Expt. No..... **Colloids** Page No. 01

On the basis of size of particles of solute in solution we can classify the solution into three types :-

i) True Solution
ii) Colloids
iii) Suspension.

Difference between True solution, Colloid & Suspension

	True Solution	Colloid	Suspension.
i.	Size of Particle < 1000 nm	Size of particle 1nm – 1000nm	Size of particle > 1000 nm.
ii.	Can not be filtered by any filter paper.	Can be filtered only by Parchment paper	Can be filtered by ordinary filter paper.
iii.	It can not scatter the light or Tyndal effect	It can scatter the light & can show Tyndal effect	It can not show Tyndal effect.
iv	Particle do not settle down at all.	Very few particle only settle down on Centrifugation.	Particle can Settle down under gravity.
v	Solute particles are invisible	Particles (dispersed phase) are almost invisible but some particle can be seen by ultra microscope.	It's particle can be seen at ordinary Condition.
vi.	Example: Sucrose aqueous solution	Ink, Blood, Milk	i.e Muddy water

Types of Colloidal System

A Colloidal System is made up of two phases one which is scattered or dispersed in the other. That phase which is scattered in other is called dispersed phase or external phase or discontinuous phase and the other in which scattered phase or dispersed phase is present is called dispersion medium or external phase or continuous phase. Generally the amount of dispersed phase is smaller with respect to dispersion medium the dispersed phase or dispersion medium may be of any state of matter i.e may be of solid, liquid or gas.

Colloidal System based on State of Matter:

Dispersed phase	Dispersion midium	Types of Colloidal	Example
I. Solid	Solid	Solid sol	Gem stones.
II Solid	liquid	sol	Paints
III. Solid	Gas	Aerosol	Smoke dust
IV. liquid	Solid	Gel	Cheese, butter.
V. liquid	liquid	Emulsion	Milk.
VI liquid	Gas	Aerosol	fog, mist, Cloud.
VII) Gas	Solid	Solid sol.	Pumice stone
VIII) Gas	liquid	Foam	Froth, Soap lather
IX) Gas	Gas	Air	Air.

Classification of Colloids based on interactions between dispersed phase & dispersed midium

It is of Two Types:

i) lyophilic Colloids ii) lyophobic Colloid.

i) lyophilic Colloids:- lyo = liquid, & philic = attraction, hence when dispersed phase is liquid (dispersion midium) loving species then it is called lyophilic Colloids, If the liquid is water then it is called hydrophilic hydrophil. Colloid. or Solvent loving Colloids.

Characteristics of lyophilic Colloids:-

i) These colloids are quite stable and it is difficult to coagulate or precipitate it.

ii) If the dispersion midium of the Colloid is removed by evaporation, and left dispersion phase again mixed with despersion midium then we can get back the Colloid, so it is called "reversible Colloid" also.

Example: Protein, Starch, gelatin, Albumin etc

(2) lyophobic Colloids:- when dispersant phase lyo: liquid, phobic: repulsion. So, when dispersed phase dislike or hate dispersion midium or liquid then the Colloid is called lyophophobic Colloids or Solvent hating Colloids, if the despersion midium is water then it is called hydrophobic Colloids.

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Characteristics of lyophobic Colloids:

1. These Colloids can be coagulated or precipitated easily.
2. If once these Colloids are precipitated then it can not be reversed back by simply mixing residue with dispersion medium, so called irreversible Colloid also.

Examples: Cu, Ag, Sulphur, $Fe(OH)_3$ etc are lyophobic Colloids or irreversible Colloids or solvent hating Colloids.