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Nuclear fusion

The joining together of two smaller atomic nuclei to produce a larger nucleus. Radiation is released when this happens. Nuclear fusion happens in stars like our Sun, and in hydrogen bombs.

Alpha particle

Subatomic particle comprising two protons and two neutrons (the same as a helium nucleus).

Nuclei

Nuclei is the plural of nucleus. The nucleus is the central part of an atom. It contains protons and neutrons, and has most of the mass of the atom.

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Neutron

Uncharged subatomic particle, with a mass of 1 relative to a proton. The relative charge of a neutron is 0.

Proton

Subatomic particle with a positive charge and a relative mass of 1. The relative charge of a proton is +1

Atom

All elements are made of atoms. An atom consists of a nucleus containing protons and neutrons, surrounded by electrons.

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Mass number

The number of protons and neutrons found in the nucleus of an atom.

Beta radiation

Radiation caused by beta particles (high-energy electrons). A beta particle is an electron ejected from a nucleus when a neutron becomes a proton.

Gamma radiation

A type of ionising radiation that is also part of the EM spectrum. It has no mass.

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Half-life

The time it takes for the number of nuclei of a radioactive isotope in a sample to halve. Also defined as the time it takes for the count rate from a sample containing a radioactive isotope to fall to half its starting level.

Activity

The number of decays of a radioactive element per second. Measured in Becquerels (Bq).

Radioactive tracer

A radioisotope used to trace, eg the flow of blood through an organ.

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Sterilisation

The process of ensuring that a sample contains no living things.

Nuclear fission

The splitting of a large nucleus to produce two smaller ones. Two or three neutrons are also released in the process. The energy from the neutrons powers a nuclear reactor.

Chain reaction

A nuclear chain reaction occurs when a neutron splits a nucleus, releasing more neutrons, which in turn go on to split even more nuclei.

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