

## <sup>157</sup>Hf

Macfarlane discovered <sup>157</sup>Hf in 1965 as reported in “Alpha-decay properties of some lutetium and hafnium isotopes near the 82-neutron closed shell” (1965Ma14). An enriched <sup>144</sup>Sm target was bombarded with <sup>20</sup>Ne at the Berkeley heavy-ion linear accelerator and <sup>157</sup>Hf was produced in (7n) fusion evaporation reactions. Excitation functions and  $\alpha$ -particles spectra were measured. “One of the Hf alpha groups was observed at an alpha particle energy of 5.68 MeV and was found to decay with a half-life of  $0.12 \pm 0.03$  sec. This group can be seen in the spectra shown in [the figures]. The excitation function for the production of this activity by the reaction  $\text{Sm}^{144} + \text{Ne}^{20}$ , has a peak cross section of 0.2 mb at an excitation energy of 106 MeV. This energy agrees closely with values observed for (H.I.,7n) reactions, which means that this activity is due to Hf<sup>157</sup>. The second Hf alpha group has an alpha-particle energy of 5.27 MeV and decays with a half-life of  $3 \pm 0.5$  sec.”

Adapted from reference (2012Gr19)

1965Ma14 R. D. Macfarlane, Phys. Rev. **137**, B1448 (1965).

2012Gr19 J. L. Gross and M. Thoennessen, At. Data Nucl. Data Tables **98**, 983 (2012).

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