

²⁷⁰Db

In the 2010 paper “Synthesis of a new element with atomic number $Z = 117$ ”, Oganessian et al. reported the first observation of ²⁷⁰Db (2010Og01). A ²⁴⁹Bk target was bombarded with a 252 MeV ⁴⁸Ca beam at Dubna to form ²⁹⁴117 in the (3n) evaporation reaction. ²⁷⁰Db was populated by subsequent α -decay. The residues were separated with a gas-filled recoil separator and implanted in a semiconductor detector array. Subsequent α particle decay and spontaneous fission events were recorded in this array and in eight detectors arranged in a box configuration around the implantation detector. “The data are consistent with the observation of two isotopes of element 117, with atomic masses 293 and 294. These isotopes undergo α decay with $E_\alpha = 11.03(8)$ MeV and $10.81(10)$ MeV and half-lives $14(+11, -4)$ and $78(+370, -36)$ ms, respectively, giving rise to sequential α -decay chains ending in spontaneous fission of ²⁸¹Rg ($T_{SF} \sim 26$ s) and ²⁷⁰Db ($T_{SF} \sim 1$ d), respectively.” A single decay chain beginning at ²⁹⁴117 and ending with the spontaneous fission of ²⁷⁰Db was observed.

Adapted from reference (2013Th02)

2010Og01 Yu. Ts. Oganessian, F. Sh. Abdullin, P. D. Bailey, D. E. Benker *et al.*, Phys. Rev. Lett. **104**, 142502 (2010).

2013Th02 M. Thoennessen, At. Data Nucl. Data Tables **99**, 312 (2013).

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