^{14}C

The first identification of ^{14}C was presented in "The disintegration of Nitrogen by Neutrons" by Bonner and Brubaker from the Kellogg Radiation Laboratory of the California Institute of Technology in 1936 (1936Bo02). The neutron capture reaction on ^{14}N was studied and reaction products were measured in a cloud chamber. In addition to the reaction ^{14}N(n,α)^{11}B (1), the two possible reactions with single-charged ejectiles ^{14}N(n,d)^{13}C (2) and ^{14}N(n,p)^{14}C (3) were considered. "According to calculations from Bethe's masses, reaction (2) is endothermic by 4.7 MeV. Thus we must turn to reaction (3) to explain the singly charged particles. $_{7}N^{14} + _{0}n^{1} \rightarrow _{6}C^{14} + _{1}H^{1}$. The C^{14} would probably be radioactive, going into N^{14} with the emission of an electron. However, such a radioactive C^{14} has not been observed." Previously, Kurie had mentioned the possibility that neutron capture on ^{14}N could lead to the formation of ^{14}C, however he could not distinguish the other possibilities of ^{14}N(n,d)^{13}C or ^{14}N(n,t)^{12}C (1934Ku01). Also, Miller et al. had speculated that ^{14}C had been produced in the reaction ^{11}B(α,p)^{14}C, however, they stated "...until there is more evidence on this point it seems reasonable to assume that all the four energy changes are connected with the B^{10} isotope" (1934Mi01).

Adapted from reference (2012Th01)

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