

# SPECTROSCOPY

Spectro

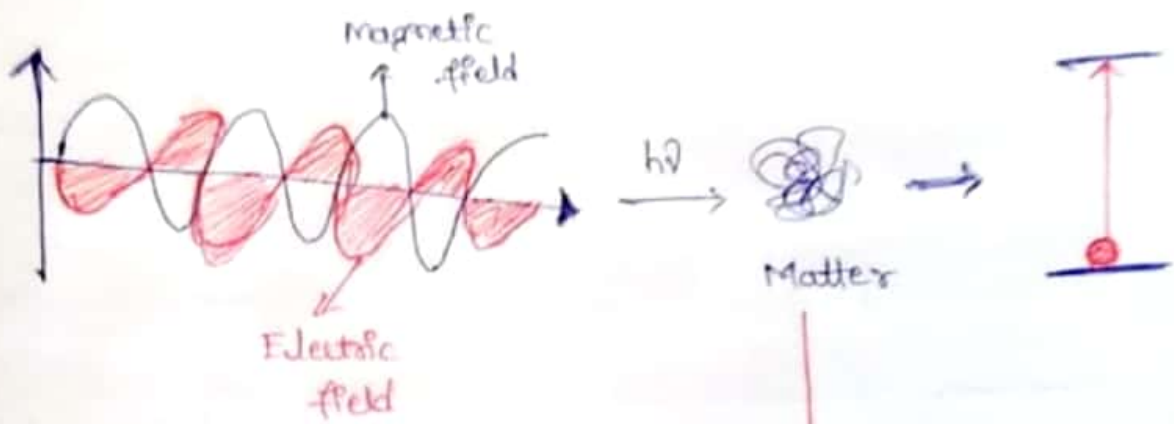
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Spectrum

Study

is result of interaction of electromagnetic radiations with matter.

\* Hence spectroscopy involves the study of interaction of radiation (EMR) with matter.



Matter is made of molecules & possess molecular energies.

Electronic energy

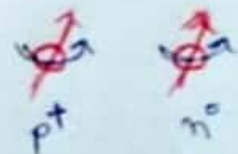
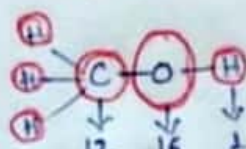
Vibrational energy

Rotational energy.

Arises due to rotation of electrons

Arise due to vibration of bond due to different masses

Arise due to rotation of proton & neutron



\* Spectroscopy can also be defined as interaction of photon energy with molecular energy.



## Classification of Spectroscopy

Atomic Spectroscopy



- \* Study of EMR absorbed & emitted by atoms.
- \* Determine type of atoms present.
- \* Atoms move to excited state from ground state.

Absorption Spectroscopy (AAS)

Atomic Emission Spectroscopy (AES)

Molecular Spectroscopy



- \* Study of EMR absorbed & emitted by molecules
- \* Determine the structure of molecule
- \* Molecule move to excited state from ground state

Electronic Vibrational Rotational

## General Classification

Non-destructive



UV-Vis, IR, NMR

Destructive



AAS, MS