

¹³³Ba

Cork and Smith reported the first observation of ¹³³Ba in their 1941 article “Radioactive Isotopes of Barium from Cesium” ([1941Co03](#)). ¹³³Ba was produced by bombarding cesium with 9.5 MeV deuterons at the University of Michigan. Following chemical separation the isotope was identified with a magnetic beta-spectrometer and by absorption measurements. The observed 40.0(5) h half-life was identified as an excited state and could be ascribed to either ¹³³Ba or ¹³⁴Ba. “However, it is known that the Rochester group have found this same activity by bombarding cesium with protons. In their bombardment it is possible to produce barium by the (P,N) and (P,γ) reactions. Although the latter process is known to occur, the former is much more probable and favors the assignment to Ba¹³³.” The reference to the Rochester group was a private communication. The observed half-life corresponds to an isomeric state and its decay by a 276.4 keV γ-ray populating the ground state was measured (after an additional 12 keV decay which was not observed). The half-life of the ground state (> 2 y) was reported by Katcoff ten years later ([1951KaZR](#)).

Adapted from reference ([2010Sh20](#))

- [1941Co03](#) J. M. Cork and G. P. Smith, Phys. Rev. **60**, 480 (1941).
[1951KaZR](#) S. Katcoff, : NNES **9**, paper320 p. 1865 (1950).
[2010Sh20](#) A. Shore, A. Fritsch, J. Q. Ginepro, M. Heim *et al.*, At. Data Nucl. Data Tables **96**, 749 (2010).

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