

Radioactivity | Notes

Definitions

Radioactivity: Spontaneous emission of alpha, beta or gamma radiation from the unstable nuclei of radioactive substance

Radio isotope: Radioactive Isotope

Background radiation: Low level radiation that everybody is exposed to every day

Half-life: time taken for half the number of a radioactive substance to decay

Nuclear Fission: splitting of the nucleus of a heavy element into two or more smaller nuclei with the emission of neutrons and a large amount of energy

Nuclear fusion: Union of light nuclei to form a heavier nucleus with the emission of large amounts of energy

Photon: A bundle of light energy

Alpha Particle: Alpha particles consist of two protons and two neutrons bound together into a particle identical to a helium-4 nucleus

Beta Particle: A beta particle, (β) is a high-energy, high-speed electron

Gamma Ray: A gamma ray, is penetrating electromagnetic radiation arising from the radioactive decay of atomic nuclei.

Advantages of Nuclear Fusion

- Less Waste
- Fuel Deuterium readily available from oceans
- No possibility of an uncontrolled runaway reaction

Advantages of Nuclear Fission

- Cheap

Disadvantages of Nuclear Fission

- Waste Disposal Problem
- Release of Radon gas when mining uranium

Alpha Particle Properties α

- Low penetrating power
- High ionising ability
- +2 Charge
- Identical to helium nucleus

Beta Particle Properties β

- Higher penetrating power than alpha
- Higher Ionising ability than alpha
- -1 Charge (Electron)
- Electron

Gamma Ray properties γ

- Highest Penetrating power
- Highest ionising ability
- EMF Radiation

