^{178}Tl

In 1997, Carpenter et al. observed ^{178}Tl in "Excited states in ^{176,178}Hg and shape coexistence in very neutron-deficient Hg isotopes" (1997Ca16). A rhodium target was bombarded with 340 and 380 MeV ^{78}Kr beams from the Argonne ATLAS superconducting linear accelerator forming ^{178}Tl in the fusion-evaporation reaction ^{103}Rh(^{78}Kr,3n). Reactions were separated with the Argonne Fragment Mass Analyzer (FMA) and implanted in a double-sided silicon strip detector which also detected subsequent α decay. "In addition, three other α lines at 6.71, 6.79, and 6.87 MeV are correlated with A = 178. These three lines are, in turn, all followed by α decay to the same daughter nucleus, ^{174}Au. They have been associated with the decay of the previously unknown isotope ^{178}Tl." The first measurement of the half-life of 254^{+11}_{-9} ms for ^{178}Tl was reported five years later confirming the α-decay energies (2002Ro17).

Adapted from reference (2013Fr04)

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