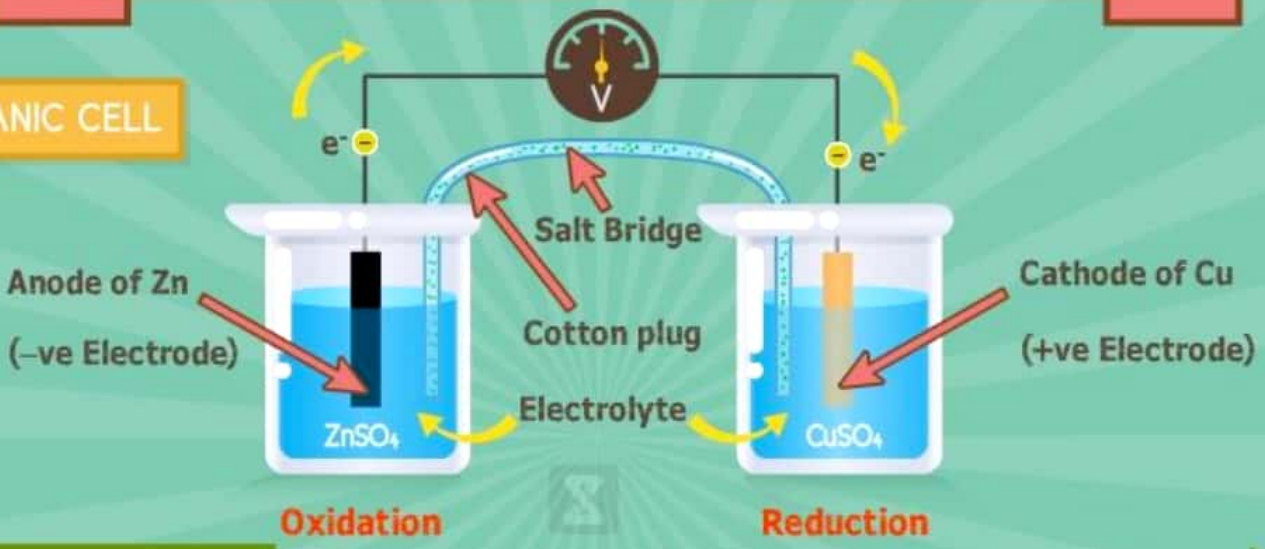
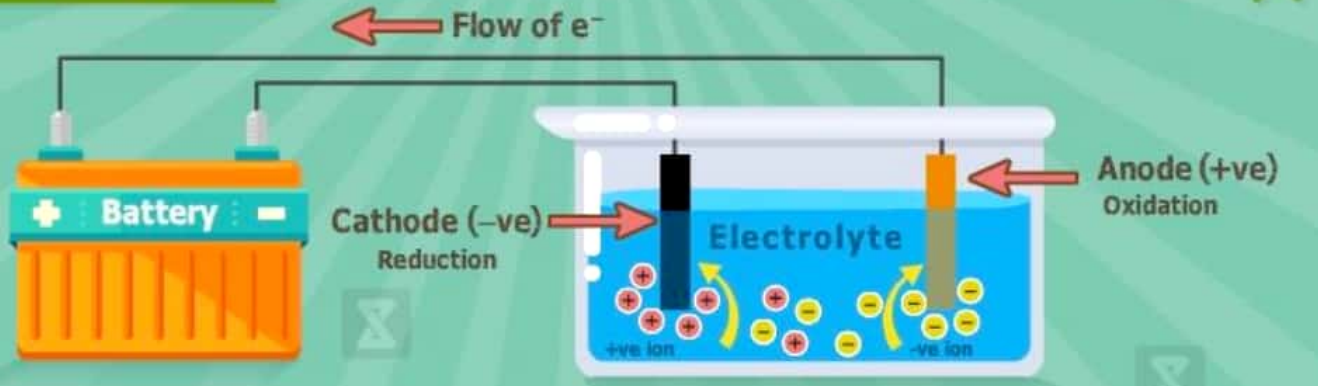
ELECTROCHEMISTRY

COMPARING GALVANIC AND ELECTROLYTIC CELL

GALVANIC CELL



ELECTROLYTIC CELL



PROPERTY	ELECTROLYTIC CELL	GALVANIC CELL
Basic structure	Two half cells connected by salt bridge.	Both electrodes placed in same container
Energy conversion	Electrical energy → Chemical energy	Chemical energy → Electrical energy
Transfer of electrons on the electrode	Positive(anode) → Negative(Cathode)	Negative(anode) → Positive(Cathode)
Anode	Positively charged electrode	Negative terminal cell
Cathode	Negatively charged electrode	Positive terminal cell

WHAT ARE COLLOIDS ?

Is Milk a Colloidal Solution?

Particle size > 10^{-9} m

No — Particle size is less than 10^{-9} m

Yes — Particle size is greater than 10^{-9} m

Salt Solution (True Solution)

Milk (Colloidal)

Colloids are everywhere around us

Colloid = dispersed phase + dispersed medium

How Curd is Formed ?

Coagulation : It is a process of forming precipitate by adding electrolyte to a colloidal solution.

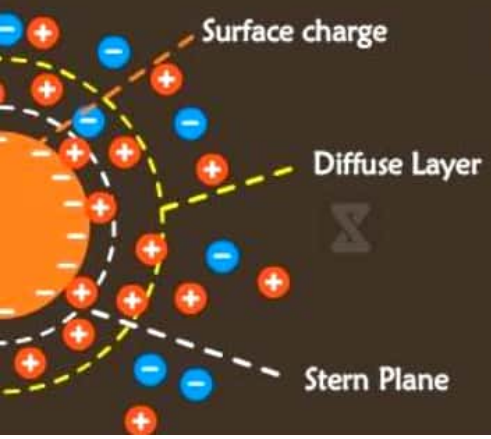
Adding electrolytes to colloidal solution causes opposite charge to combine and form precipitate. Here acid is the electrolyte added and curd is the precipitate fomed.

Tyndall Effect

Tyndall effect is observed in morning, where sunlight scatters due to colloidal solution i.e. Fog.

Light passes through without scattering.

Light scatters due to large particle size



Stability of Colloids

Colloids are generally unstable. They are stabilised by forming a electric double layer.

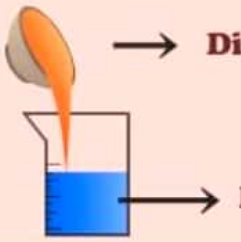
Surface Charge :- Formed by absorbing charged ions on particle.

Diffuse Layer :- Diffuse layer consists of both the ions with higher concentration of counter ions.

Stern Layer :- Layer formed due to electrostatic attraction of opposite ions to the particle surface

12 AMAZING COLLOIDS USED IN OUR DAILY LIFE

Colloid is a homogeneous non-crystalline substance consisting of large molecules or ultra-microsopic particles of one substance dispersed through a second substance



Solid	Liquid	Gas
		

Paint

Dispersed Phase	Dispersed Medium
	

Ice Cream

Dispersed Phase	Dispersed Medium
	

Tooth Paste

Dispersed Phase	Dispersed Medium
	

Smoke

Dispersed Phase	Dispersed Medium
	

Jam

Dispersed Phase	Dispersed Medium
	

Sponge

Dispersed Phase	Dispersed Medium
	

Milk

Dispersed Phase	Dispersed Medium
	

Clouds

Dispersed Phase	Dispersed Medium
	

Butter

Dispersed Phase	Dispersed Medium
	

Hair Gel

Dispersed Phase	Dispersed Medium
	

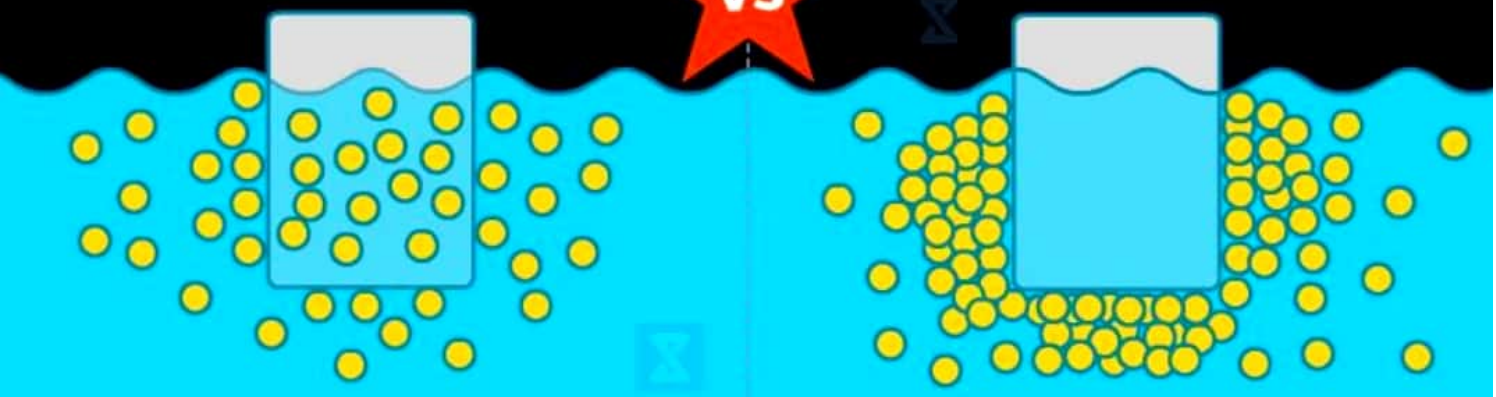
Blood

Dispersed Phase	Dispersed Medium
	

Shaving Cream

Dispersed Phase	Dispersed Medium
	

Absorption vs Adsorption



Absorption

Adsorption

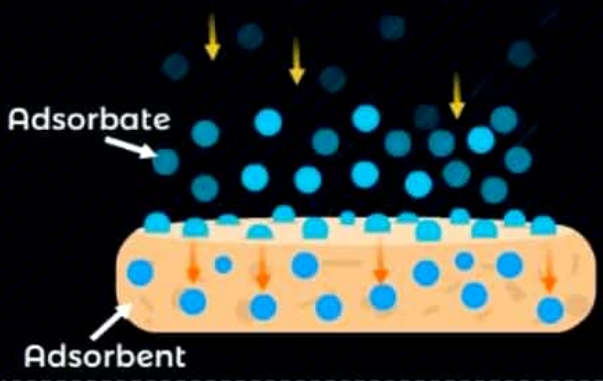
Absorption is the distribution of a certain substance through out the volume of another substrate.

Adsorption is the attachment of a certain substance onto the surface of another substrate.

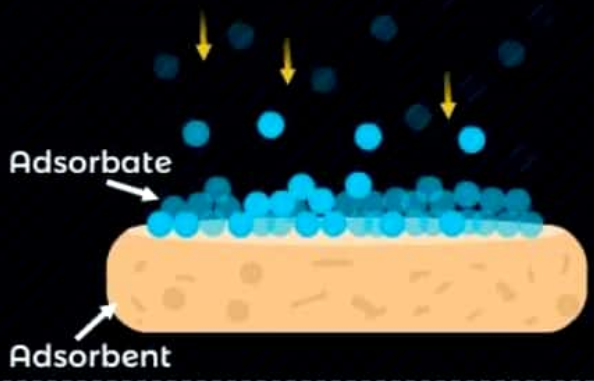
Absorbed materials can be separated between different phases due to their chemical characteristics.

Adsorption can be used to separate out certain material by adsorbing them onto one surface.

ILLUSTRATION



ILLUSTRATION



Materials get absorbed into other material through the availability of space and also due to the properties of each material.

The vacant surface of the adsorbent has extra energy that stimulates the attachment of foreign molecules on to it.

Absorbed materials remain within the space of the absorbent without having a chemical relationship being perfectly intact as when it is free

Adsorbates bind onto the surface of the adsorbent most commonly through van der waals interactions or through covalent bonds.