

^{131}Ce

The 1966 paper “On the Decay of ^{131}Ce ” by Norris et al. reported the first conclusive assignment of ^{131}Ce produced at Brookhaven National Laboratory (1966No05). The isotope was generated with 40 MeV ^4He and 20 MeV ^3He beams from the Brookhaven 150 cm cyclotron in the reactions $^{130}\text{Ba}(^4\text{He},3n)$ and $^{130}\text{Ba}(^3\text{He},2n)$, respectively. Gamma-ray spectra of chemical separated samples were measured with multi-channel scintillation spectrometers. “A 10 min activity in chemically separated cerium was identified as ^{131}Ce by timed separation of its ^{131}La and ^{131}Ba descendants.” The direct cerium decay measurement resulted in a half-life of 10.5(6) min while the timed lanthanum separation experiment yielded 9.5(3)m. Norris et al. also measured an isomeric half-life of 5.0(10) min. In an earlier measurement a half-life of 30 min was speculated to correspond to ^{131}Ce (1960Wa03). However, the authors made no assignment: “An activity of 30-minutes half-life and 4.2 MeV maximum positron energy, which may be due to ^{131}Ce , was also observed” and “The identity of the 30-minute activity is open to question”. Norris et al. pointed out that this activity was most likely due to ^{130}Ce .

Adapted from reference (2009Gi07)

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