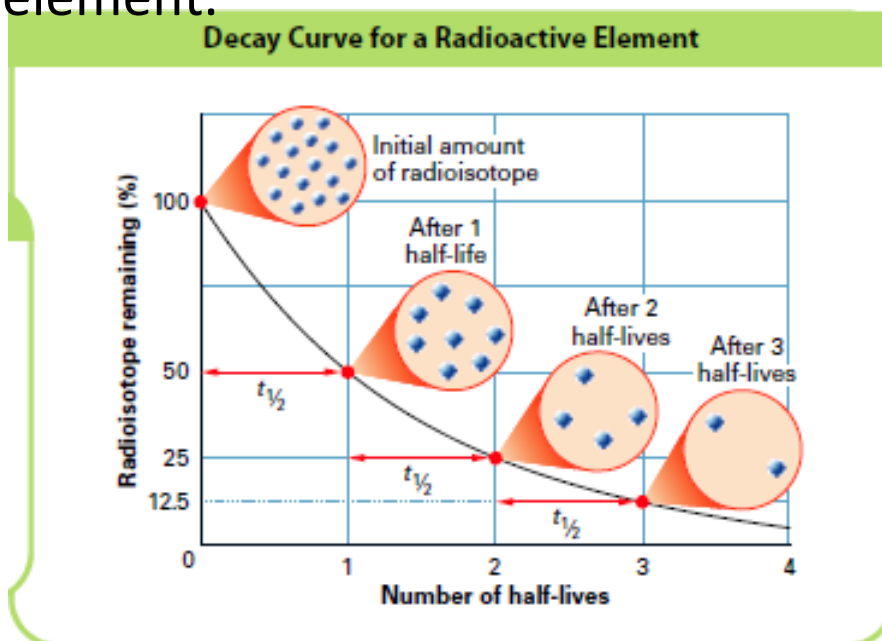
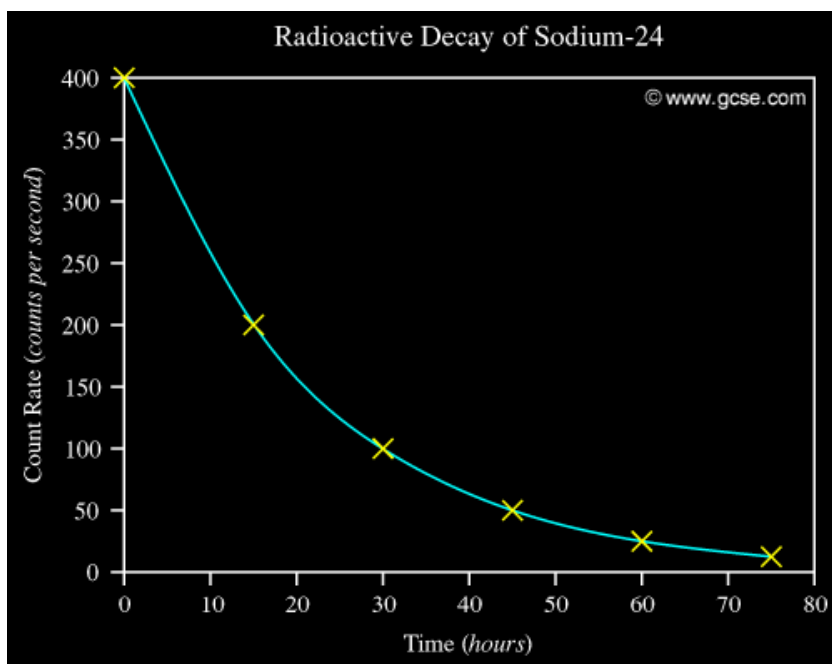


Table 25.2**Decay Processes****Beta Emission****Electron Capture****Positron Emission****Alpha Emission**

Half-Life

A half-life ($t_{1/2}$) is the time required for one-half of the nuclei of a radioisotope sample to decay to products. After each half-life, half of the existing radioactive atoms have decayed into atoms of a new element.





Transmutation is the conversion of an atom of one element to an atom of another element. This can occur by radioactive decay, or when particles (protons, neutrons, alpha particles) bombard the nucleus of an atom.

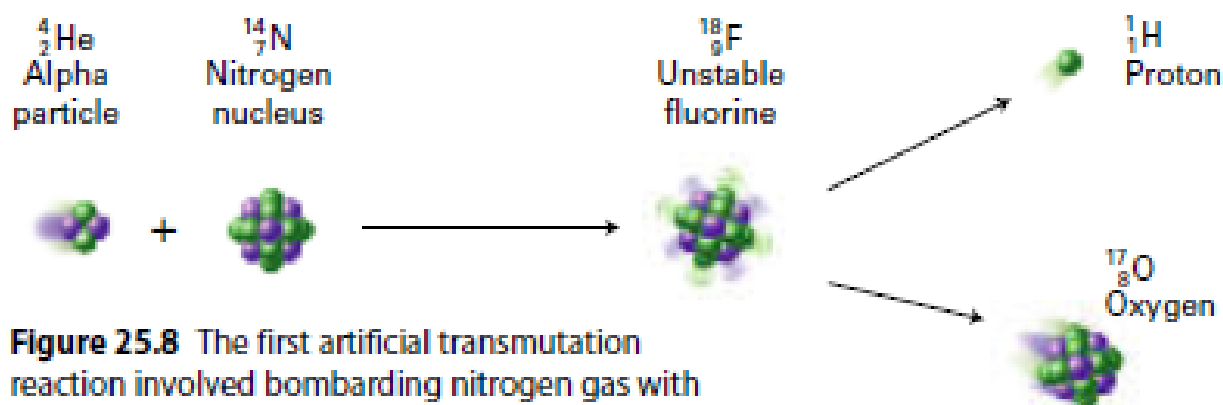


Figure 25.8 The first artificial transmutation reaction involved bombarding nitrogen gas with alpha particles, as illustrated here. **Interpreting**

Transuranium elements are elements in the periodic table with atomic numbers over 92. All of these elements undergo transmutation, and all are radioactive.

Homework

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