^{52}Mn

In 1938, Livingood and Seaborg outlined their discovery of ^{52}Mn in the article "Radioactive Manganese Isotopes" (1938Li10). The reactions for this isotope made use of deuterons at energies of 5.5 and 7.6 MeV, and helium ions at energies of 16 MeV at the Berkeley cyclotron. The reaction of ^{54}Fe with deuterons and alpha particles was chosen for ^{52}Mn. Decay curves were measured with a quartz fiber electroscope following chemical separation. "Mn^{52} from Fe+D: Half-Lives 21$\pm$2 min. (+) and 6.5$\pm$1.0 Days (+): Two positron emitting manganese isotopes Mn^{52} and Mn^{54} can be expected through the disintegration type Fe(d,α)Mn; nevertheless, we believe both these activities must be described as isomers of Mn^{52}. This follows from the fact that neither period is obtained by deuteron bombardment of chromium, and the reaction Cr(d,n)Mn could lead to Mn^{54} but not to Mn^{52}." The 6.5 days and the 21 min. halflives correspond to the ground state and an isomereric state, respectively. Halflives of 5 d (1937Li02), 21 min (1937Li02, 1937Da01) and 42 min (1938Du01) had previously been reported, however, no mass assignments were made.

Adapted from reference (2012Ga06)

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