

²⁵³Rf

In 1997, Heßberger described the identification of ²⁵³Rf in “Spontaneous fission and alpha-decay properties of neutron deficient isotopes ^{257–253}104 and ²⁵⁸106” (1997He29). ²⁰⁴Pb and ²⁰⁶Pb targets were bombarded with 4.68 MeV/u and 4.81 MeV/u ⁵⁰Ti beams from the GSI UNILAC accelerator forming ²⁵³Rf in (1n) evaporation reactions. Recoil products were separated with the velocity filter SHIP and implanted in a position sensitive 16-strip silicon wafer which also measured subsequent α decay and spontaneous fission. “New spontaneous fission activities were identified and assigned to ²⁵³104, ²⁵⁴104, and ²⁵⁸106. The half-lives were measured as $T_{1/2} = (48_{-10}^{+17}) \mu\text{s}$ for ²⁵³104, $T_{1/2} = (23 \pm 3) \mu\text{s}$ for ²⁵⁴104, and $T_{1/2} = (2.9_{-0.7}^{+1.3}) \text{ms}$ for ²⁵⁸106. No indication for α -decay of any of these isotopes was found.” The quoted half-life corresponds to an isomer and a half-life of 11_{-3}^{+6}ms tentatively assigned to ²⁵³Rf corresponds to the ground state. Earlier a 1.8 s half-life was reported for ²⁵³Rf in a conference proceeding (1976FIZN) as quoted in (1981Sc22, 1987Hy02).

Adapted from reference (2013Th02)

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