^{135}Xe

Wu from the University of California at Berkeley reported the identification of ^{135}Xe in the 1940 article "Identification of two radioactive xenons from uranium fission" (1940Wu05). Barium targets were irradiated with neutrons produced by bombarding beryllium with 16 MeV deuterons forming ^{135}Xe in the reactions ^{138}Ba(n,α). Resulting activities were measured with an ionization chamber following chemical separation. "Although barium has seven known isotopes (130, 132, 134, 135, 136, 137 and 138), only three of them would be able to produce radioactive xenon (except for isomers of stable nuclei) by a(n,α) reaction. These are 130, 136, and 138. We have seen that Ba gives by a (n,α) reaction the 5-day xenon and we interpret this as $_{56}$Ba^{136}(n,α)$_{54}$Xe^{133}. Since the abundance of Ba^{130} is only 1/700 of that of Ba^{138}, it is very likely that the barium of mass number 138 is responsible for the formation of the 9.4-hour xenon according to the reaction $_{56}$Ba^{138}(n,α)$_{54}$Xe^{135}." Segre and Wu had reported the 9.4 h half-life in xenon without a mass assignment earlier in the year (1940Se06). In 1920, Aston had incorrectly reported ^{135}Xe to be a stable isotope (1920As03).

Adapted from reference (2013Ka01)

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