

Pb(${}^{37}\text{Mg}$, ${}^{36}\text{Mg}\gamma$) **2014Ko14**

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	21-May-2021

Includes C(${}^{37}\text{Mg}$, ${}^{36}\text{Mg}\gamma$).

This dataset is adapted from a dataset in the XUNDL database compiled by J.C. Batchelder (ORNL), December 10, 2014.

Coulomb and nuclear dominated one-neutron removal reaction.

2014Ko14: ${}^{37}\text{Mg}$ secondary beam was produced in ${}^9\text{Be}({}^{48}\text{Ca}, X)$, $E=345$ MeV/nucleon primary reaction at RIBF-RIKEN facility, using 15 mm thick ${}^9\text{Be}$ target. Secondary fragments were selected using $B\rho$ - ΔE - $B\rho$ method through the BigRIPS fragment separator. Beam energies at mid target were 244 MeV/nucleon for the Pb target of 3.37 g/cm² thickness, and 240 MeV/nucleon for the C target of 2.54 g/cm² thickness. Outgoing ${}^{36}\text{Mg}$ residues were identified using $B\rho$ - ΔE -TOF method with the ZeroDegree spectrometer (ZDS). The γ rays were detected using DALI2 array of 186 NaI(Tl) detectors. Measured E_γ , I_γ , cross sections, γ rays in coincidence with ${}^{36}\text{Mg}$ outgoing particles, and parallel momentum distributions of ${}^{36}\text{Mg}$ residues. Deduced level and J^π in ${}^{36}\text{Mg}$. Comparison with shell-model calculations.

Measured total $\sigma=660$ mb 40 for Pb target, and 80 mb 4 for C target; deduced Coulomb breakup $\sigma=490$ mb 50 for Pb target (**2014Ko14**).

 ${}^{36}\text{Mg}$ Levels

E(level)	J^π	Comments
0	0 ⁺	Measured partial $\sigma=530$ mb 60 for Pb target, and 38 mb 8 for C target; deduced Coulomb breakup $\sigma=40$ mb 60 for Pb target (2014Ko14).
660	2 ⁺	Measured partial $\sigma=130$ mb 50 for Pb target, and 42 mb 7 for C target; deduced Coulomb breakup $\sigma=40$ mb 60 for Pb target (2014Ko14).
2060?	(4 ⁺)	

 $\gamma({}^{36}\text{Mg})$

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
660	660	2 ⁺	0	0 ⁺	E_γ : peak observed near 660 keV is associated by 2014Ko14 to the 662 keV transition to the g.s., known from 2013Do22 and 2007Ga34 .
1400	2060?	(4 ⁺)	660	2 ⁺	E_γ : possible weak peak observed near 1400 keV is associated with the 1370 keV transition to the first 2 ⁺ state, known from 2013Do22 .

Pb(${}^{37}\text{Mg}, {}^{36}\text{Mg}\gamma$) 2014Ko14Level Scheme