^{242}Cf

^{242}Cf was simultaneously discovered in 1967 by Sikkeland and Ghiorso in "New californium isotope, ^{242}Cf" (1967Si07) and Fields et al. in "Nuclear properties of ^{242}Cf, ^{243}Cf, ^{244}Cf, and ^{245}Cf" (1967Fi04). Sikkeland and Ghiorso used the Berkeley Hilac to bombard uranium targets with a 124 MeV ^{12}C beam. Reaction products were slowed in helium gas and deposited on a platinum disk which was then moved to an α grid chamber. "A least-squares-fit analysis of the decays for the α group at 7.39±0.02 MeV in which about 500 events were used gave a half-life of 3.4±0.2 min. The shapes and positions of the maxima of excitation functions for the production of this α emitter corresponded to a (^{12}C,3n), (^{12}C,4n), (^{12}C,5n), (^{12}C,6n) and (^{12}C,8n) reactions with the targets ^{233}U, ^{234}U, ^{235}U, ^{236}U and ^{238}U, respectively, and is thus the nuclide ^{242}Cf." Fields et al. bombarded ^{242}Cm and ^{244}Cm targets with a ^{3}He beam from the Argonne 60-in. cyclotron. The subsequent α decay of the recoils was measured. "Irradiations of ^{242}Cm and ^{244}Cm by ^{3}He ions produced two new isotopes of californium; ^{242}Cf emits a 7.35±0.01 MeV α-particle group and has a half-life of 3.2±0.5 min. ^{243}Cf emits 7.06±0.01 and 7.17±0.01 MeV α-particle groups and decays with a half-life of 12.5±1.0 min." Both articles were submitted on March 14, 1967 and the discovery credit is given to Sikkeland and Ghiorso because their article appeared first in the journal.

Adapted from reference (2013Fr02)

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