^{239}Pu

The discovery of ^{239}Pu was reported by Kennedy et al. in the 1946 paper "Properties of 94(239)" (1946Ke02). A uranyl nitrate target was irradiated with neutrons produced by bombarding beryllium with 16 MeV deuterons from the Berkeley 60-inch cyclotron. ^{239}Np was chemically separated and ^{239}Pu was populated by β-decay which then was irradiated with neutrons from the 37-inch cyclotron and subsequent fission events were observed with an ionization chamber. A ^{239}Pu sample was then placed near the screen window of an ionization chamber. "After the 93^{239} had decayed into 94^{239} preliminary fission tests were made on this sample which then contained 0.5 microgram of 94^{239}. This sample was placed near the screen window of an ionization chamber which was imbedded in paraffin near the beryllium target of the 37-inch Berkeley cyclotron. This gave a small, but detectable, fission rate when a 6-microampere beam of deuterons was used." In addition, α-decay was measured and a half-life of about 3×10^4 years was extracted. It is interesting to note that the paper had been submitted already in 1941: "This letter was received for publication on the date indicated [May 29, 1941] but was voluntarily withheld from publication until the end of the war. The original text has been somewhat changed, by omissions, in order to conform to present declassification standards." It should be noted that this paper submitted on May 29, 1941, was published in the October 1946 issue, while another paper by Kennedy and Wahl (1946Se32), submitted on December 4, 1941, was published earlier in the April 1946 issue of Physical Review.

Adapted from reference (2013Fr02)

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