

Name: _____

Periodic Table and Atomic Structure	Objectives
2. Atomic Structure	-Outline the historical development of atomic theory (outline principles only, mathematical treatment not required): -Dalton: atomic theory; -Thomson: negative charge of the electron; -Rutherford: discovery of the nucleus as shown by the particle scattering experiment; -Bohr: model of the atom; -recall that matter is composed of particles, which may be atoms, molecules or ions -define an atom -appreciate that atoms are minute particles -state the law of conservation of mass -describe, relative mass, relative charge and location of a proton, neutron, and electron in an atom

All materials are made up of tiny building blocks called **atoms**. The process of diffusion is proof that all materials are made up of these atoms.

History of the Atom and its Structure:

1. The Greeks:

All matter is made up of small, indivisible particles

2. John Dalton:

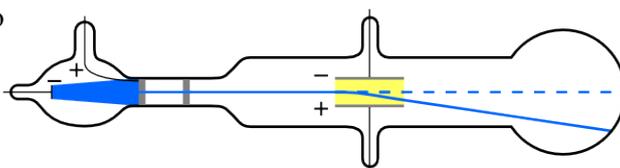
Dalton's Atomic Theory:

- All matter is made up of minute particles called atoms.
- All atoms are indivisible, i.e. they cannot be broken down into any simpler particles.

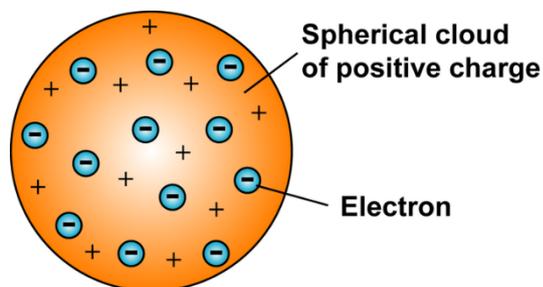
3. J.J. Thomson:

Carried out an experiment with a cathode ray tube containing a pair of oppositely charged, parallel plates.

The cathode rays were attracted towards the positive plate, so the particles must be negatively charged. He called them **electrons**. He could cancel out the attractive forces using a magnetic field.



4. J.J. Thomson's Plum Pudding Model:



This model of the atom was proven to be wrong with Rutherford's Discovery of the nucleus.

5. Ernest Rutherford:

Discovered the nucleus by bombarding gold foil with alpha particles (+ve charged) and looking at what happened to the alpha particles:

Result	Conclusion
Most passed straight through	Matter is mostly empty space
Some were deflected at large angles	+ve alpha particles repelled when passing near the small positive nucleus
Very small number reflected back along original path	+ve alpha particles collided head on with the nucleus

Properties of Subatomic Particles:

	Relative Charge	Relative Mass	Location
Proton	+1	1	Nucleus
Neutron	0	1	Nucleus
Electron	-1	1/1830 (nearly 0)	Outside Nucleus

Model of the Atom after the Discovery of the Nucleus (Bohr Model):