^{266}Db

The discovery of ^{266}Db was reported by Oganessian et al. in the 2007 paper "Synthesis of the isotope ^{282}113 in the ^{237}Np+^{48}Ca fusion reaction" (2007Og02). A 244 MeV ^{48}Ca beam from the Dubna U400 cyclotron bombarded a ^{237}Np target and ^{282}113 was populated in the (3n) fusion evaporation reaction. ^{266}Db was populated by subsequent α decays. The residues were separated with a gas-filled recoil separator and implanted in a semiconductor detector array. Alpha 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 first decay chain was terminated by SF decay with an apparent life time of 31.7 min. The origin of this decay can be spontaneous fission of ^{266}Db, or its ε decay with a life time of 31.7 min followed by the relatively short-lived spontaneous fission of the even-even isotope ^{266}Rf." Originally this result was not accepted as the discovery of ^{266}Db because it "was at the end of the isotope chain originating at ^{282}113, however, the observed spontaneous fission could have been due to either ^{266}Db or ^{266}Rf [Ref. (2007Og02) and Ref. (2007Og01)]" (2013Th02). However, in a recent paper Oganessian et al. indicated that the spontaneous fission is indeed occurring from ^{266}Db. In Figure 5 of Ref. (2013Og01) they show ^{266}Db as decaying by fission with a half-life of 22^{+105}_{-10} min and state in the caption: "For five new spontaneously fissioning nuclei marked by gray squares, that is, the isotopes of Db and Rg that terminate the α-decay sequences with SF, the half-lives are listed" (2013Og01). Also, the reported half-life in the original publication is a measured property of ^{266}Db and independent of its decay mode.

Adapted from reference (2014Th03)

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