

C($^{36}\text{Mg}, ^{35}\text{Mg}\gamma$), ($^{37}\text{Al}, ^{35}\text{Mg}\gamma$) **2017Mo26**

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	ENSDF		15-Dec-2017

One-neutron knockout and two-nucleon (a neutron and a proton) removal reactions.

2017Mo26: 235 MeV/nucleon ^{36}Mg and 246 MeV/nucleon ^{37}Al beams obtained from fragmentation of 345 MeV/nucleon ^{48}Ca with ^9Be target, followed by separation using BigRIPS separator and Zero Degree spectrometer at RIBF-RIKEN facility. Measured reaction products, E_γ , I_γ , ($^{35}\text{Mg}\gamma$)-coin, inclusive and γ -ray cross sections, parallel momentum distributions in coincidence with γ rays using DALI2 array of 186 large-volume NaI(Tl) crystals. Deduced levels, L-transfers, J^π . Comparison with shell-model calculations using SDPF-M interaction, and with antisymmetrized molecular dynamics (AMD) model calculations using Gogny D1S force. No clear $\gamma\gamma$ -coincidences were observed, indicating that each observed transition populates a separate level. Detection threshold for γ rays was 200 keV in this work.

 ^{35}Mg Levels

E(level) [†]	J^π	L	Comments
0			J^π : $3/2^-$ from shell-model with SDPF-M and SDPF-M + $p_{1/2}$ interactions; $3/2^+$ from shell-model with antisymmetrized molecular dynamics (AMD) framework with the Gogny D1S force (2017Mo26).
0+x			E(level): this level is either the g.s. or at an energy <200 keV, the detection threshold in this experiment.
0+y?			E(level): <200 keV, based on the analysis of inclusive momentum distribution.
206+x 8			J^π : not $1/2^-$ from shell-model calculations.
443+x 7	($3/2^+, 5/2^+$) [‡]	(2)	
616+x 8	($1/2^-, 3/2^-$) [‡]	(1)	
670+x 8			

[†] From E_γ data. It is assumed here that all the four gamma rays feed the same level, based on the prediction of only one excited state below 200 keV excitation in shell-model calculations by **2017Mo26**.

[‡] From measured parallel-momentum distribution and deduced L-transfer.




 $\gamma(^{35}\text{Mg})$

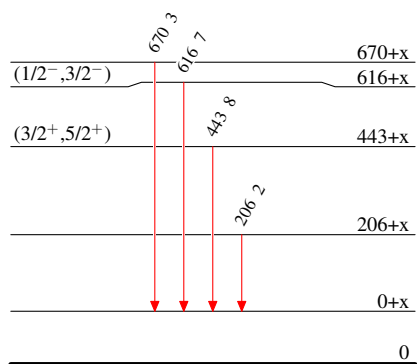
E_γ	σ_γ (mb) [†]	E_i (level)	J_i^π	E_f	Comments
206 8	2 1	206+x		0+x	New γ observed by 2017Mo26 .
443 7	8 1	443+x	($3/2^+, 5/2^+$)	0+x	
616 8	7 1	616+x	($1/2^-, 3/2^-$)	0+x	
670 8	3 1	670+x		0+x	E_γ : value taken from 2011Ga15 , as this γ is not resolved from the 616-keV in 2017Mo26 , but its presence is indicated in the spectra.

[†] γ -ray emission σ (mb).

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Legend

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

 $^{35}_{12}\text{Mg}_{23}$