

## <sup>139</sup>Sm

Van Klinken et al. described the observation of <sup>139</sup>Sm in “<sup>139</sup>Sm, a new nuclide of relevance for the systematics of the N=77 isomers” in 1971 ([1971Va22](#)). Alpha particles up to 104 MeV from the Karlsruhe isochronous cyclotron bombarded enriched <sup>144</sup>Sm and <sup>142</sup>Nd. <sup>139</sup>Sm was produced in the reactions <sup>144</sup>Sm( $\alpha,\alpha5n$ ) and <sup>142</sup>Nd( $\alpha,7n$ ), respectively. Gamma-ray spectra were recorded with Ge(Li) detectors after irradiation. “Two new activities with half-lives of  $2.6\pm0.3$  min and  $9.5\pm1.0$  s are produced with constant yield ratios from <sup>144</sup>Sm and <sup>142</sup>Nd, but not from <sup>141</sup>Pr and <sup>140</sup>Ce. When produced from <sup>142</sup>Nd, the threshold for these activities is  $10\pm3$  MeV higher than that for the known isotope <sup>140</sup>Sm. Therefore, both activities have to be attributed to  $A = 139$  and  $Z = 62$ .” Previous searches for <sup>139</sup>Sm were unsuccessful ([1968B114](#), [1970Dr04](#)).

Adapted from reference ([2013Ma01](#))

- [1968B114](#) H. J. Bleyl, H. Munzel, and G. Pfennig, *Radiochim. Acta* **10**, 106 (1968).  
[1970Dr04](#) C. Droste, W. Neubert, J. Lewitowicz, S. Chojnacki *et al.*, *Nucl. Phys. A* **152**, 579 (1970).  
[1971Va22](#) J. van Klinken, S. Goring, D. Habs, M. von Hartrott *et al.*, *Z. Phys.* **246**, 369 (1971).  
[2013Ma01](#) E. May and M. Thoennessen, *At. Data Nucl. Data Tables* **99**, 1 (2013).

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