SURFACE CHEMISTRY

Surface chemistry deals with the phenomena that occur at the interface of two surfaces which can be solid-liquid, solid-gas, solid-vacuum, liquid-gas, etc. **Thomas Graham** (1861) studied the process of diffusion of dissolved substances through parchment paper or an animal membrane. He divided substances into two classes:

(i) Crystalloids
(ii) Colloids.

Substances like sugar, urea, common salt, etc. which readily passed through the membrane while in the dissolved state were called **crystalloids**.

Substances like starch, glue, gelatine, etc, which in the dissolved state either do not pass at all or pass through very slowly are called **colloids.**

In a colloid, the fine solute particles (dispersed phase) are heterogeneously dispersed in another substance called dispersion medium. Depending upon the nature of interaction between dispersed phase and dispersion medium colloids are classified as Lyophilic (solvent attracting) and Lyophobic (solvent repelling). If water is the dispersion medium. the terms used are hydrophilic and hydrophobic.

Disperse phase: It is a component present in small proportion and consists of particles of colloidal dimensions (1-1000 nm).

Dispersion medium: The medium in which colloidal particles are dispersed is called the dispersion medium. In a colloidal solution of sulphur in the water, sulphur particles constitute disperse phase and water constitutes a dispersion medium.

The two phases, namely dispersed and dispersion can be solid, liquid or gas. Thus, different types of colloidal solutions are possible depending on the physical state of the two phases. It should be borne in mind that gases between themselves cannot form a colloid due to their property of diffusion to give homogeneous mixtures.

Lyophilic And Lyophobic Colloids

Depending upon the interaction between the disperse phase and the dispersion medium, the colloidal solutions are classified into two types:

1. Lyophilic colloids and 2. Lyophobic colloids.

1. Lyophilic colloids

In these colloids, the dispersed phase has great affinity for the dispersion medium.

2. Lyophobic colloids

In this type of sols, dispersed phase has very little affinity for dispersion medium.