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Nuclear Chemistry Vocabulary

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| **Across**  **2.** Radiation that is energetic enough to ionize matter it collides with  **4.** Radiation that is made up of beta particles and is deflected toward a positively charged plate when radiation from the radioactive source is directed between two electrically charged plates  **5.** Protons and neutrons  **7.** A series of nuclear reactions that starts with an unstable nucleus and results in the formation of a stable nucleus  **11.** The process that is used to determine the age of an object by measuring the amount of a certain radioisotope remaining in that object  **12.** The process in which nuclei are bombarded with high-velocity charged particles in order to create new elements  **13.** The difference in mass between a nucleus and its component nucleons  **14.** A form of high energy electromagnetic radiation emitted from some materials that are in an excited electron state  **18.** An element with an atomic number of 93 or greater on the periodic table  **19.** A force that acts on subatomic particles that are extremely close together and overcomes electrostatic repulsion among protons  **21.** Radiation that is made up of alpha particles and is deflected toward a negatively charged plate when radiation from a radioactive source is directed between two electrically plates  **22.** The ability of radiation to pass through matter  **23.** A particle that has the same mass as an electron but an opposite charge  **24.** An isotope that emits non-ionizing radiation and is used to signal the presence of an element or specific substance  **25.** The splitting of a nucleus into smaller, more stable fragments, accompanied by a large release of energy | **Down**  **1.** The time required for one-half of a radioisotope's nuclei to decay into its products  **3.** High energy radiation that accounts for most of the energy lost during radioactive decay  **6.** A nuclear fusion reaction  **8.** A nuclear reactor that is able to produce more fuel than it uses  **9.** A radioactive decay process that occurs when an atom's nucleus draws in a surrounding electron, which combines with a proton to form a neutron, resulting in an x-ray photon being emitted  **10.** A reaction in which an atom's atomic number is altered  **15.** Isotopes of atoms with unstable nuclei  **16.** The minimum mass of a sample of fissionable material necessary to sustain a nuclear chain reaction  **17.** A radioactive decay process in which a proton in the nucleus is converted into a neutron and a positron, and then the positron is emitted from the nucleus  **20.** The process of binding smaller atomic nuclei into a single, larger, and more stable nucleus |