Atomic Theory

- · Democritus 1st person to develop the idea of an atom (~3-4BC) (atomos indivisible)
- Aristotle disagreed w/ Democritus, believed everything is made of earth, air, water, is fire.
 (Since he was more popular, not many people believed Democritus. So the idea of atoms fell away for a while.)
- · John Dalton English school teacher, why careful (1700s) experimenter, took meticulous observations
 - · Dalton's Atomic Theory
 - everything is made of atoms
 - atoms are indivisible
 - all atoms of an element are identical
 - different elements have different atoms
 - atoms form compounds w/simple, whole-number ratios (Ex. HzO is always made from 2 hydrogens and loxygens)
 - · Dalton's model of the atom

J. J. Thomson (1800s)

· cathode Ray Experiment

electricity cathode rays

discourred electrons!

cathode tube. When the magnet was filled w/an placed near the tube while electricity excited the gas, the glowing stream of gas bent toward the positive side of the magnet. Since opposites attract, Thomson believed that the stream of particles must be negatively charged. He called them electrons (e-)

·Plum Pudding Model (Chocolate Chip Cookir Model)

positively-charged

pout

electrons (randomly arranged)

(1)

· Ernest Rutherford (1890s)

· Gold Foil Experiment

Gold

Foil

Radioactive elimint,
Polonium, gives off
positively charged particles
called alpha particles

discourred the nucleus He expected alpha particles to pass straight through (It. green line). Most did, but some bounced off something at an angle (dk. green line)

alpha particle detector - light flashes when its hit by an alpha particle

the believed the positive alpha particles hit something positive in the atoms, called it the nucleus

· Nuclear mode!

positive (holds protons : neutrons)
nucleus (holds protons : neutrons)
electrons

· In 1911, he discourred positively changed protons (p+) in the nucleus

· In 1932, he discoursed neutrons (r) in the nucleus whis graduate student, James Chadwick.

· Niels Bohr - Danish Physicist
· Planetary model

nucleus w/ protons ? nuutrons
electrons - orbit the nucleus in distinct
circular orbits, like planets orbit
the sun.

Erwin Schrödinger

· Quantum Mechanical Model (Current) mathematical model

>nucleus w/protons and neutrons

selectron cloud-90% chance area of finding an electron that moves within an orbital (not a round orbit) but we aren't exactly sure how it moves.