

Planck's & Th. a black body emits or absorbs the energy such as light and heat not continuously but in whole no. small packet of energy called quantum.

$$E = h\nu \quad \text{or} \quad E = h \frac{c}{\lambda} = hc\bar{\nu}$$

Einstein extended that energy, like light not only emitted or absorbed in packets but is also propagated in space in packets. Each packet he named photon.

$$E = h\nu, \quad \begin{array}{c} E = mc^2 \\ \uparrow \\ \text{The energy of a photon.} \end{array}$$

### Rutherford's Atomic Model :

$\alpha$ -particle scattering experiment ( $\text{He}^{2+}$ )

With the help of fluorescent zinc sulphide screen majority of the  $\alpha$  particles passed through a few  $\rightarrow$  deflected.

- ① all the charge and entire mass very small central core called the atomic nucleus.
- ② a large portion is hollow
- ③ Radius of atomic nucleus  $\sim 10^{-13}$  cm.  
Radius of atom is  $\sim 10^{-8}$  cm.
- ④ Electrons were moving in circular orbit around the nucleus so that the coulombic attraction between the nucleus and the electron was equal to centrifugal force on the electron.

### Drawback of Rutherford's Model :

- ① From his model atom cannot be stable. But it is well known that most of the atoms are stable.  
as electrons lose energy continuously
- ② According to his model atom should be continuous spectra but experimentally observed spectra are non-continuous.

### Bohr's postulate :

- ① atom possess several circular orbits in which electron can stay.

$$mvr = n \frac{h}{2\pi} \quad \begin{array}{l} \text{principal q. no.} \\ h = \text{Planck's Constant} \\ = 6.62 \times 10^{-27} \text{ erg sec.} \end{array}$$

$$(ii) \quad \frac{E_i - E_j}{h\nu} = n$$

1, 2, 3 — K, L, M shells.