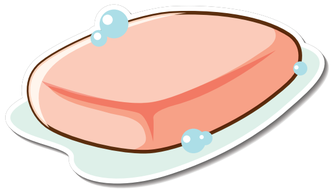
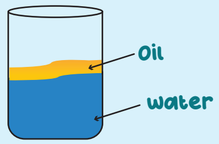
SURFACE CHEMISTRY



Dispersion of one liquid into another liquid which is immersible



Types

- Oil dispersed in water (O/W type) Milk
- Water dispersed in oil (W/O type) Butter

Emulsion

Accumulation of molecular particles of at the surface rather than in the bulk of a solid or liquid is known as Adsorption.

It is a surface phenomenon.

PHYSISSORPTION

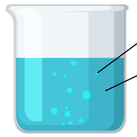
- It is reversible.
- Simply on surface of adsorbent by weak van der waal's forces.
- Low temperature and high pressure are favourable

CHEMISORPTION

- Irreversible process
- Simply on surface of absorbent via chemical bonds.
- High temperature and high pressure is favourable.

Colloids

Heterogeneous mixture where one substance is dispersed in another substance called dispersion medium



- Multimolecular colloids large no. of atoms/ molecules aggreate (size < 1 nm)
- Macromolecular colloids: large molecules (Polymers)
- Associated: Low concentration colloids like normal electrolytes

Lyophilic Colloids: Solvent loving

Lyophobic colloids: Solvent hating

Bond on nature of interaction

Classification Based on Physical State

Dispersed Phase	Dispersion Medium	Type of Colloid	Example
Gas	Liquid	Foam	Shaving Cream
Gas	Solid	Solid Sol	Pumice Stone
Liquid	Gas	Liquid aerosol	Fog
Liquid	Liquid	Emulsion	Milk
Liquid	Solid	Gel	Butter
Solid	Gas	Solid aerosol	Dust
Solid	Liquid	Sol	Ink
Solid	Solid	Solid Sol	alloys

PURIFICATION

- Dialysis
- Electrodialyss
- Ultrafiltratin

COLLIGATIVE PROPERTIES

- Tyndall effect
- Brownian Moment

Methods of Preparation

DISPERSION METHOD

MECHANICAL
BREEDING'S ARC

CONDENSATION METHOD

PEPTIZATION
EXCHANGE OF SOLVENT
EXCESSIVE

CHEMICAL METHOD

OXIDATION
REDUCTION
HYDROLYSIS
DOUBLE

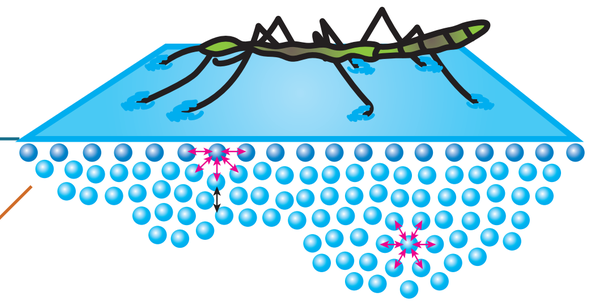
FRENDLICH ADSORPTION THEOREM

$$\frac{x}{m} = Kp\frac{1}{N}(N > 1)$$

$$\log\frac{x}{m} = \log K + \frac{1}{N}\log p$$

Adsorption isotherm means to express variation in the amount absorption with pressure at constant temperature

Thermodynamics of Isotherm



APPLICATION

Purification of drinking water.
Medicines
Rubber Industry
Industrial Production

Substance which alter the rate of reaction and remain chemically and quantitatively unchanged after the reaction are known as catalyst and phenomenon

Types of catalysis

Enzyme catalysis

Enzyme that catalyse many life process in living organism are termed as Biochemical catalysts knows as Biochemical catalysis.

Mechanism

Step 1: Binding of enzyme to substrate to form an activated complex
$E + S \rightarrow ES^*$

- Lock and key theory
- Induced Fit theory

Mechanism

Step 2: Decomposition of activated complex to form product
$ES^* \rightarrow E + P$

Shape selective

Catalytic reaction that depends upon pore structure of catalyst and size of reactant and product moelcule (Zeolites)

Homogeneous:

Catalyst and Reactant in Same Physical State:

$$2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$$

Homogeneous:

Reactant and Catalyst in different Physical State:

$$2SO_2(g) \xrightarrow{Pt} 2SO_3(g)$$