

¹⁴³Sm

Silva and Goldemberg observed ¹⁴³Sm in 1956 as described in “Photodisintegration of samarium” (1956Si36). Sm₂O₃ was irradiated with x-rays from the Sao Paulo 22 MeV betatron. Decay curves, absorption spectra and excitation functions were measured. “The only two isotopes of Samarium that by neutron emission could result in a nucleus decaying in 9.03 minutes are ¹⁴⁷Sm (15%) and ¹⁴⁴Sm (3.1%), the other isotopes giving rise by neutron emission to other well known activities. The threshold for the reaction ¹⁴⁷Sm(γ ,n)¹⁴⁶Sm and ¹⁴⁴Sm(γ ,n)¹⁴³Sm computed from the semi-empirical mass formula are 7.08 and 9.31 MeV. Our result of 9.6 MeV supports the previous assignment of ¹⁴⁴Sm as the isotope of Samarium involved in the reaction investigated in this paper.” The previous assignment mentioned in the quote refers to two papers by Butement where a half-life of 8 min was assigned to either ¹⁴³Sm or ¹⁴⁶Sm (1950Bu07, 1951Bu25). In the second paper (1951Bu25) Butement states that the observation is consistent with an assignment to ¹⁴³Sm, however, in the summary table both isotopes are listed as possibilities. Only two weeks later the assignment of a 8.3 min half-life to ¹⁴³Sm was independently reported by Mirnik and Aten (1956Mi65).

Adapted from reference (2013Ma01)

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