

¹⁶³Ho

Hammer and Stewart published the observation of ¹⁶³Ho in the 1957 paper “Isomeric transitions in the rare-earth elements” (1957Ha12). Holmium oxides were irradiated with x-rays from the 75 MeV Iowa State College synchrotron and ¹⁶³Ho was produced in the photonuclear ($\gamma,2n$) reaction. Decay curves and X- and γ -ray spectra were recorded. “Since Ho is a single isotope of mass 165, the ($\gamma,2n$) reaction would place the isomeric state in Ho¹⁶³ and the (γ,d) reaction would place it at Dy¹⁶³. However, Dy¹⁶⁴ is a stable isotope and if the 0.8-sec isomeric state were in Dy¹⁶³, we should have observed it from the Dy¹⁶⁴(γ,n)Dy¹⁶³ reaction. Since we did not, we assume that the reaction we observed was Ho¹⁶⁵($\gamma,2n$)Ho^{163m}.” The measured half-life corresponds to an isomeric state which populated the ground state with a 305 keV transition. A lower limit of 1000 years for the half-life of the ground state was deduced by mass spectroscopy three years later by Naumann (1960Na10). A previously reported half-life of 5.20(5) d (1950Wi13) was incorrect (1954Ha19).

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