

Chapter 4

STRUCTURE OF ATOM

Bohr's atomic model:

To overcome the objections raised against Rutherford's atomic model, Bohr has proposed his atomic model.

- Bohr has introduced the concept of stationary orbits.
- Only certain orbits are allowed for the electron to revolve around the nucleus.
- These orbits are also known as energy levels ($n=1, 2, 3, \dots$) or shells (K, L, M, N.....)
- As long as electron is present in these stationary orbits, it never radiate energy.
- Electron may lose or gain energy when it jumps from one stationary orbit to another.
- If electron jumps from lower energy level to higher energy level, it gains some energy. Similarly, when electron jumps from higher energy level to lower energy level, it lose some energy.
- The energy gained (or) lost by electron is always equal to difference between two energy levels.

$$\Delta E = E_2 - E_1 = h\nu$$

Where E_1 & E_2 are energies of lower & higher energy levels respectively.

- Bohr's atomic model says that energy of electron is quantized.

Drawbacks:

- It could not explain the spectra of multi electron systems.
- It could not explain Stark effect and Zeeman effect.
- It fails to explain fine spectra.