Separation Methods Summary

A. Mechanical Mixtures

MIXTURE	METHOD	WHEN TO USE METHOD
SOLID in SOLID	Hand separation	Large chunks present among other solids
	Gravity separation	The density of the desired solids is much different from the density of the other solids
	Solvent extraction	One solid preferentially dissolves in a particular solvent
	Chromatography	The solids are coloured, present in small amounts and are soluble in some solvent or mixture of solvents
SOLID in LIQUID	Hand separation	A few large pieces of solid are present in the liquid
	Gravity separation	Solid particles are present in a ***small*** amount of liquid
	Filtration	Solid particles are present in a ***large*** amount of liquid

B. Solutions

MIXTURE	METHOD	WHEN TO USE METHOD
SOLID in LIQUID	Evaporation	The solid is wanted and the liquid is not
	Distillation	The liquid is wanted; the solid may or may not be wanted
	Solvent extraction	An immiscible added solvent preferentially dissolves at least one but not all of the solids present
	Recrystallization	One dissolved solid is much less soluble than the others present (if any); the liquid is not wanted
	Chromatography	Small amounts of more than one coloured solid are present; the liquid present is not wanted
LIQUID in LIQUID	Distillation	Two or more liquids are present and have different boiling temperatures
	Solvent extraction	An immiscible added solvent preferentially dissolves at least one but not all of the liquids present