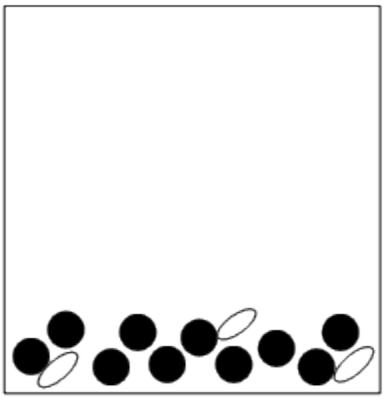
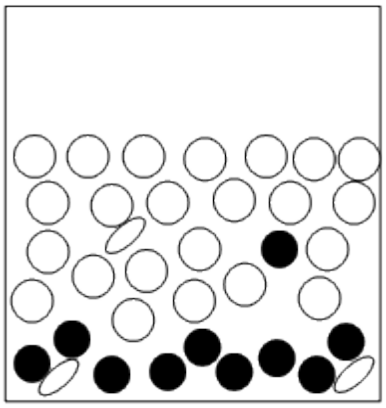
RECRYSTALLIZATION

Recrystallization is used to purify solids. Usually this method works best when there is only a small amount of impurity in the solid.



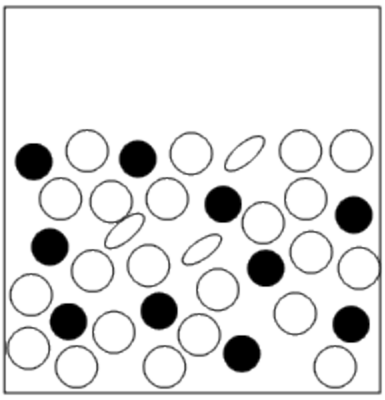
an impure solid

The method involves addition of a cold solvent to the material.



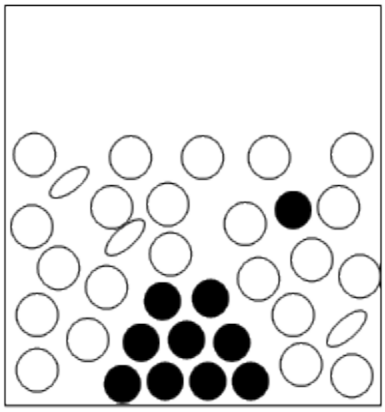
some of the solid dissolves
when solvent is added

The mixture that results is heated until the solids dissolve.



all of the solid dissolves
when the solvent is heated

The mixture is slowly cooled again until a pure solid is obtained.



some materials
remain dissolved

when cooled, one of the solids
slowly packs together in an
organized, crystalline form.

Recrystallization depends on different solubilities of the target compound and other compounds present in the impure mixture. The goal of this method is to have one compound dissolved in a solvent while the other compound is not dissolved. If one compound is an undissolved solid, it can be filtered out of the solution in order to separate it from all the other things that are in solution.

Solubility in a solvent is a physical property of a material, just like its boiling point or melting point. Sodium chloride (table salt) has a particular solubility in cold water (35.7 g will dissolve in 100 mL) while sodium oleate (found in some soaps) has a

different solubility in cold water (10 g per 100 mL). That difference can be exploited to separate these two compounds.

Source : http://employees.csbsju.edu/cschaller/Principles%20Chem/purification/recrystallization.htm