

# HISTORY OF ATOMIC MODEL

1885

Johann Balmer derived a formula for mathematically predicting hydrogen spectrum.

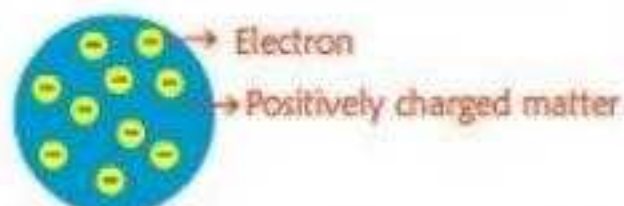
J J Thomson discovered Electron



1897

Rutherford proposed a model where positive charge is at the center, and electron moves around in a spiral path and losses energy.

J J Thomson proposed plum pudding model



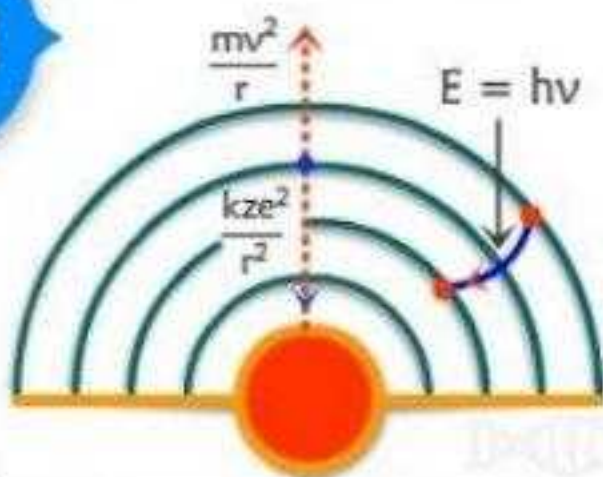
1904

1911

1913

$$r = 0.529 \times \frac{n^2}{Z} \text{ \AA}$$

$$\frac{kze^2}{r^2} = \frac{mv^2}{r}$$



## Bohr's Atomic Model

- Bohr worked with J J Thomson and found flaws in his theory
- He proposed electron revolves around nucleus in orbits.
- Electron is stabilized by centripetal and electrostatic forces.
- Electron don't lose energy in an orbit.
- Electron losses or gains energy by moving across orbits.
- He proved Balmer was right by deriving his formula theoretically.
- Only applicable for one electron systems.
- Failed to predict dual nature of electron.

1923

De Broglie introduced the concept of dual nature in electrons. He used Einstein's  $E = mc^2$  and proposed any moving particle or object has an associated wave.

