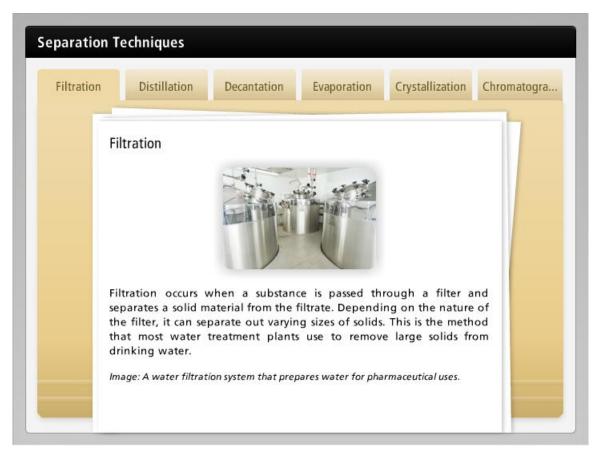
Introduction



There are many different types of separation techniques. Methods of separating mixtures include filtration, decantation, distillation, evaporation, crystallization, and chromatography. In this interactivity, click on each of the folders to learn more about each of these separation techniques.



Filtration



Filtration occurs when a substance is passed through a filter and separates a solid material from the filtrate. Depending on the nature of the filter, it can separate out varying sizes of solids. This is the method that most water treatment plants use to remove large solids from drinking water.

Image: A water filtration system that prepares water for pharmaceutical uses.



Distillation

Filtration	Distillation	Decantation	Evaporation	Crystallization	Chromatogra
	Distillation is the separating substance by heating the l vaporizes and then condensed liquid is by gravity or pres other substance(s). method that most v plants use to remove dissolved contam drinking water.	es from a liquid iquid until i condenses. The then separated sure from the This is the vater treatmen e salt and othe ninants from			

Distillation is the process of separating substances from a liquid by heating the liquid until it vaporizes and then condenses. The condensed liquid is then separated by gravity or pressure from the other substance(s). This is the method that most water treatment plants use to remove salt and other dissolved contaminants from drinking water.

Image: The most common laboratory tool used for distillation is a retort.



Decantation

Filtration	Distillation Decantation Evaporation Crystallization Ch	hromatogra
	Decantation	
	4	
	Decantation is a separation technique that is based primarily on	
	two physical properties, solubility and density. In order for two substances to be separable using decantation, they must be	
	two physical properties, solubility and density. In order for two	

Decantation is a separation technique that is based primarily on two physical properties, solubility and density. In order for two substances to be separable using decantation, they must be immiscible, meaning that they do not dissolve in each other, and they must have different densities, meaning that one of the substances will float on top of the other.

Image: Due to their individual properties, oil and water are not immiscible. When oil spills occur, marine spill response groups can sometimes use a boom, which is a floating barrier set up to contain an oil spill. Booms form a loop to enclose the oil and decant it from the water.



Evaporation

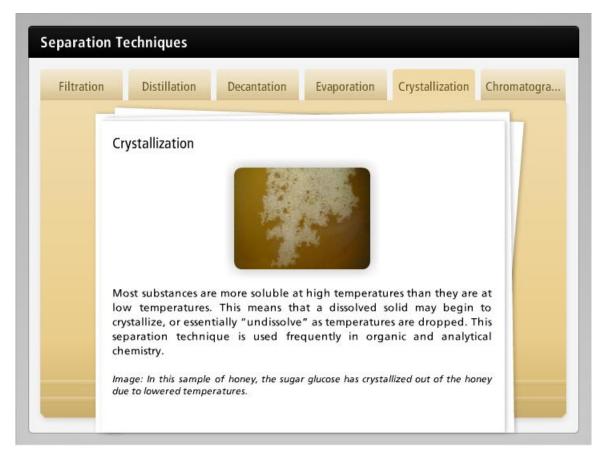
Filtration	Distillation	Decantation	Evaporation	Crystallization	Chromatogra.
	Evaporation A soluble solid ca out of a solution the liquid from th liquid does not hav up to its boiling po in conditions tha evaporate such temperatures or pressure and lower Image: Sea salt is evaporation. Ocean w flood into small man near the sea shore. The evaporate, leaving var ocean water behind.	by evaporating e solution. The ve to be heated int, but must be it allow it to as higher lower vapor humidity. harvested using ater is allowed to n-made reservoirs as pools are left to			

A soluble solid can be separated out of a solution by evaporating the liquid from the solution. The liquid does not have to be heated up to its boiling point, but must be in conditions that allow it to evaporate such as higher temperatures or lower vapor pressure and lower humidity.

Image: Sea salt is harvested using evaporation. Ocean water is allowed to flood into small man-made reservoirs near the sea shore. These pools are left to evaporate, leaving various salts from the ocean water behind.



Crystallization



Most substances are more soluble at high temperatures than they are at low temperatures. This means that a dissolved solid may begin to crystallize, or essentially "undissolve" as temperatures are dropped. This separation technique is used frequently in organic and analytical chemistry.

Image: In this sample of honey, the sugar glucose has crystallized out of the honey due to lowered temperatures.



Chromatography

Filtratio	n	Distillation	Decantation	Evaporation	Crystallization	Chromatogra.
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	Chro	omatography				
			Before Chromatography	During/After Chromatography		
				1		
				111		
				i : i		
				그는 가지는 것이다. 그가 걸었는 것 것 같아요. 그 것 같아?	y for each other.	
	chror are u	matography, t used to separa	he various levels te the individua	of attraction for l color compone	r a solvent or surfa nts within a mixt	ace ure
	chror are u of dy level	matography, t used to separa yes. The differ l of attraction	he various levels te the individua ent colors with t to the surface th	s of attraction for I color compone he mixture will e at they are separ	r a solvent or surfa nts within a mixtu ach have a differe ating onto. This v	ace ure ent
	chron are u of dy level cause	matography, t used to separa yes. The differ l of attraction e the mixture t	the various levels te the individua ent colors with the to the surface the to split into lines	s of attraction for I color compone he mixture will e at they are separ of different colo	r a solvent or surfa nts within a mixtu ach have a differe ating onto. This v	ace ure ent will

Different molecules have different levels of affinity for each other. In chromatography, the various levels of attraction for a solvent or surface are used to separate the individual color components within a mixture of dyes. The different colors with the mixture will each have a different level of attraction to the surface that they are separating onto. This will cause the mixture to split into lines of different colors.

Image: This image shows the before and after of chromatography performed on three dyes. When the solvent is applied the colors from which each dye is composed separate out into individual colors.

