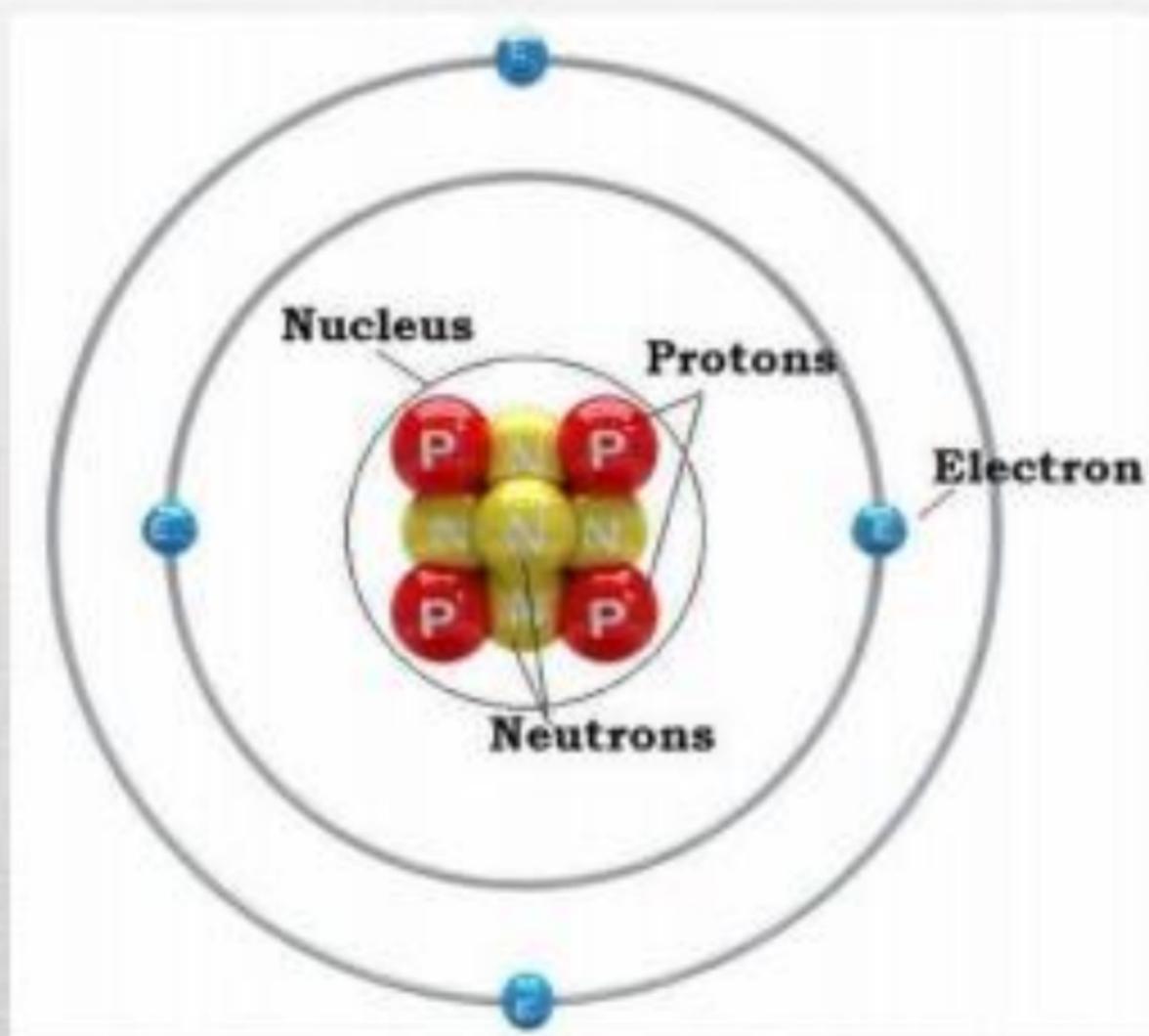


Atomic Structure , Matter and Radioactivity



Matter in Our Surroundings - Class 9th, Chapter 1

Is matter around us pure ? , class 9th , chapter 2

Atom and molecule , class 9th , chapter 3

Structure of Atom , class 9th , chapter 4

Matter in Our Surroundings - Class 9th, Chapter 1

MATTER in our **Surroundings**



SOLID



LIQUID



GAS

Introduction

Pancha Tattva

THE FIVE ELEMENTS



Water



Ether



Earth



Air

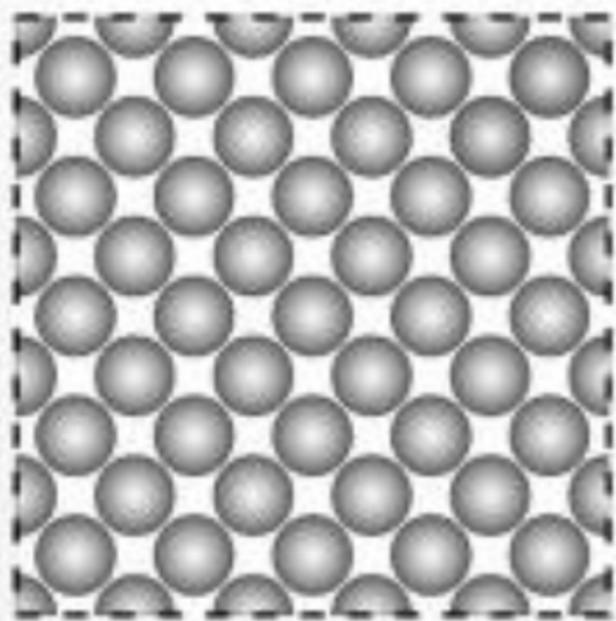


Fire

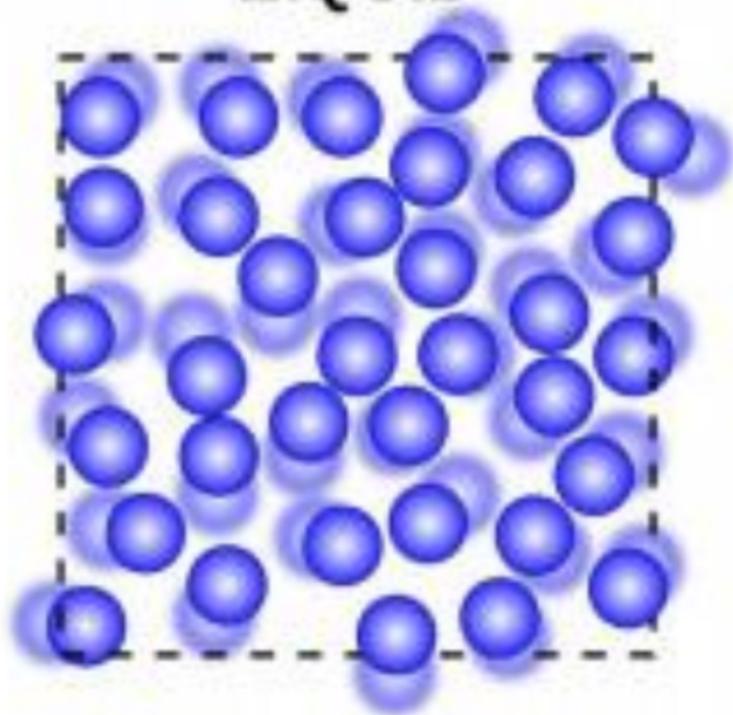
Properties of Matter

- **Matter is made up of very small particles which are very hard to see through naked eyes .**
 - **Particles of matters possess kinetic energy which means they are constantly moving they move faster with in increase in the temperature means kinetic energy increase with an increase in temperature .**
 - **पदार्थ बहुत छोटे कणों से बना होता है जिन्हें नग्न आंखों से देखना बहुत कठिन होता है।**
 - **पदार्थ के कणों में गतिज ऊर्जा होती है, जिसका अर्थ है कि वे लगातार गतिशील रहते हैं, वे तापमान में वृद्धि के साथ तेजी से आगे बढ़ते हैं, इसका अर्थ है कि तापमान में वृद्धि के साथ गतिज ऊर्जा में वृद्धि होती है।**
-

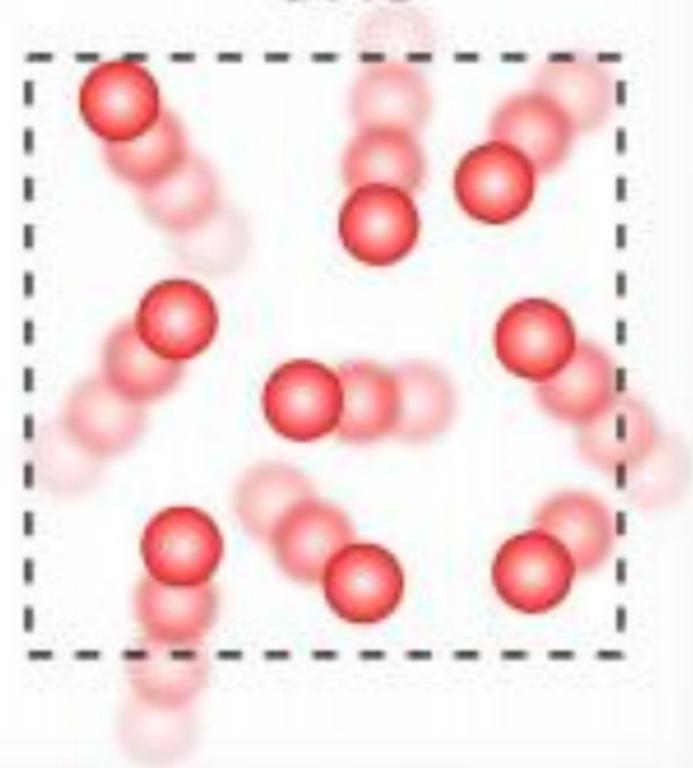
SOLID



LIQUID

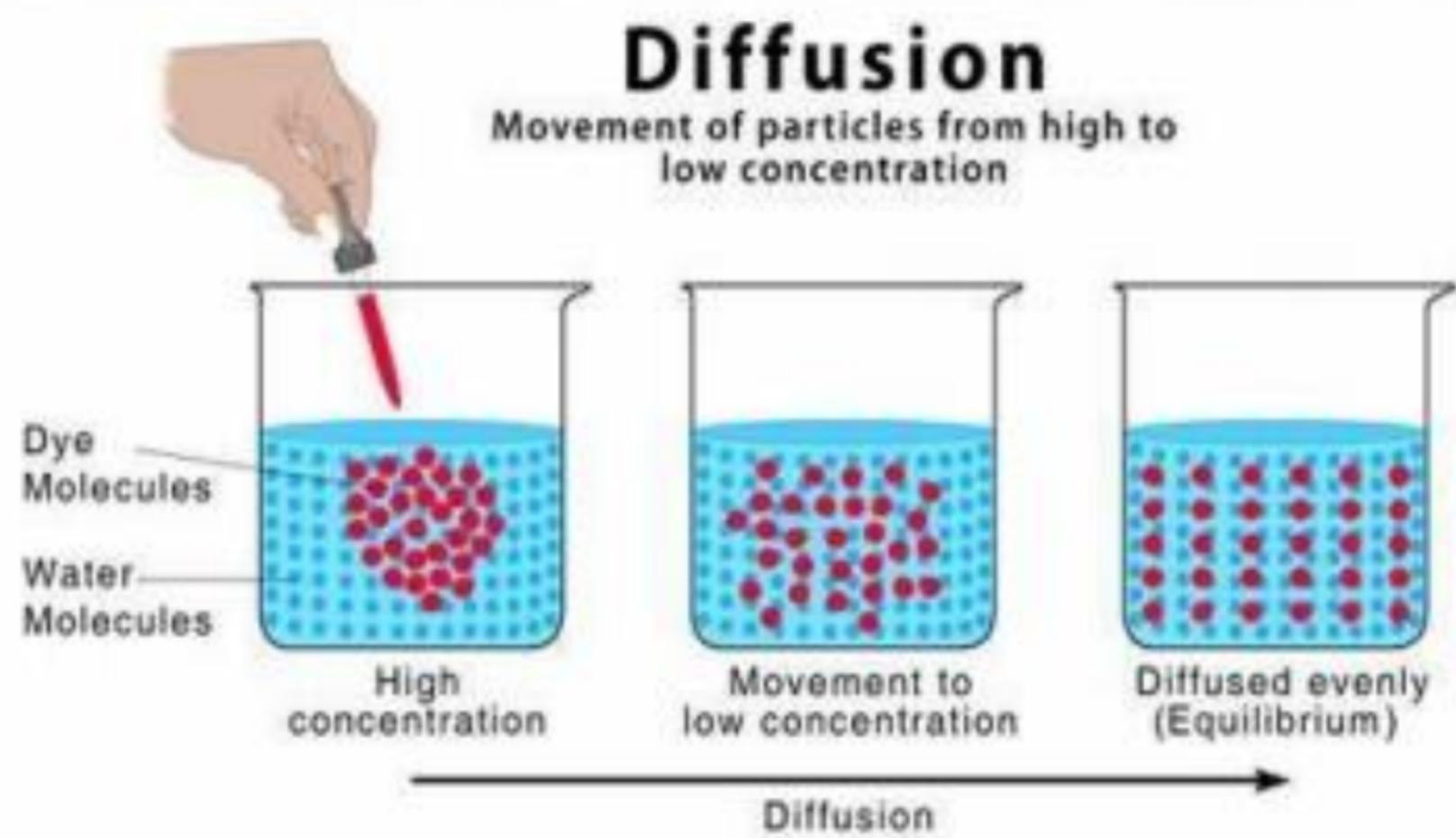


GAS



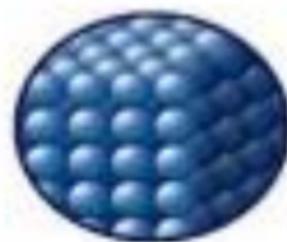
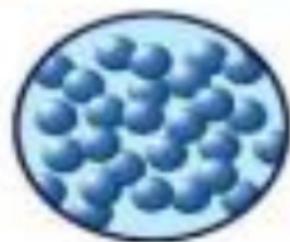
Diffusion

- **Particles of matter intermix on their own with each other by getting into the spaces between the particles . this is called diffusion .**
 - **Diffusion become faster on heating as it increase the speed of particles.**
 - **There is a force of attraction acting between the particles that keep the particle together .**
 - **The strength of the force of attraction varies from one kind of matter to another .**
-



States of Matter

States of Matter

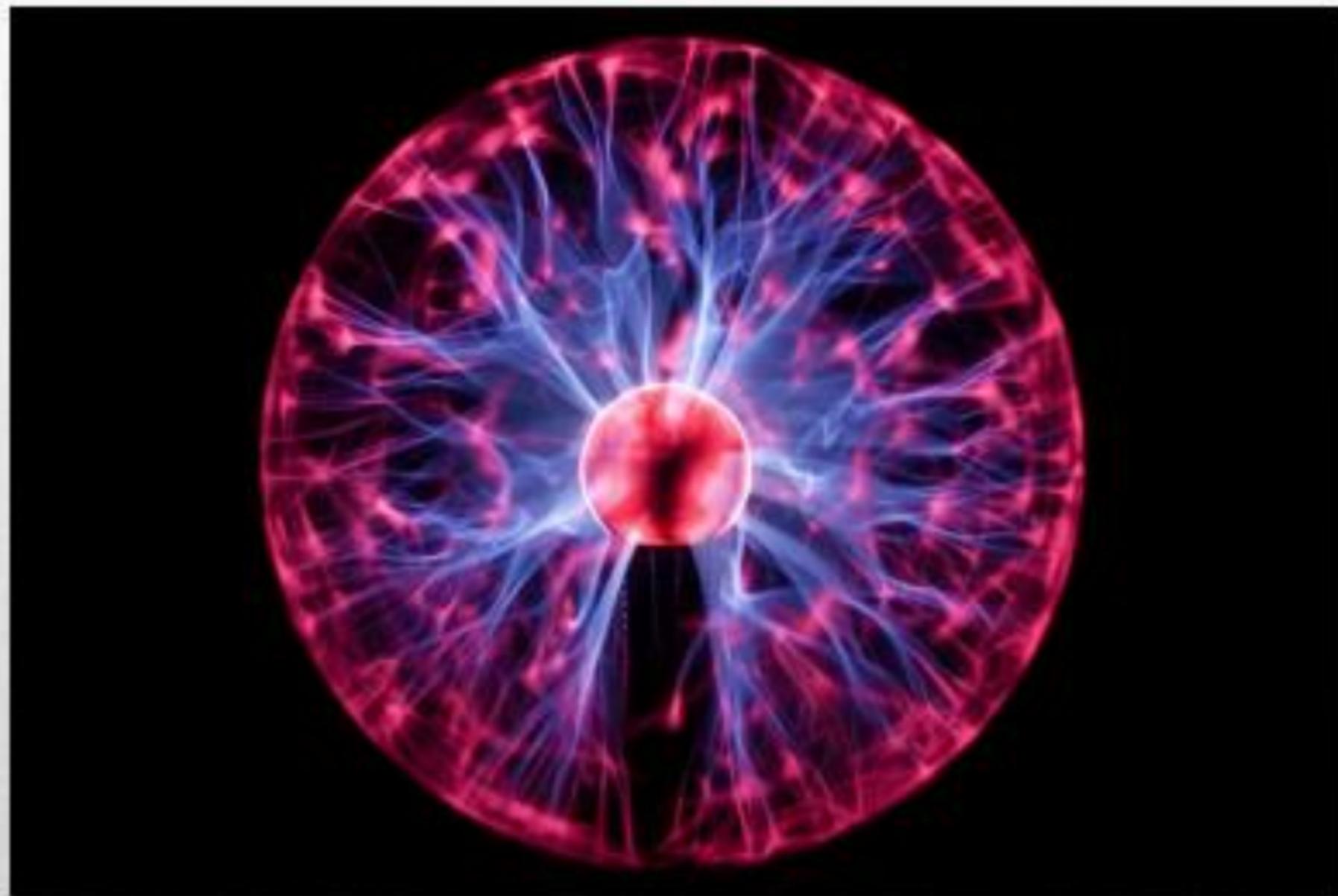


Gas

Liquid

Solid

Plasma State





Nebula



Flame



Lightning

Plasma

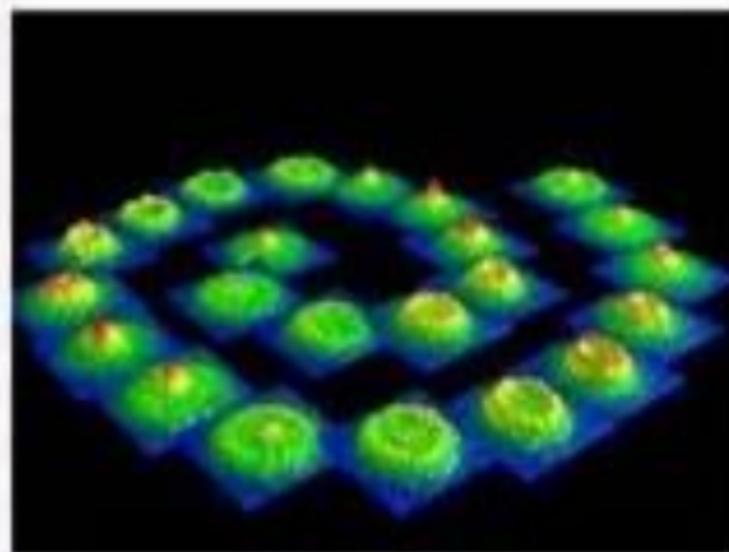


Stars



Aurora Borealis

What is a Bose-Einstein Condensate?



- This state of matter is a new edition to the crew.
- It all starts when the atoms start to get cold, really cold.
- When the atoms get cold, they get closer and begin to clump up.
- When the atoms clump up, they become one big blob that all look the same.

Properties of Solid State

Properties of Liquid State

Properties of Gaseous State

Solid



- Rigid
- Fixed Shape
- Fixed Volume
- High Density
- Closely tight and organized particles
- Slightly Compressible

Liquid



- Not Rigid
- No Fixed Shape
- Fixed Volume
- Average to High Density
- Closely tight but not disorganized particles
- Slightly Compressible

Gas

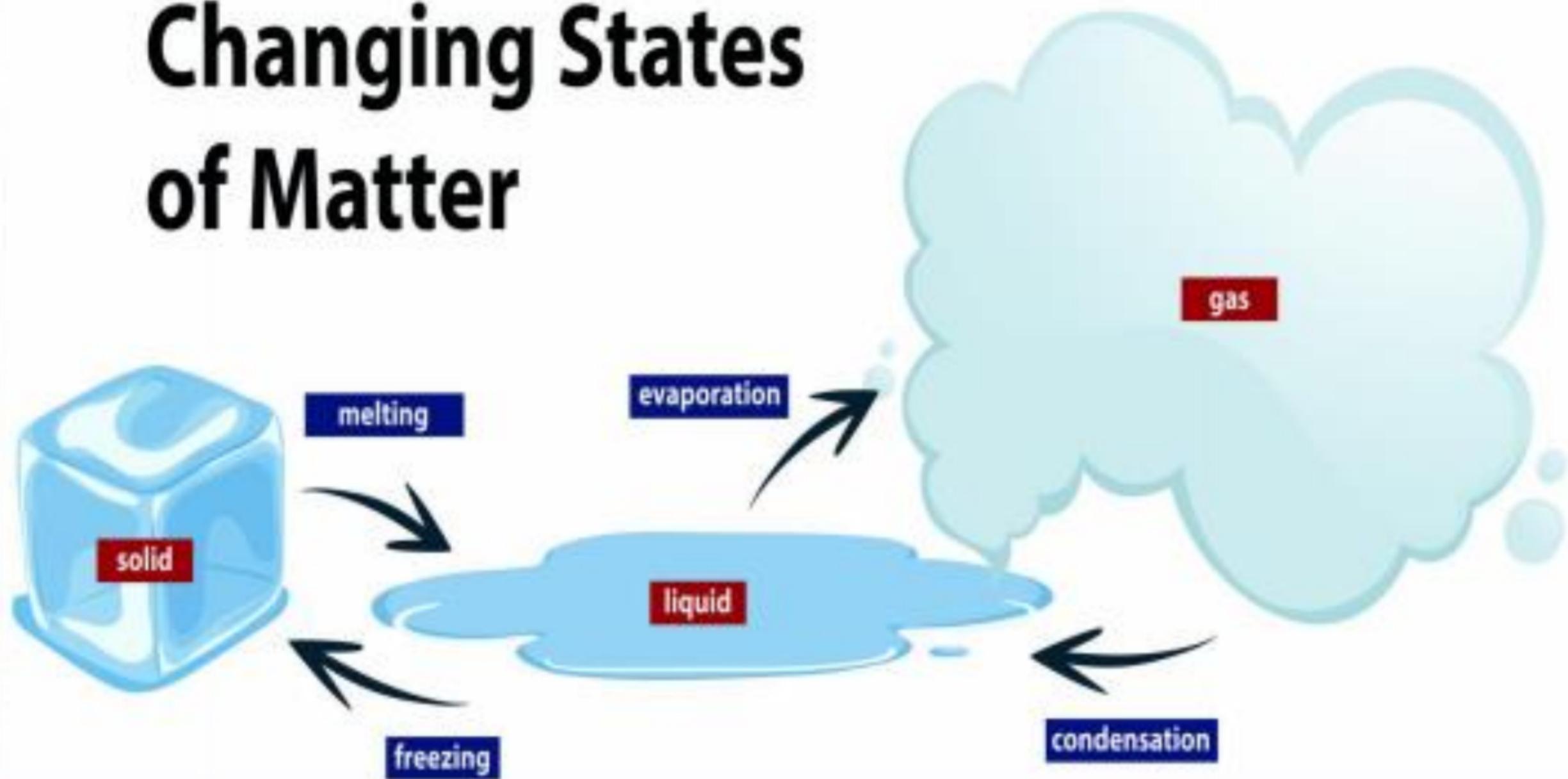


- Not Rigid
- No Fixed Shape
- No Fixed Volume
- Low Density
- Far apart and disorganized particles
- Highly Compressible

”

Can Matter Change its State

Changing States of Matter



- **When the temperature of solid rises, the kinetic energy of particle increase which induces higher speed vibrations.**
 - **The energy supplied by energy exceeds the force of attraction between the particles, promoting particles to leave their fixed positions and attain greater mobility .**
-

- **At a certain point the solid start converting into liquid through melting . the process of melting is also known as fusion .**
 - **The minimum temperature at which a solid melt to become a liquid at the atmospheric pressure is called as a melting point.**
 - **The melting point of a solid is an indication of the strength of the force of the attraction between its particles.**
 - **The melting point of ice is 273.15 Kelvin**
-

Effect of Temperature Change

नापमान परिवर्तन का प्रभाव
(गुप्त अंश)

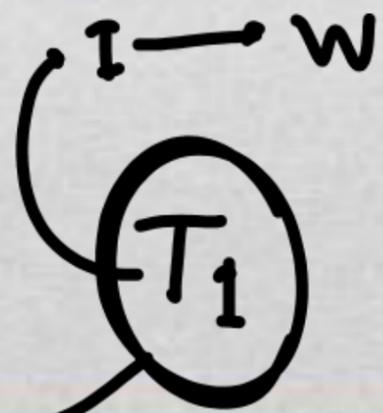
पानी
Liquid

Solid द्रव

Fat

Requird

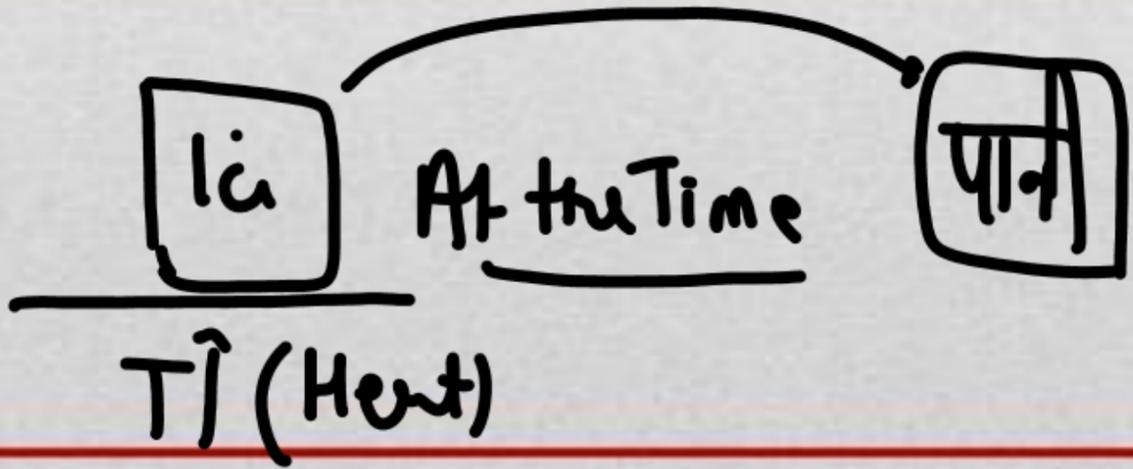
Heat

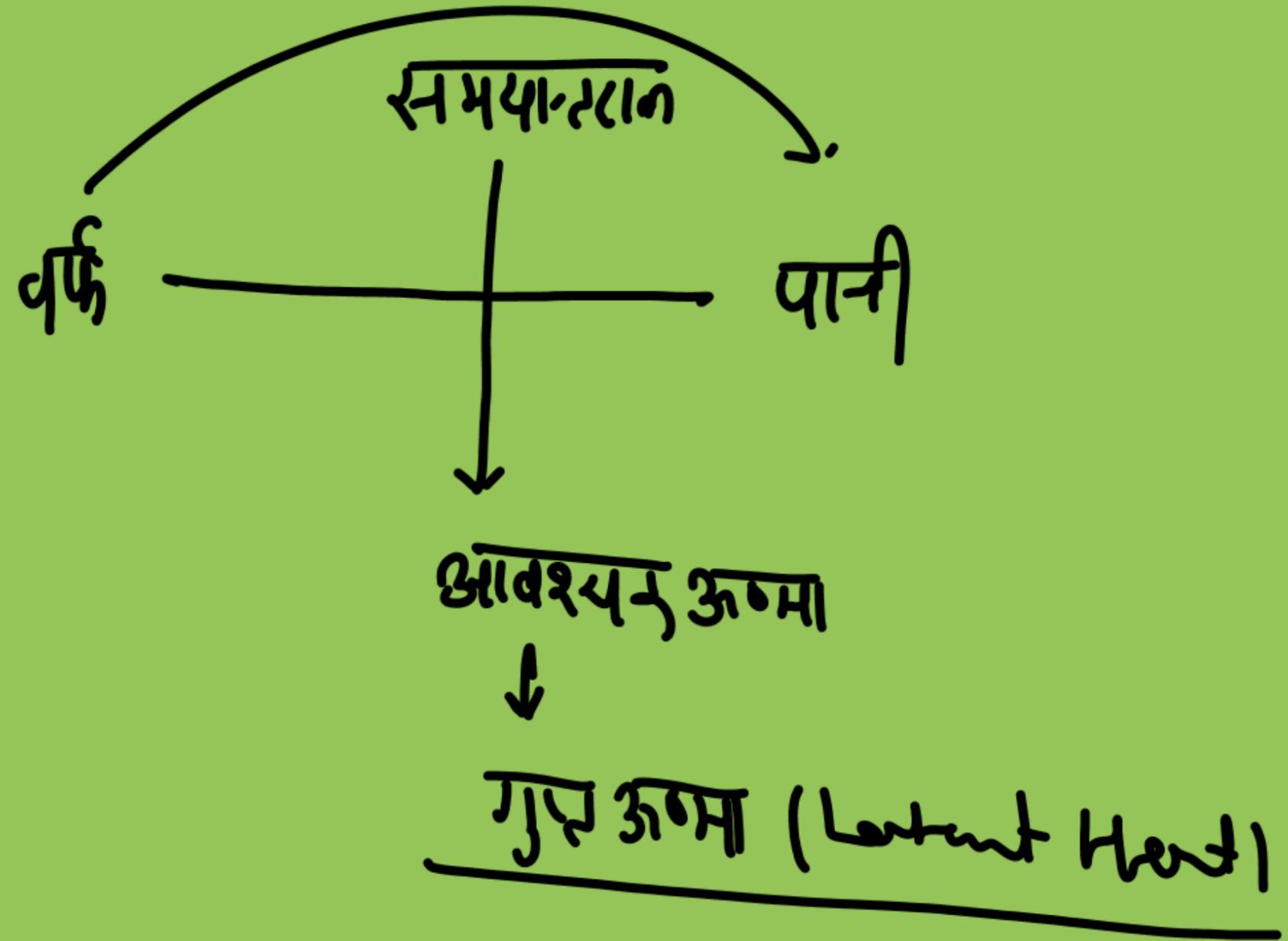


Latent heat of fusion

- The amount of heat energy that is required to change 1 kilogram of solid into liquid at atmospheric pressure at its Melting point is known as a latent heat of fusion.
- This heat energy absorb by solid without showing any rise in temperature in known as latent heat.

Time Interval = T_1

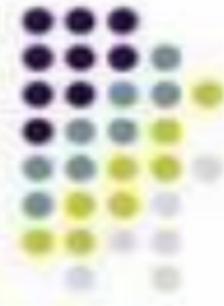




Latent Heat of Vaporization

घाष्ण की गुणधर्म

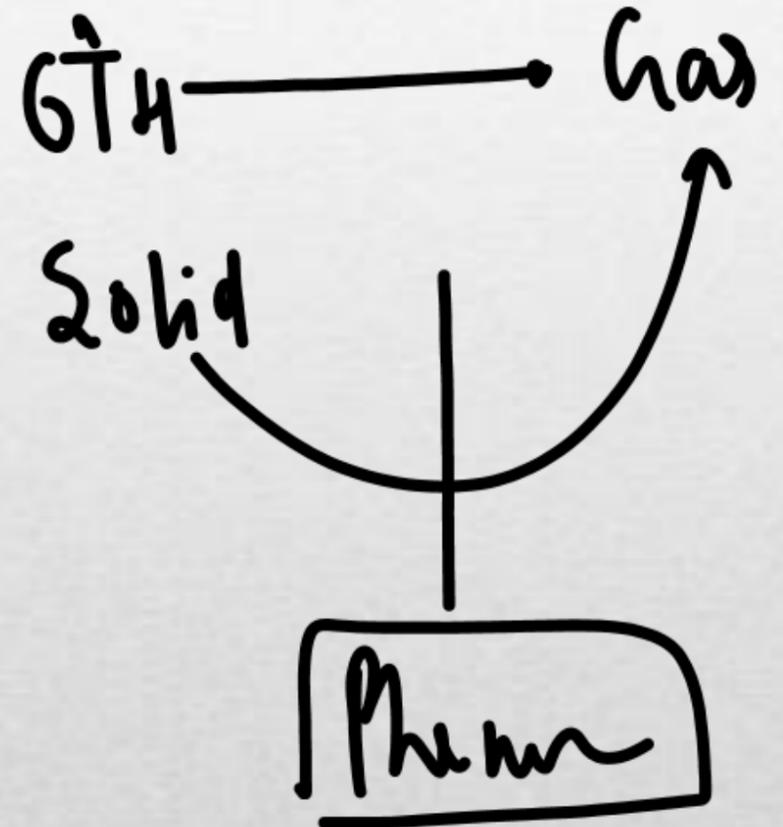
Latent Heat of Vaporization (ΔH_v)



- **Latent heat of vaporization** is the amount of heat required to vaporize 1 g of a substance at its boiling point without changing its temperature.
- It is also the amount of heat that must be removed to condense 1 g of a gas at its boiling point without changing its temperature.

Sublimation

उर्ध्वपातन



अथवा

Solid CO₂

~~नैफथलिन~~

Sublimation

Sublimation

- the changing of a solid directly to a gas

- Example

Dry ice is solid carbon dioxide. At room temperature and pressure, it sublimates into carbon dioxide vapor.



Deposition

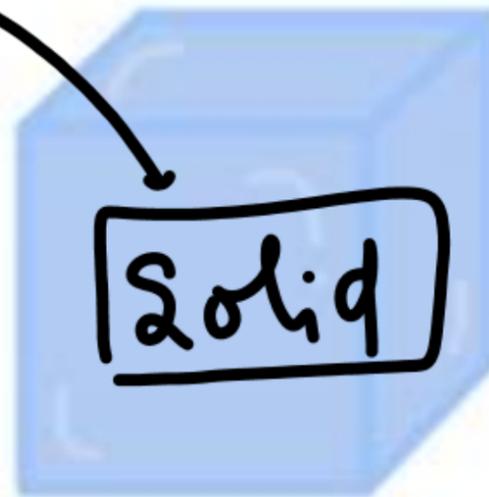
निक्षेपण



Gas

Gas

Deposition



Solid

Solid

उत्पत्ति (Frost)

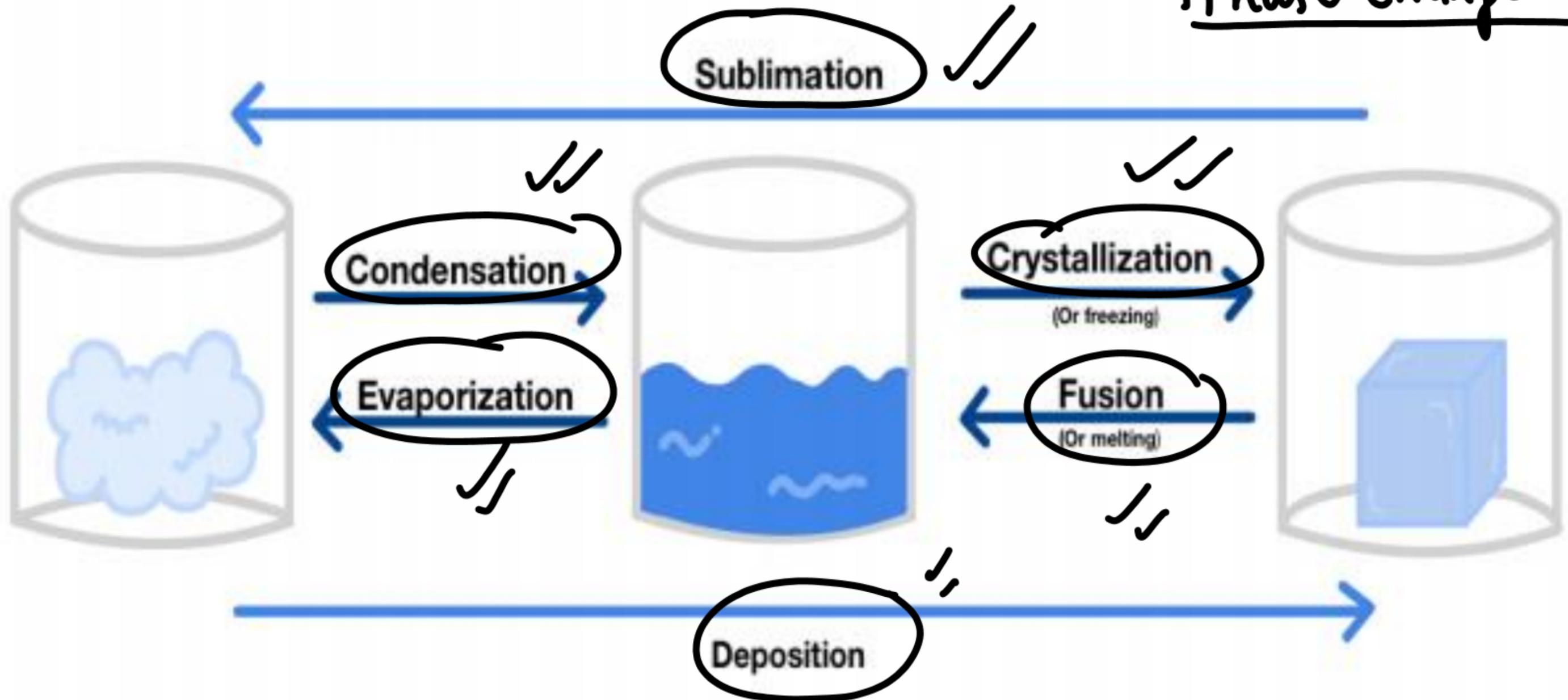
उत्पत्ति

पद



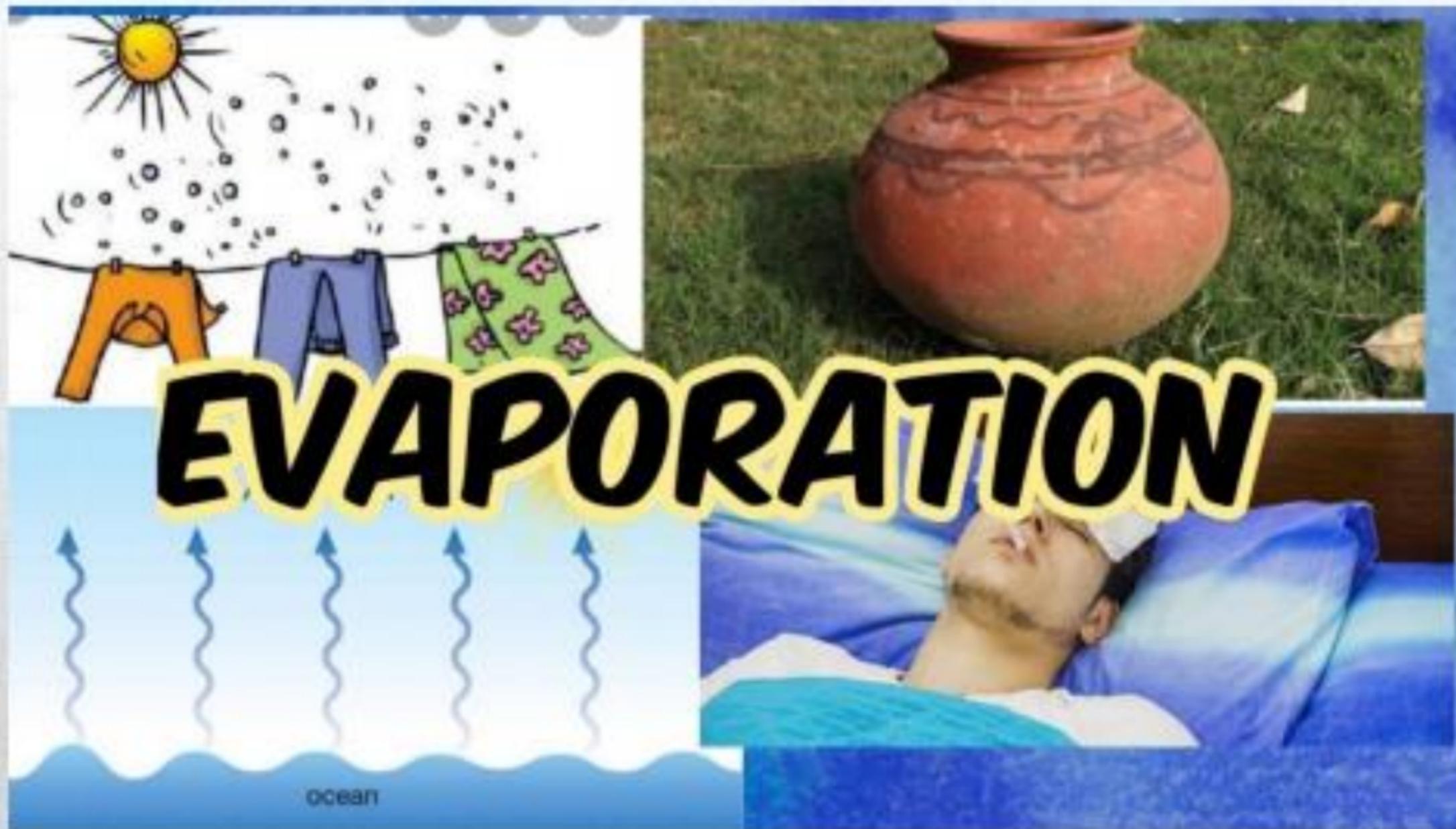
Phase Change Guide

Phase Change



EVAPORATION

वाष्पीकरण



Factors affecting Evaporation

ਵੈਕਸੀਗਰਿਓ

• Wind speed

↑ ਵਾਨੀਅਰ ↑

ਪ੍ਰਤੀਪਿੰਡੇਤਰਫਲ →

• Surface area



Humidity

ਆਦਰਾ

• Temperature



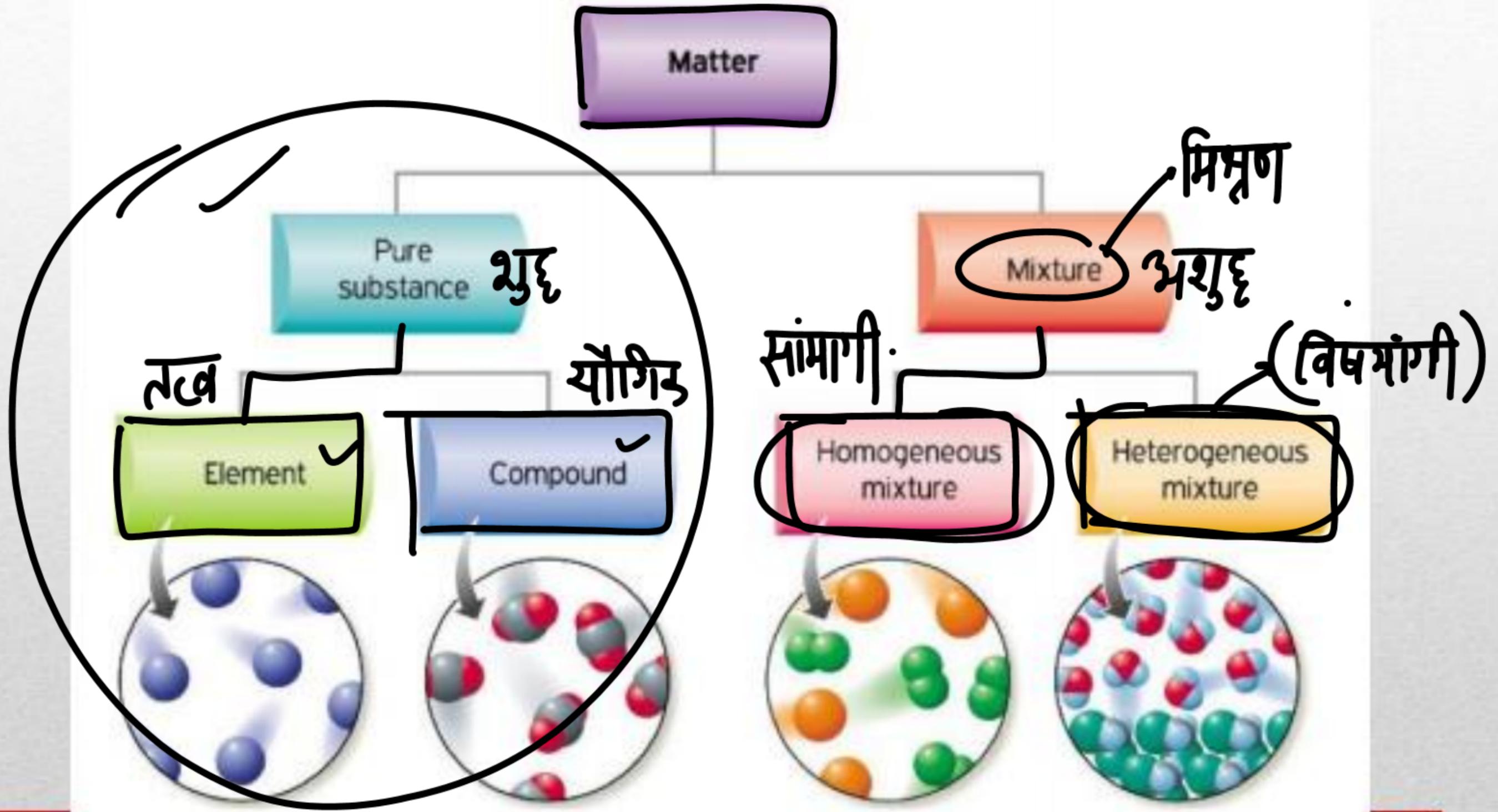
ਨਾਪਮਾਨ ↑ ਵਾਨੀ ↑



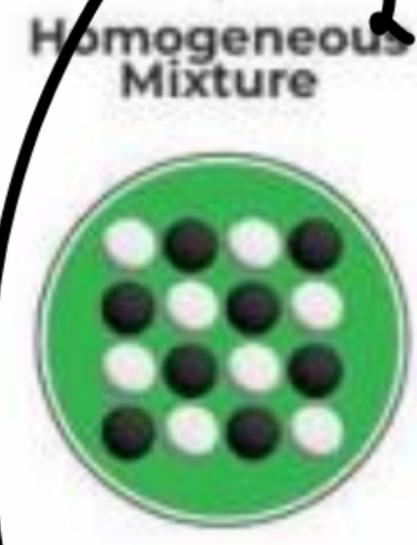
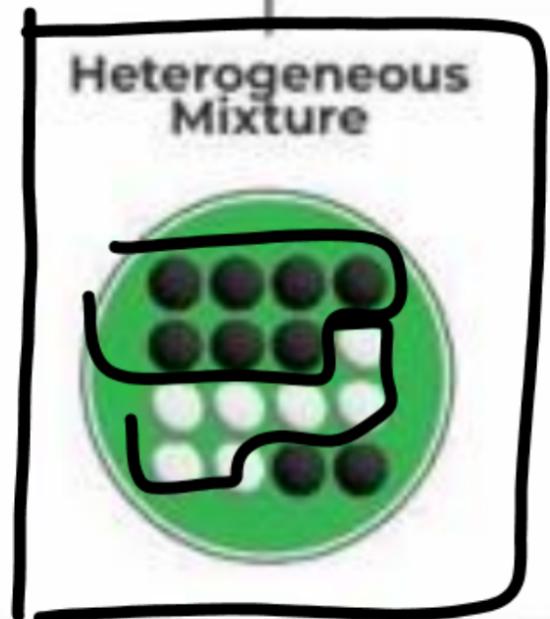
Is matter around us pure ? , class 9th , chapter 2

क्या हमारे चारों तरफ
के पदार्थ शुद्ध हैं ?

= Chp. 2



Mixtures



गले का पानी
दूध

धूल / भाँची

पानी + रेल

पानी + बालू

पीनी + पानी
नमक + पानी

विषमांगी मिश्रण

दो या दो से अधिक पदार्थ आपस में मिलते
पणु उनकी प्रकृति/प्रकृति

समांगी मिश्रण

दो दो से अधिक पदार्थ आपस-
समान प्रकृति/प्रकृति

अलग-अलग

विलयन | मिश्रण | कोलायड

Homogeneous VS Heterogeneous

•Look the same throughout

•Examples

•Solutions

•Solute & Solvent



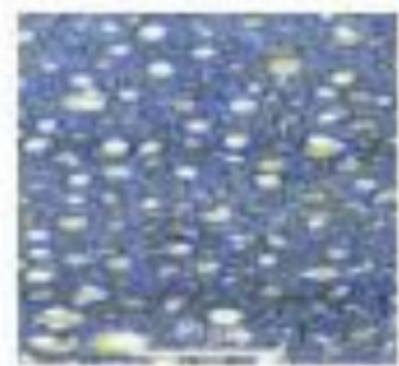
•Don't look the same throughout or have different size particles

•Examples

•Suspension

•Colloid (liq/solid)

•Emulsion (liq/liq)



विलयन

मिश्रण
→ कोलायड

Solutions (विलयन)

A solution is a homogeneous mixture of two or more substances

विलयन, दो या दो से अधिक पदार्थों का समान मिश्रण है।

Solution \Rightarrow Solvent + Solute

विलयन = विलायक + विलेय

$C_{12}H_{22}O_{11}$ (Sugar) (100g)

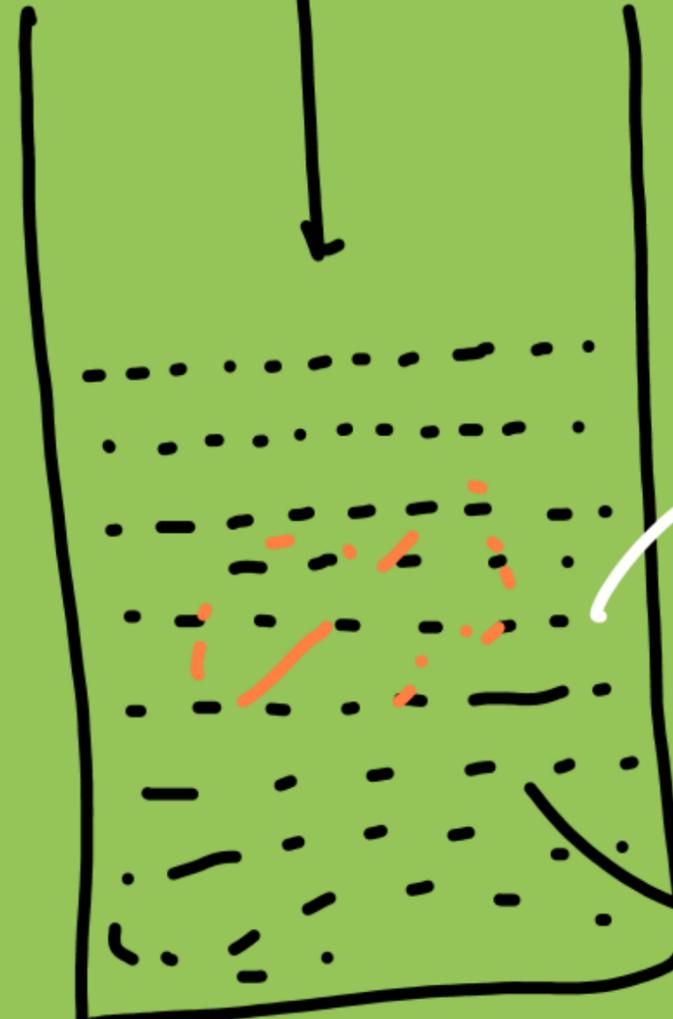
विलयन = विलापक + विलेय

विलापक \Rightarrow विलयन में अधिक मात्रा

Solvent = Ex-Value in Solution
(H_2O)

विलेय \rightarrow विलयन में न्यूनतम मात्रा

Solute \rightarrow Min. Value in Solution \rightarrow Sugar



5L (H_2O)

Sugar + Water / Solution



Solutions & Solubility

विलयन के प्रकार ✓

AQUEOUS SOLUTIONS: SATURATED VS. UNSATURATED

Saturated solution:

Formed when no more solute will dissolve in a solution, with excess solute present.

असंगत

Unsaturated solution:

A solution that is not yet saturated

Supersaturated solution:

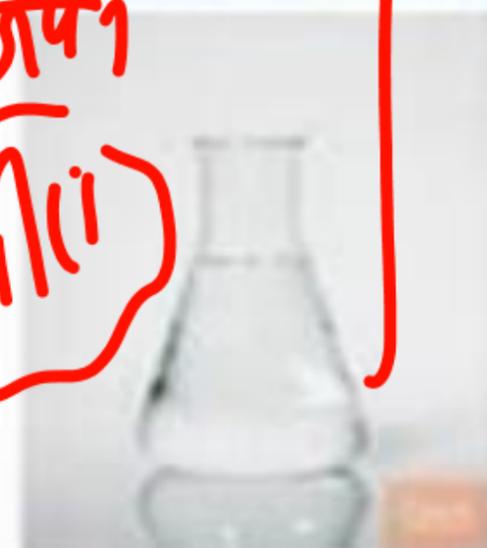
Formed when a solution dissolves more solute than allowed at a specific temperature. No excess solute is present.

परसंगत विलयन

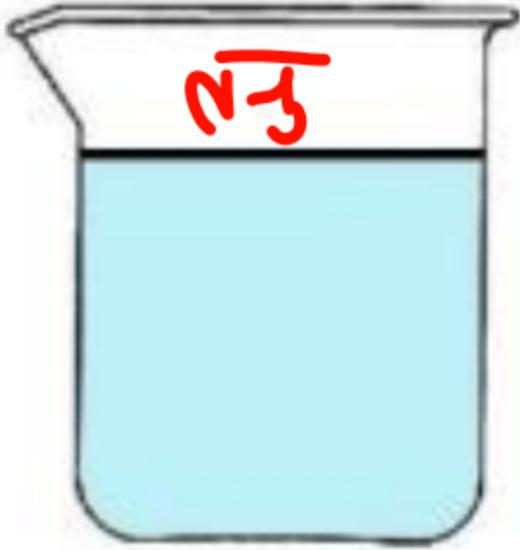
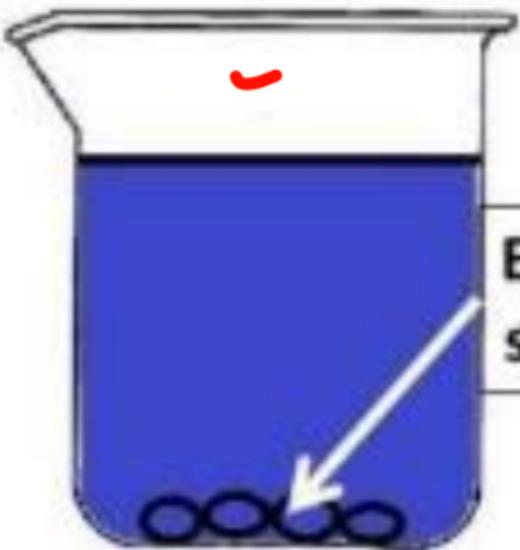
शुद्धि

संगत विलयन

मे
विलयन के
विलेप
मात्रा



SOLUTIONS

Diluted solution	Concentrated solution	Saturated solution
		
Has <u>very little</u> solute in it	Has a <u>lot</u> of solute in it	Has the <u>maximum</u> amount of solute in it
Can <u>dissolve</u> a lot more solute	Can <u>dissolve</u> a little more solute	Cannot <u>dissolve</u> any more solute

→ Supersatur



Suspension

"निवृत्तन"

It is a heterogeneous mixture in which salute particles are spread through the liquid without dissolving in it

Suspension



चाकपाउडर
+
पानी

नाले का पानी

Mud Water

धूलभारी
हवा

विषमंगी मिश्रण

विलेयकों ✓

हवा लिफा
आँसू

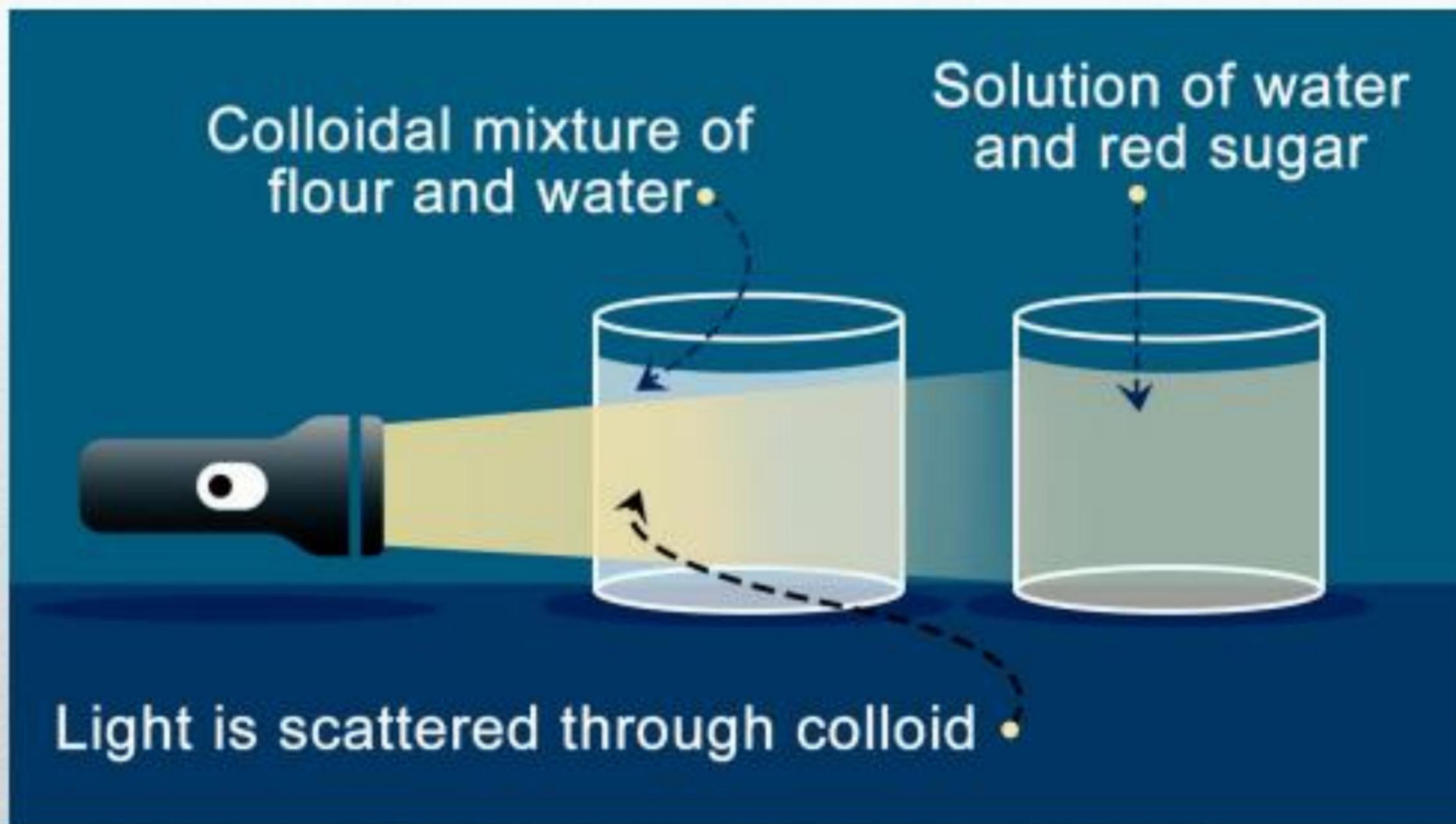
Properties of Suspension

Colloidal Mixture

It is appear to be homogeneous, due to smaller particle size as compared to suspension but in really it is a heterogeneous mixture . the particles of an colloids are uniformly spread throughout the solution .

Properties of Colloids

Tyndall effect



Types of Colloids

Examples	Dispersing Medium	Dispersed Substance	Colloid Type
Fog, aerosol sprays	Gas	Liquid	Aerosol
Smoke, airborne bacteria	Gas	Solid	Aerosol
Whipped cream, soap suds	Liquid	Gas	Foam
Milk, mayonnaise	Liquid	Liquid	Emulsion
Paint, clays, gelatin	Liquid	Solid	Sol
Marshmallow, Styrofoam	Solid	Gas	Solid foam
Butter, cheese	Solid	Liquid	Solid emulsion
Ruby glass	Solid	Solid	Solid sol

