic acid and 0.5 gm of sugar (glucose) is to be dissolved in about 10 ml of distilled water. The sugar will dissolve in water while benzoic acid remains precipitate. Than perform filtration by which the benzoic acid remains as the precipitate on the filter paper while the goes with the filtrate as a solution. The sugar can be recovered from the filtrate by evaporating the solvent (water).

To test the precipitate (on the filter paper) is the benzoic acid sodium bicarbonate solution is be added on this precipitate. The benzoic acid will be dissolved due to the formation of soluble sodium benzoate and bubbles of the evolved CO_2 gas will be seen.



benzoic acid **sodium bicarbonate** **sodium benzoate**

Questions

1- If you have a mixture of urea and salicylic acid how can you separate then using solution and filtration method?
2- What are filtration?
3- How can To test the precipitate (on the filter paper)?