

## <sup>142</sup>Gd

<sup>142</sup>Gd was identified in 1986 by Lunardi et al. in “First observation of yrast  $\gamma$ -rays in the N = 78 nuclei <sup>142</sup>Gd and <sup>141</sup>Eu” (1986Lu07). Samarium targets were bombarded with 65–107 MeV  $\alpha$ -particle beams from the Jülich cyclotron and <sup>143</sup>Gd was produced in the fusion-evaporation reaction <sup>144</sup>Sm( $\alpha$ ,6n). Excitation functions were measured and  $\gamma$ -ray spectra were recorded with Ge detectors. “We have therefore reinvestigated  $\alpha$ -induced (xnyp) excitation functions for the N = 82 targets of Sm and Nd with  $\alpha$ -particle beams from 65–107 MeV from the cyclotron at Jülich. From the new data we found that the earlier proposed <sup>142</sup>Gd yrast cascade with the 526 keV  $2^+ \rightarrow 0^+$  transition, must be assigned to the <sup>141</sup>Eu isotonic nucleus formed through the <sup>144</sup>Sm( $\alpha$ ,p6n) reaction, whereas a new yrast cascade based on an intense 515 keV line is assigned to the ( $\alpha$ ,6n) channel populating levels in <sup>142</sup>Gd.” The incorrect assignment of the previously measured yrast cascade mentioned in the quote was published ten years earlier (1976Ma56).

Adapted from reference (2013Ma01)

- 1976Ma56 M. A. J. Mariscotti, H. Beuscher, W. F. Davidson, R. M. Lieder *et al.*, *Z. Phys. A* **279**, 169 (1976).  
1986Lu07 S. Lunardi, F. Soramel, W. Starzecki, W. Meczynski *et al.*, *Z. Phys. A* **324**, 433 (1986).  
2013Ma01 E. May and M. Thoennessen, *At. Data Nucl. Data Tables* **99**, 1 (2013).

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