

## Osmosis and diffusion

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### Abstract:-

Today's article is about osmosis and diffusion. Scientist RJH Dutrochet and Scottish chemist Thomas Graham is credited for his discovery of osmosis in 1826 and diffusion in 1829, respectively.

### Osmosis

#### Definition:-

By definition, Osmosis is the spontaneous flow of the solvent molecules through a semipermeable membrane into a solution or from a dilute solution to a concentrated one.

If two layers of the solution and water are separated by a membrane semipermeable membrane through which only water can pass and the solvent will push through it into the solution it is called osmosis. Abbe Nollet observed when a solution is separated from its pure solvent by a semipermeable membrane a membrane which allows solvent to pass through it but not the solute there is a

spontaneous flow of solvent went into the solution. Osmosis is also observed when you were to solutions made from the same solvent but of different concentrations are separated from each other by a semipermeable membrane. In such cases solvent flows from less concentrated solution into the more concentrated one.

The hydrostatic pressure which is just sufficient to prevent Osmosis is called osmotic pressure. The phenomenon of osmosis and osmotic pressure can be illustrated by simple experiment as follows. Prepare a fairly concentrated solution of sugar. Place it in a cup the walls of which are semipermeable. The cup is closed by our piston. Now lower this to a bigger vessel containing water. The process of osmosis spontaneously starts. The solvent molecules start entering the solution through the membrane the spontaneous flow of the solvent was the solution can be stopped by applying pressure on the solution. This can be done by placing weight on the Piston as shown. Applied pressure produced by placing weight will tend to stop Osmosis which comes into play as a result of placing excess pressure of the solution side of force is the spontaneous

process of osmosis. The excess pressure which must be applied on the solution side to prevent the flow of the solvent into it through semipermeable membrane is called Osmotic pressure of the solution.

### **Diffusion:**

Diffusion can be illustrated pretty easily. Taking a strong solution of potassium permanganate in a beaker and carefully covering its surface with a layer of water. The purple colour potassium permanganate molecules will gradually diffuse into water until the two layers merged into one another and become uniform the colour and homogeneous this is called diffusion. It is of molecule behave like those of a gas and possesses kinetic energy in exert pressure.

### **Definition:-**

By definition, diffusion can be termed as net passive movement of molecules or particles from the region of higher to the region of lower concentration.

Diffusion is driven by a gradient in concentration. The concept of diffusion is widely used in many fields, including physics, chemistry,

biology and so on.

### **Reference:-**

Inorganic Chemistry:- prof K.l