

Key Terms

alpha particle - A positively charged particle, indistinguishable from a helium atom nucleus and consisting of two protons and two neutrons.

beta particle - A high-speed electron or positron, especially one emitted in radioactive decay.

gamma ray - Electromagnetic radiation emitted by radioactive decay and having energies in a range from ten thousand (10^4) to ten million (10^7) electron volts.

fission - A nuclear reaction in which an atomic nucleus, especially a heavy nucleus such as an isotope of uranium, splits into fragments, usually two fragments of comparable mass, releasing from 100 million to several hundred million electron volts of energy.

fusion - A nuclear reaction in which nuclei combine to form more massive nuclei with the simultaneous release of energy.

isotope - One of two or more atoms having the same atomic number but different mass numbers, due to a different number of neutrons in the nucleus.

nuclear reactor - Any of several devices in which a chain reaction is initiated and controlled, with the resulting heat typically used for power generation and the neutrons and fission products used for military, experimental, and medical purposes.

radioactivity - Spontaneous emission of radiation, either directly from unstable atomic nuclei or as a consequence of a nuclear reaction.

artificial transmutation - An artificially induced nuclear reaction caused by the bombardment of a nucleus with subatomic particles or small nuclei.

bombardment - the act (or an instance) of subjecting a body or substance to the impact of high-energy particles

nucleon - A proton or a neutron, especially as part of an atomic nucleus.

half-life - The time required for half the nuclei in a sample of a specific isotopic species to undergo radioactive decay.

particle accelerator - A device, such as a cyclotron or linear accelerator, that accelerates charged subatomic particles or nuclei to high energies.

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