

$^{160}\text{Gd}(^{37}\text{Cl}, ^{39}\text{Cl}\gamma)$ 1994Fo04

Type	Author	History Citation	Literature Cutoff Date
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1994Fo04: E=167 MeV ^{37}Cl beam was produced from the Argonne superconducting linear accelerator ATLAS. Target was 1.0 mg/cm² ^{160}Gd (98% enriched) on a ≈ 15 mg/cm² gold backing. γ rays were detected with the Argonne-Notre Dame BGO γ -ray facility consisting of 12 Compton-suppressed Ge detectors and a 50-element BGO array. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ -coin. Deduced levels, J, π . Comparisons with shell-model calculations.

 ^{39}Cl Levels

E(level) [†]	J π [‡]
0	3/2 ⁺
1301.0 10	(5/2 ⁺) [#]
1786.0 13	(7/2 ⁻)
2424.0 13	(9/2 ⁺) [#]
2834.0 17	(11/2 ⁺) [#]
3519.0 20	(15/2 ⁺) [#]

[†] From a least-squares fit to γ -ray energies, assuming $\Delta E\gamma=1$ keV.

[‡] From Adopted Levels, unless otherwise noted.

[#] The assignment consistent with sdfp (space)-shell model calculations, assuming $\pi d_{3/2}$ for g.s. The excitations correspond to $\pi d_{3/2}(vf_{7/2}^2)$, seniority=3.

 $\gamma(^{39}\text{Cl})$

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π
410	50	2834.0	(11/2 ⁺)	2424.0	(9/2 ⁺)
485	90	1786.0	(7/2 ⁻)	1301.0	(5/2 ⁺)
638	70	2424.0	(9/2 ⁺)	1786.0	(7/2 ⁻)
685	50	3519.0	(15/2 ⁺)	2834.0	(11/2 ⁺)
1123	20	2424.0	(9/2 ⁺)	1301.0	(5/2 ⁺)
1301	100	1301.0	(5/2 ⁺)	0	3/2 ⁺

[†] From 1994Fo04. Quoted values of intensities are estimated from arrow widths in Figure 2 of 1994Fo04.

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Level Scheme
Intensities: Relative I_γ

Legend

→ $I_\gamma < 2\% \times I_\gamma^{max}$
→ $I_\gamma < 10\% \times I_\gamma^{max}$
→ $I_\gamma > 10\% \times I_\gamma^{max}$

