

Mustansiriyah University
College of science
Biology Dept.
Zoology
4th class
Laboratory Technique LAB.
(6)

NAME :



PURPOSE

THE MAIN PURPOSE OF THIS LAB IS TO GIVE YOU EXPERIENCE WITH TECHNIQUES FOR SEPARATING DIFFERENT KINDS OF MATTER BASED ON THEIR PHYSICAL PROPERTIES.



SEPARATION



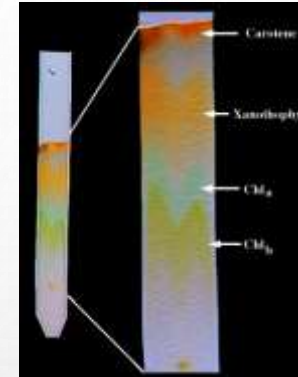
SUBSTANCES vary widely in their physical properties, so there are also a variety of separation techniques. a brief list includes:

distillation, filtration, magnetic, chromatography, evaporation, decanting, and extraction.

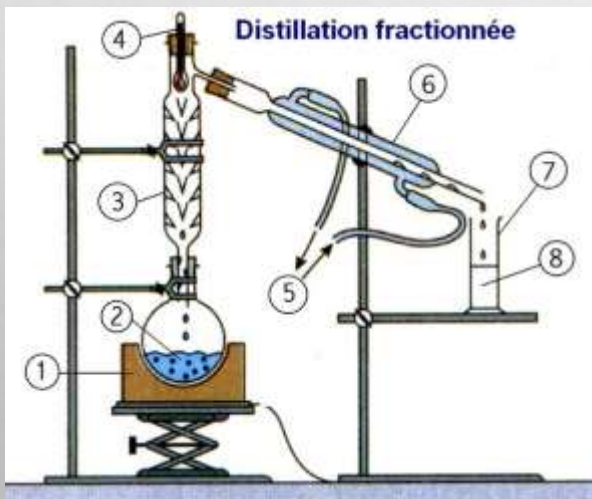


Various Methods for Separating the Components of a Mixture

Chromatography: separating components of a mixture that have differing adsorptive tendencies on a stationary phase as the mixture is passed over or through the stationary phase .

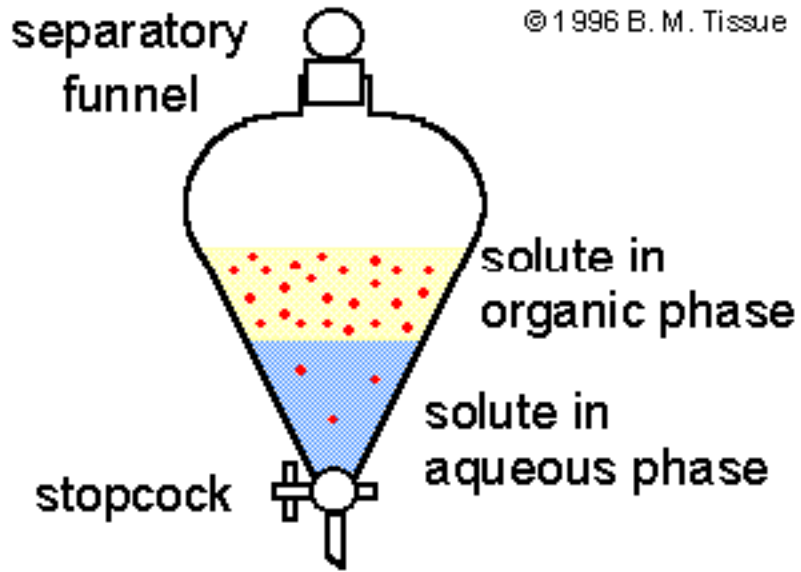


Chromatography of plant pigments



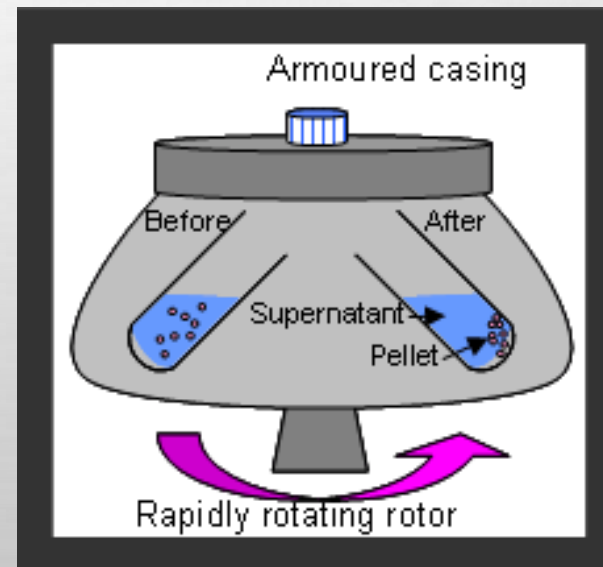
Distillation: Separation through vaporization of a liquid from a solid, or another liquid, followed by vapor condensation.

Distillation is used in many different industries including **chemical, brewery and pharmaceutical**.

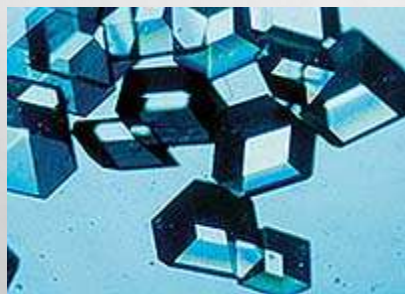


Extraction: removing a substance from a solid or liquid mixture by adding a solvent in which the substance is more soluble.

Centrifugation: removing a substance from a solution by means of a centrifuge.



Crystallization: forming a crystalline solid by decreasing its solubility as a result of cooling the solution, evaporating the solvent, or adding a solvent in which the solid is less soluble such that solid crystals form.



Crystals of insulin grown in space let scientists determine the vital enzyme's structure and linkages with much higher resolution than Earth-grown crystals.



mineral
aquamarine

Sublimation of Iodine



Sublimation:
vaporizing a solid
and subsequently
condensing its
vapor.

Filtration: removing a solid substance from a liquid by passing the suspension through a filter.



**Gravity
Filtration**



**Crude oil filtration
(vacuum filtration)**

Decantation: a process for separating the liquid component of a solid—liquid mixture from the solid by pouring.



**Decanting whey
from the curds
in cheese making.**



**Decanting
a solvent
from a solute.**

Side arm or filtration flask



A filtration flask looks like a flask with a **short side arm**.

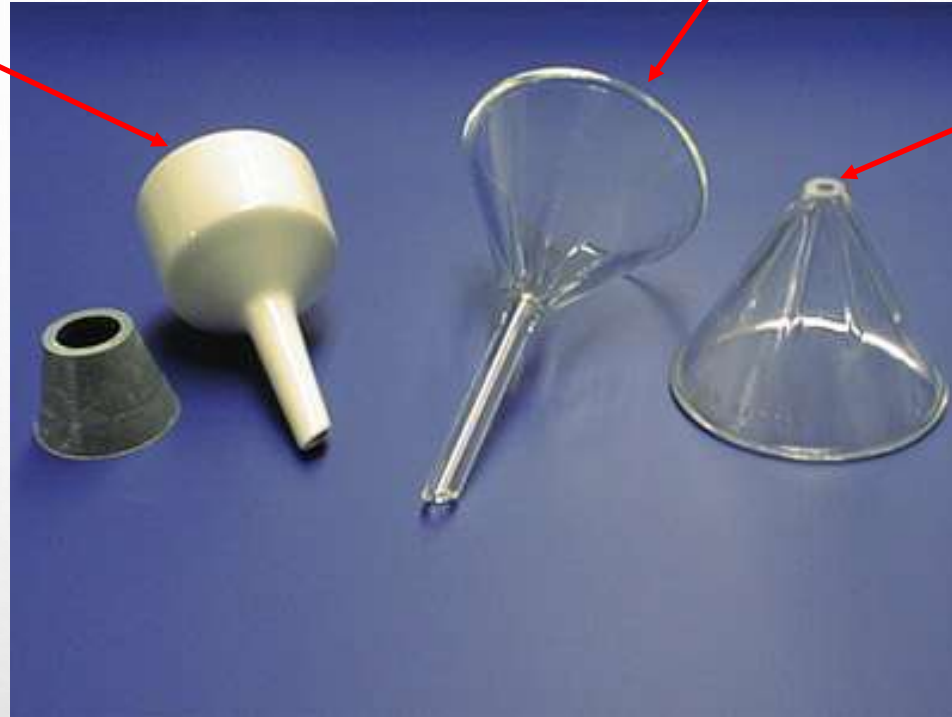
The "**arm**" is designed to **connect** the flask to a **vacuum source**.

When sealed on the top with a stopper or a Büchner funnel, the vacuum flask will **maintain a reduced pressure**.

Büchner Funnel

Stemmed Funnel

Stemless Funnel



A **Büchner funnel** is the white porcelain funnel. It requires an adaptor or **rubber stopper** with a hole in it to connect it to the top of a filtration flask.

A Büchner funnel is **used exclusively for vacuum filtrations**.