Chemistry

Atomic Structure

Developing of model of atom

Dalton's model (1803)

- Atoms are tiny solid balls
- they cannot be broken into simpler parts
- atoms of the same element are identical
- atoms of different element are different
- chemical reactions will be equal to rearrangement of atom

Thomas model 1897- plum pudding model

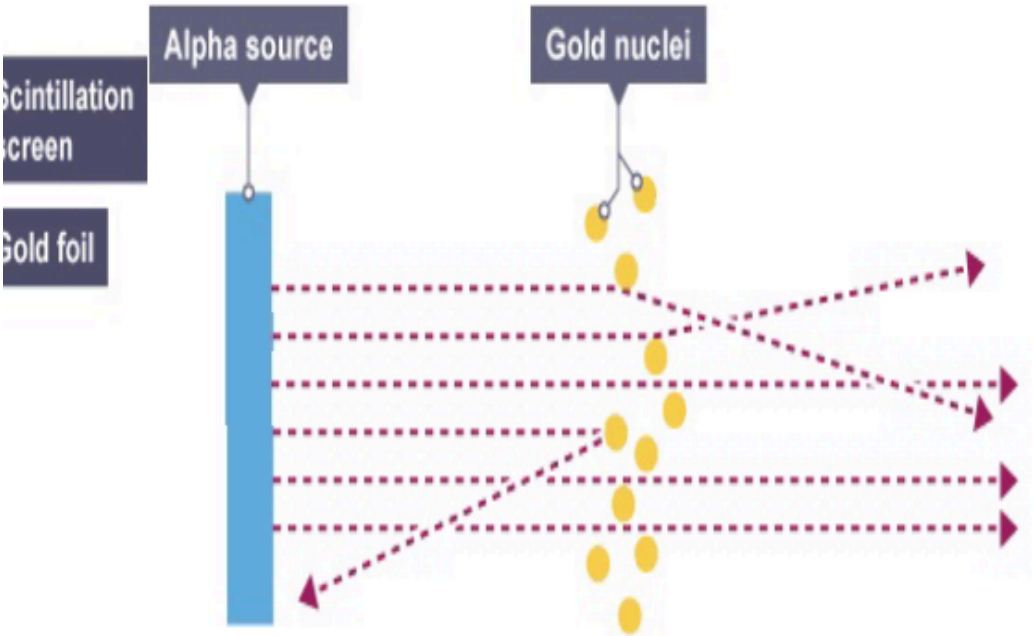
- Thomas discovered the electron
- he proposed that atoms are equal to positive charge
- negative electrons embedded in it
- overall atom is neutral

Alpha scattering experiment 1907 to 1911

- The experiment was performed by ratherford Geiger and Marsden
- Ratherford fired Alpha particles at thin gold foil

Observations

- Most particles pass through that means atom has mostly empty space
- Some are deflected it means positive mass is in the centre
- Few bounced back it means nucleus is very small dense and positive



Ratherford nuclear model 1911

Atom has small positively charged nucleus

Electron Orbit around the nucleus in a cloud

Bohr model 1913

- Solve problem of electron collapse
- electrons Orbit nucleus in fixed energy levels called shells
- electrons can move between the shells by absorbing or releasing energy and it is called em radiation
- nucleus will be equal to protons or positive charges

Chadwicks Discovery 1932

It Prove the existence of neutrons (neutral particles)

Current model of atom

- Nucleus has protons and Neutrons
- protons are positive and neutrons are neutral
- electrons are negative and they are in shell around the nucleus
- atoms are neutral when protons are equal to electrons
- Movement of electron
- when an electron moves to lower shell Energy is released and it is called radiation

- when an electron moves to higher shell it absorbs energy

Renewable energy:

- Renewable energy resources are sources that will never run out
- Energy is renewed as it is used

Wind Power or Power turbines

- Built in exposed areas such as moors and coasts
- The Blade will turn and generator will produce electricity

Advantages are

- There is no pollution
- No running costs and we need no fuel
- Can be removed without permanent damage

Disadvantages are

- Its spoils the view
- it is noisy
- it is unreliable
- and it is costly initial cost is very expensive

Solar cells

Solar cells produce electricity directly from the Sun

The are use in watches satellite and road sign

Advantages of solar cells

- No pollution
- free energy once installed
- effective when in cloudy countrie

Disadvantages of solar

- high initial coast
- only generate electricity during day time

Geothermal and hydroelectric power

- geothermal is used in underground thermal energy(hot rocks ,near surface radioactive decay of Uranium)
- It generate electricity or directly heats the building
- Drawback is basically location specific only works in volcanic areas

HydroElectric power

- It uses falling water into Turbines and then generators

- hydro means water and electric means electric city
- advantages are that it is very reliable
- it can respond to electricity instant demand
- disadvantages are flooding land destroys habitats, farmland and scenery
- Methane and carbon dioxide released from the rotting
- Expensive initial setup

Wave power and tidal barrage

Wave power

Many small turbines connected to generators

Advantages are

- No fuel cost
- useful for small Islands

Disadvantages are

- disturbs seabed
- harmful to Marine life
- spoils view
- dangerous for boats
- unreliable

Tidal Barrage:

- It is a dam like structure with turbines at the bottom
- It it uses gravitational pull of moon and sun
- Tidal movement generate electricity
- Advantages of tidal Barrage
- no fuel cost
- minimal running costs
- environmentally friend
- disadvantages are
- alters animal habitats
- spoil scenery
- blocks boats

Bio fuels

- Biofuels are made from Plant products and animal waste
- they can be solid liquid or gas
- they burn to produce electricity

Advantages are

- they are renewable

- carbon neutral if plants are regrown

Disadvantages

- they are expensive to produce
- large scale farming may lead to deforestation and food shortages