



Medical chemistry- year1



Matter

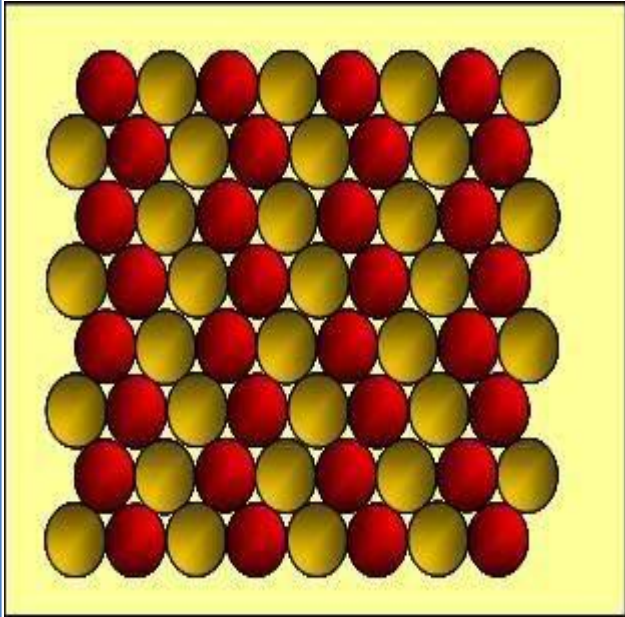
Lecture 2 (part2)

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Basic Of Science

College Of Dentistry

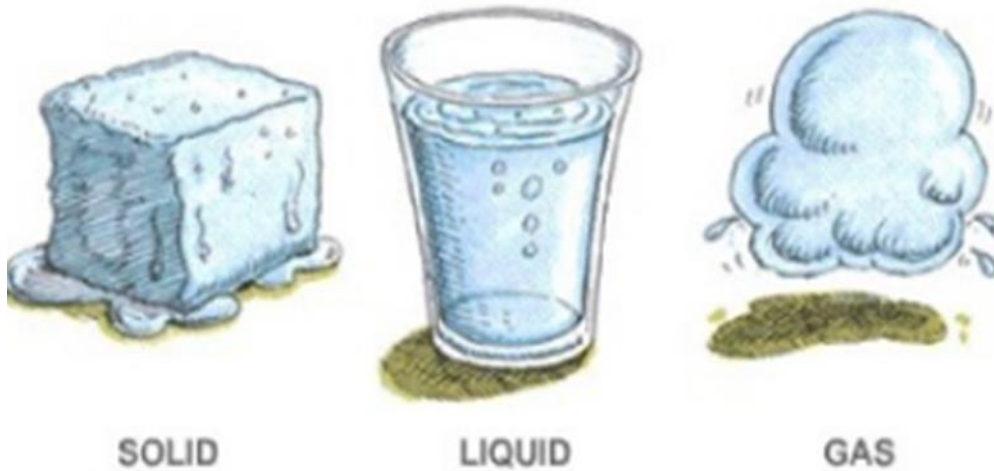
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Objectives

- 1-Definition of matter
- 2-Properties of matter
- 3-State of matter
- 4-Changes in matter
- 5-Classification of matter
- 6-Separation of mixtures

State of mater



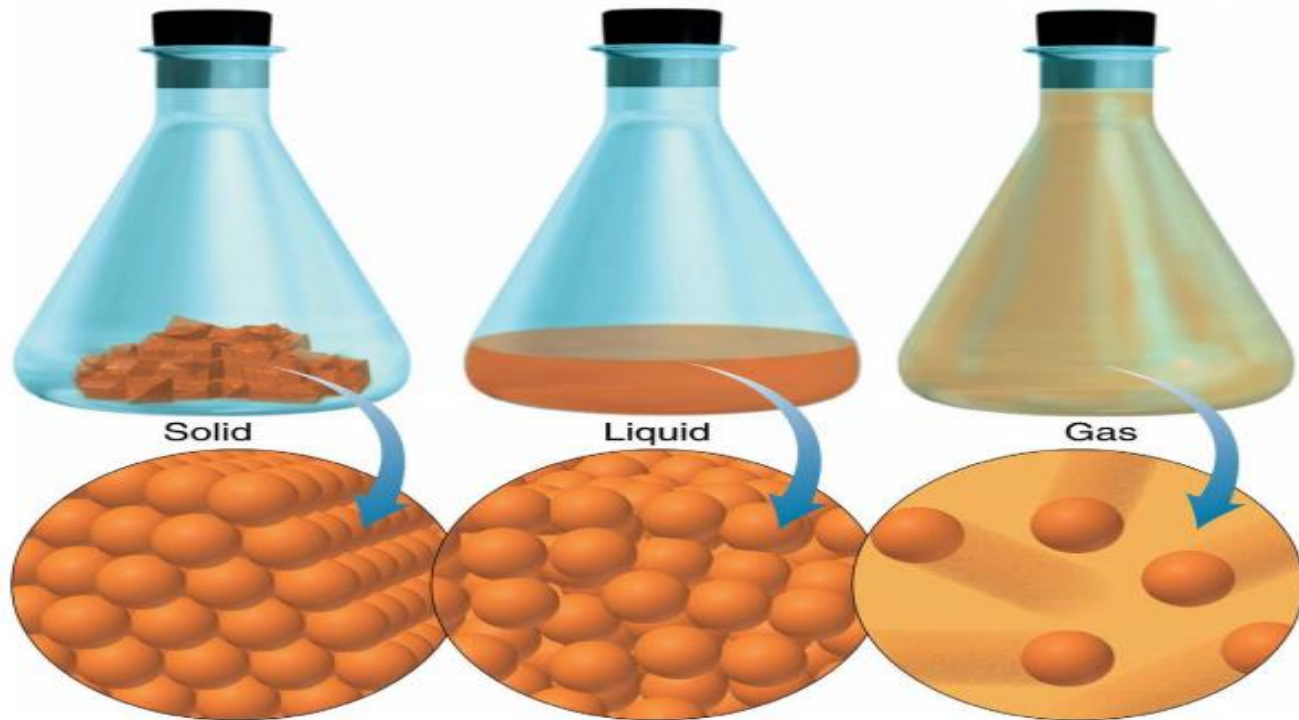
State of matter

- matter can be classified according its physical state and its composition
- physical state :
 - Solid
 - Liquid
 - gas
- in dentistry we make use of all them although dental materials exist primarily solids or liquids.

State of matter

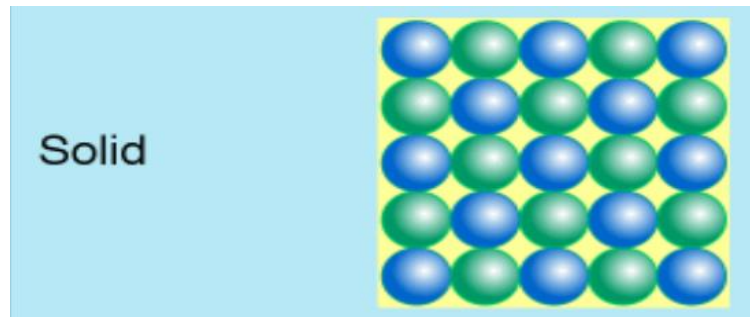
- classification into different states bases upon:
 - Particle arrangement
 - Energy of Particle
 - Distance between particles
- State of matter is dependent on temperature
And pressure of the surroundings.

STATES OF MATTER



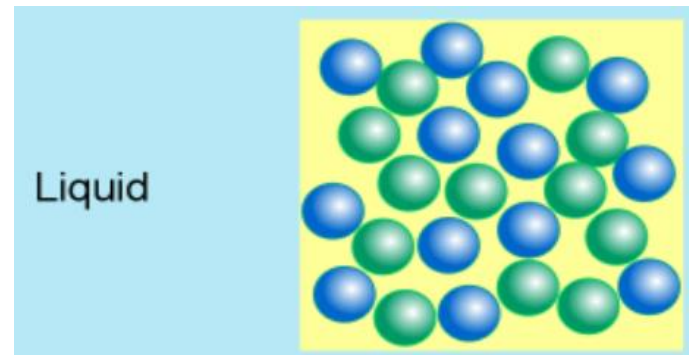
Solids

- has a definite shape and volume
- true solids have very rigid, ordered structures, in fixed positions i.e. high density
- atoms held tightly together, therefore incompressible
- atoms move through vibration only, therefore small thermal expansion



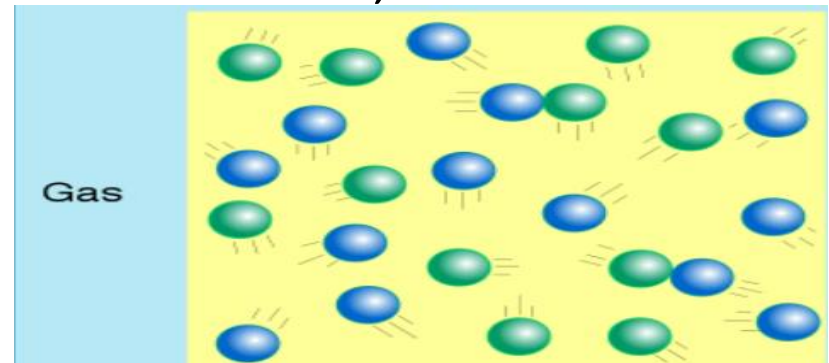
Liquid

- has a definite volume, atoms are not widely separated, therefore high density and small compressibility.
- no definite shape i.e follows the shape of its container
- atoms move rapidly enough to slide over one another i.e ability to flow
- small thermal expansion



Gases

- also known as vapour
- no fixed volume or shape , container to the volume and shape of its container.
- atoms far apart i.e low density and can be compressed
- moves at high speeds , colliding with container, moderate thermal expansion.



Changes in matter

- all matter can undergo physical and chemical changes .

1-physical changes :occurs when a substance alters its state (phase change),but does not change its chemical composition- e.g. grinding ,cutting.

phase change: transition of a substance from one state to another

- Depend on temperature and pressure

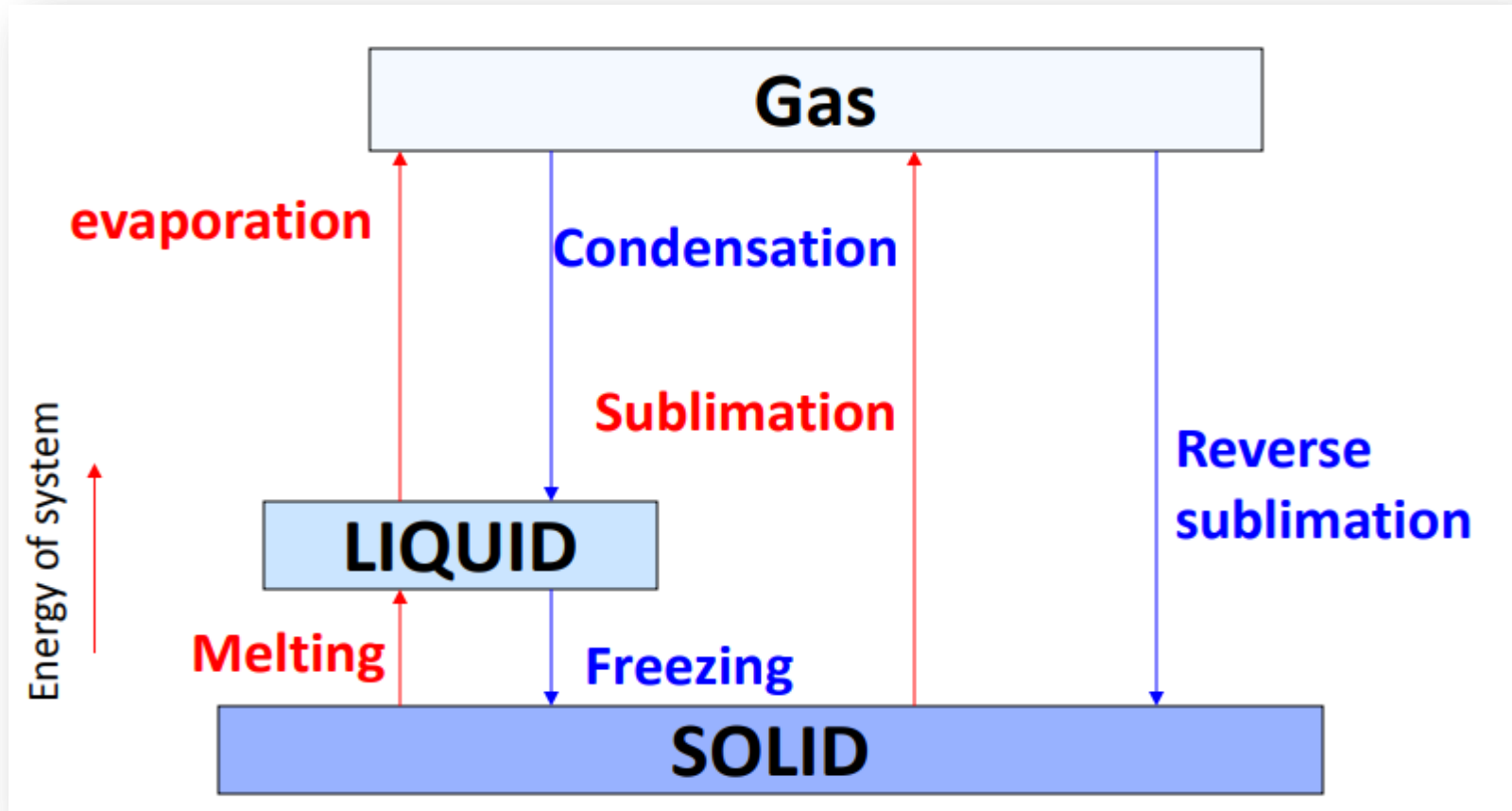
e.g : boiling ,freezing ,melting, and condensing

- physicals changes can be classified as reversible or irreversible .

The 5 Phase Changes

- 1- **Melting**: Solid to Liquid
- 2- **Freezing** :Liquid to Solid
- 3- **Evaporation**: Liquid to Gas
- 4- **Condensation**: gas to Liquid
- 5- **Sublimation**: Solid to Gas

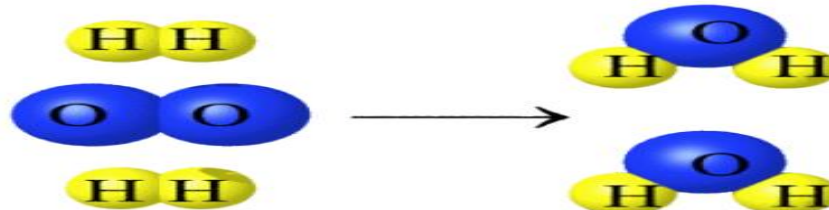
Changes in matter



Changes in matter

2- **Chemical Change**: occurs when a substance is converted into a new or different substance i.e change in the composition of a substance

- also referred to as a chemical reaction
- chemical reaction consists of reactants and products
 - Reactants – starting substances
 - products- substances which are from/produced





ANY

QUESTIONS?