

SURFACE CHEMISTRY

1. GENERAL INTRODUCTION

Surface Chemistry is that branch of chemistry which deals with the study of the phenomena occurring at the surface or interface, i.e., at the boundary separating two bulk phases.

The two bulk phases can be pure compounds or solutions. The interface is represented by putting a hyphen or a slash between the two bulk phases involved, e.g., solid-liquid or solid/liquid. No interface exists between gases as they are completely miscible. Important phenomena occur at the interface, e.g., dissolution, crystallisation, corrosion, heterogeneous catalysis, electrode processes, etc.

2. ADSORPTION

2.1 Definition

The phenomenon of attracting and retaining the molecules of a substance on the surface of a liquid or solid resulting in to higher concentration of the molecules on the surface is called **adsorption**. Adsorption of gases at metal surface is called occlusion.

2.2 Adsorbate and Adsorbent

The substance which gets adsorbed on any surface is called **adsorbate** for example, if a gas gets adsorbed on to the surface of a solid, then the gas is termed as the adsorbate.

The substance on the surface of which adsorption takes place is called **adsorbent**.

Adsorbent may be a solid or a liquid. Metal powders, powdered charcoal, animal charcoal silica powder etc. are commonly used as adsorbents.



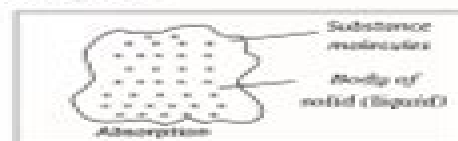
2.3 Desorption

The removal of the adsorbed substance from a surface is called **desorption**. This can be done by heating or reducing the pressure of the system.



2.4 Absorption

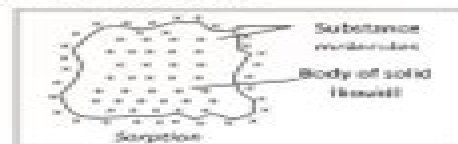
When the molecules of a substance are uniformly distributed throughout the body of a solid or liquid, this phenomenon is called **absorption**.



2.5 Sorption

The phenomenon in which adsorption and absorption occur simultaneously is called **sorption**. Dyes are absorbed as well as adsorbed in cotton fibre.

Adsorption is instantaneous i.e. a fast process while absorption is a slow process.



2.6 Difference between Adsorption and Absorption

Main points of difference between adsorption and absorption are given below.

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