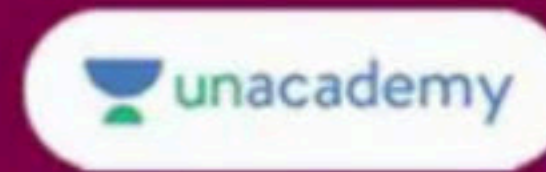


Vijaya Veedhi: Course on Physics and Chemistry

# States of Matter (Physics)





# VIJAYA VEEDHI

**DEEPIKA**

**PHYSICS & CHEMISTRY**



# **Vijaya Veedhi**

# **Physics & Chemistry**

**June 12 - Aug 10**

**Number of Sessions : 45**

**Deepika MK**

# **States of Matter**

## **Physics**

**Deepika MK**

# Matter

Anything having **mass and occupies volume.**

**Mass** is the amount of matter present in the body.

Unit - Kg

**Weight** is the gravitational force experienced by a body.

Unit - N or Kgm/s<sup>2</sup>

1kgw

# 7 States of matter are

1. Solid

2. Liquid

3. Gas

**4. Plasma**

**5. Bose Einstein Condensate**

6. Fermionic Condensate

**7. Quark- Gluon Plasma**



# 1. Solid


- > Particles are closely packed.
- > Definite shape and volume.
- > Intermolecular force of attraction is maximum.
- > Intermolecular distance is minimum.
- > Kinetic energy of particles is minimum.

## 2.Liquid

- > Loosely packed.
- > No definite shape, but volume.
- > Intermolecular distance, Force of attraction and Kinetic energy of particles in between that of solid and liquid.



### 3. Gas

- > Random particles.
  - > No definite shape and volume.
  - > Intermolecular force is Minimum.
  - > Intermolecular distance is Maximum.
  - > Kinetic energy of particles is Maximum.
- 

## 4. Plasma

- > Most abundant matter in the entire Universe(99%).
- > Highest temperature(Pyrogenic).
- > Present in Sun and other stars.
- > Ions are present(Maximum Ionisation Energy).
- > Most number of irregular molecules are present.
- > Discovered by William Crookes( Discharge Tube expt)/ (Crookes Matter).
- > Term 'PLASMA' coined by Langmuir.
- > Also known as Radiant Matter.



## 5. Bose - Einstein Condensate

- > Predicted by Satyendra Nath Bose and Einstein.
- > Basic particle - Boson.
- > Discovered by Satyendra Nath Bose and Peter Higgs (Higgs Boson).
- > God's Particle - Higgs Boson. (Named by Leon Ledermann)
- > Term 'Boson' coined by Paul Dirac.
- > State close to Absolute Zero (- 273.15 degree celsius). (Cryogenic).
- > Bosons are also known as Super atoms.



## 6. Fermionic Condensate

- > Basic particle - Fermion
- > Low temperature state.
- > Super Fluidity.

## 7. Quark - Gluon Plasma



- > Basic particle - Quark.
- > Particle exchanged in quark - quark interaction is - Gluon.
- > Fundamental particle of matter - Atom
- > Fundamental particle of Atom - Quark.
- > Nucleons(Protons and Neutrons) are made up of - Quarks.
- > Hadrons are formed by Quarks.
- > Quark Theory - proposed by George Swig and Murray Gell Mann.



> **William Crookes**

> **Langmuir**

> **Satyendra Nath Bose & Einstein**

> **Satyendra Nath Bose & Peter Higgs**

> **Leon Ledermann**

> **Paul Dirac**

> **George Swig & Murray Gell Mann**



**Next Session : Waves (Physics)**

**Date : 13/06/2020**

**Time : 09.30 AM**

**Telegram Channel : Lumen**

**Telegram Link :**

**<https://t.me/learnsceincewithdeepika>**

**Thank You**