

ATOMIC STRUCTURE

DISCHARGE TUBE	PROPERTIES	e/m Ratio	VIP Values
<p>* At 5000 Volts and high pressure, there was no effect on gas. At 0.01 torr & High potential the gas turned into ions</p> <p>* When the pressure was reduced to 0.01 torr with 5000-10000 Volts voltage, the glow disappeared and rays called cathode rays came from cathode later called electrons</p>	<ul style="list-style-type: none"> Deflection from Electric & Magnetic field Straight line motion Material particle X-ray production Can ionize produce fluorescence Can penetrate produce heat when fall on foil 	<ul style="list-style-type: none"> One kg of "Apples" or "Electrons" in a "Shopper" has Charge of 1.7588×10^{-19} Coulombs By comparing magnetic & electric field when cathode rays in straight at point "B" 	<p>e/m of electron = 1.7588×10^{-19} Coulombs Eg^{-1}</p> <p>Charge of Electron = 1.6022×10^{-19} Coulombs</p> <p>MASS of Electron = 9.1095×10^{-31} Kg</p>

MILIKAN'S EXPERIMENT

By constructing a box with (+) & (-) plate & spraying an oil 1st chamber which will flow from (+) to (-) plate will have v_1 velocity. & After getting ionized by X-rays (air), particles will be taken by oil & it will go up toward (+) plate thus will have v_2 velocity (against gravity)

$v_1 = 2 mg$
 $v_2 = eE - mg$

CANAL RAYS

When electrons were knocked out from gas, positive ions were formed, which started moving toward perforated cathode. Due to big holes & small ions they were called canal rays & later on "protons"

NEUTRONS

When mass of Electron & protons was not equal to original mass it lead to neutron discovery

alpha-particles from polonium converted "Be" into Carbon & produced "Neutrons" which had no charge

NUCLEUS DISCOVERY

alpha-particles from polonium bombarded on "0.0004cm" gold foil which led to "undeflection" of most particles but deflection of some when they hit positive dense

QUANTUM NO.

Principal Quantum (n)
 Azimuthal Quantum (l)
 Magnetic Quantum (m) = +l to 0 to -l
 spin Quantum (+1/2) (-1/2)

X-RAYS

When Cathode rays are bombarded on metal surface, X-rays are produced

$\lambda = a(z-b)$

↳ Moseley's Law

BOHR THEORY

fixed energy levels

- $\Delta E = E_2 - E_1$
- $mv^2 = n\hbar/2\pi$
- don't lose or gain energy in same orbit
- Electron \uparrow = Absorb Energy
- Electron \downarrow = loses Energy

NUCLEUS thus it was discovered

HUND'S -

(1) (2) (3) (4) (5)

AUFBAU: Electron will fill lower energy level first

PAULI - No 2 Electrons in same orbital has same Quantum Nos