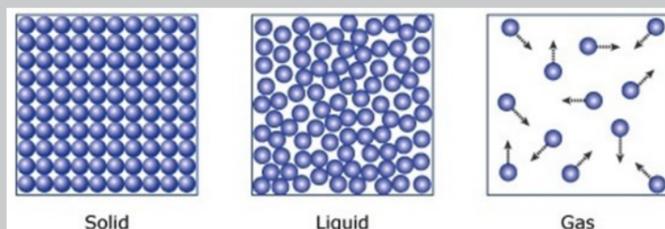


Sub-atomic particles

| Subatomic particle | Relative Mass | Relative Charge |
|--------------------|---------------|-----------------|
| Proton | 1 | +1 |
| Neutron | 1 | 0 |
| Electron | 0.0005 | -1 |

Solids, Liquids and Gases



Solid: Particles have a regular arrangement. Vibrate in a fixed position.

Liquid: Particles in a random arrangement. Move over each other.

Gas: Particles in a random arrangement. Move quickly in all directions.

Forces Between Particles

- The attractive forces between particles are electrostatic forces.
- They occur between positive and negative charges.
- They become weaker the further apart the particles get.
- They are stronger in solids and weaker in gases.

Definitions

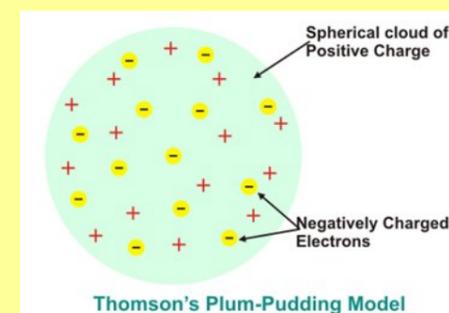
| | |
|--------------------------|--|
| Atom | The smallest particle of an element that still has its chemical properties. |
| Molecule | Made from two or more atoms joined together. |
| Chemical reaction | Makes one or more new substances with properties that are different to the original substance. |
| Physical reaction | No new substance is made. Often a change of state. |
| Ion | An atom that has lost or gained electrons to become a charged particle. |
| Isotope | An atom that contains the same number of protons but a different number of neutrons. |
| Mass number | Shows the number of protons + neutrons in the nucleus. |
| Atomic number | Shows the number of protons in the nucleus. |

Bond Length

Bond length = combined atomic radius of 2 covalently bonded atoms.

Atomic radius is typically about 1×10^{-10} m

Particle Models



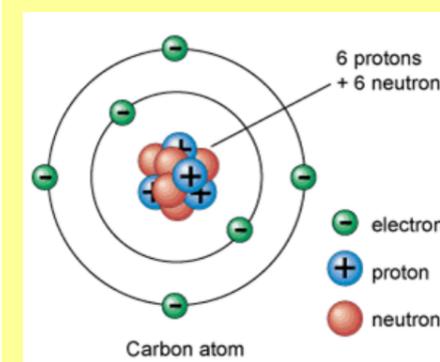
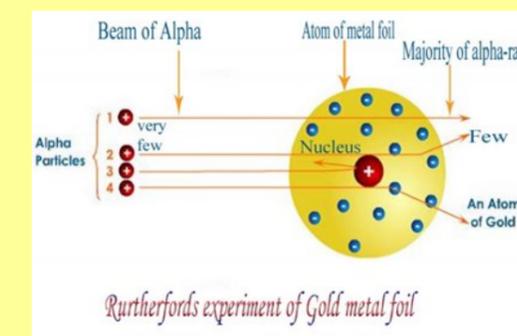
Thomson
(Plum pudding model)

Discovered the electron.

Suggested that they were distributed throughout the positive atom.

Rutherford
(Gold foil experiment)

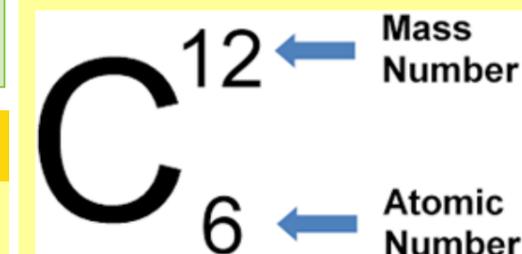
Discovered that the atom was mostly empty space with a dense positive nucleus.



Bohr

Discovered that electrons orbit the nucleus in shells.

The Periodic Table



Mass Number

The 'massive' number shows the number of protons and neutrons added together.

Atomic Number

The atomic number shows the number of protons.

The number of neutrons = mass number—atomic number



Trinity TV

For more help, visit Trinity TV and watch the following videos:

Trinity TV > Year 9 > Science > Term 1