$^{36}Ar(n,\gamma)$ E=thermal   **1968Wi25**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	John Cameron, Jun Chen and Balraj Singh, Ninel Nica	NDS 113, 365 (2012)	15-Jan-2012

1968Wi25: used Ge(Li) detector and measured σ_0, S(n), and Eγ and Iγ for 11 primary γ's and 16 secondary γ's.

1970Ha56 (superseding 1967Ar14 and 1968Sk02): used Ge(Li) pair spectrometer and anti-Compton spectrometer and measured S(n), and Eγ and Iγ (relative to γ's of ^{41}Ar) for 4 primary γ's and 3 secondary γ's.

See also 2007ChZX and 2003ChZS about the Database of Prompt Gamma Rays from Slow Neutron Capture for Elemental Analysis together with the Prompt Gamma-ray Neutron Activation Analysis database (PGAA) In the websites of IAEA and LBNL.

σ_0=5.2 5 b (1981MuZQ).

^{37}Ar Levels

E(level)[†]	J$^\pi$	Comments
0.0		
1410.6 4		
1611.9 6		
2490.9 3		
3518.0 5		
3938.5 9		
3981.1 4		
4448.6 6		
4578.7 8		
4637.6 9		
5090.5 4		
6583.7 15		
6826.2 15		
(8791.2[‡] 4)	1/2$^+$	J$^\pi$: s-wave capture in ^{36}Ar g.s.

[†] From least-squares fit to Eγ's with normalized χ^2=0.48 indicates a pretty coherent γ-ray set which however were measured In the very early days of Ge(Li) detection (mostly by 1968Wi25). See comment on the last level.

[‡] This value is based only on the data given In this dataset and differs significantly from S(n)=8787.45 21 (2011AuZZ,2003Au03); others: 8791.10 24 (1968Wi25); 8789.0 12 (1970Ha56).

$\gamma(^{37}Ar)$

E$_\gamma$[†]	I$_\gamma$[‡#]	E$_i$(level)	J$_i^\pi$	E$_f$	Comments
878.5 10	0.5	2490.9		1611.9	E$_\gamma$: 878.5 10 (1968Wi25).
1026.7 5	2.7 3	3518.0		2490.9	E$_\gamma$: 1026.7 5 (1968Wi25).
1410.3 6	33.0 5	1410.6		0.0	E$_\gamma$: 1410.6 7 (1968Wi25); 1409.7 10 (1970Ha56).
1611.7 7	3.4 5	1611.9		0.0	E$_\gamma$: 1611.7 7 (1968Wi25).
1957.3 20	2	4448.6		2490.9	E$_\gamma$: 1957.3 20 (1968Wi25).
1966.7 30	2.4	(8791.2)	1/2$^+$	6826.2	E$_\gamma$: 1966.7 30 (1968Wi25).
2087.3 10	0.3	4578.7		2490.9	E$_\gamma$: 2087.3 10 (1968Wi25).
2107.5 4	23.7 10	3518.0		1410.6	E$_\gamma$: 2107.5 4 (1968Wi25); 2108.0 15 (1970Ha56).
2135.3 20	0.2	6583.7		4448.6	E$_\gamma$: 2135.3 20 (1968Wi25).
2145.2 20	0.2	4637.6		2490.9	E$_\gamma$: 2145.2 20 (1968Wi25).
2207.6 20	2.7	(8791.2)	1/2$^+$	6583.7	E$_\gamma$: 2207.6 20 (1968Wi25).
2247.9 15	<5	6826.2		4578.7	E$_\gamma$: 2247.9 15 (1968Wi25).
2490.6 4	57.0 3	2490.9		0.0	E$_\gamma$: 2488 5 (1967Ar14); 2490.5 4 (1968Wi25); 2490.8 8 (1970Ha56).
2599.6 4	3.1 5	5090.5		2490.9	E$_\gamma$: 2599.6 4 (1968Wi25).
3226.9 20	1	4637.6		1410.6	E$_\gamma$: 3226.9 20 (1968Wi25).
3679.3 4	7.9 5	5090.5		1410.6	E$_\gamma$: 3679.3 4 (1968Wi25).
3700.2 4	13.4 9	(8791.2)	1/2$^+$	5090.5	E$_\gamma$: 3700.2 4 (1968Wi25).

^{36}**Ar(n,γ) E=thermal**   **1968Wi25 (continued)**

$\gamma(^{37}$Ar) (continued)

E_γ[†]	I_γ[‡#]	E_i(level)	J^π_i	E_f	Comments
3938.0 *10*	1	3938.5		0.0	E_γ: 3938.0 *10* (1968Wi25).
3981.4 *5*	1.3 *2*	3981.1		0.0	E_γ: 3981.4 *5* (1968Wi25).
4153.0 *10*	1.8 *2*	(8791.2)	$1/2^+$	4637.6	E_γ: 4153.0 *10* (1968Wi25).
4211.6 *10*	0.8 *1*	(8791.2)	$1/2^+$	4578.7	E_γ: 4211.6 *10* (1968Wi25).
4342.3 *5*	3.2 *2*	(8791.2)	$1/2^+$	4448.6	E_γ: 4342.3 *5* (1968Wi25).
4810.3 *5*	1.6 *2*	(8791.2)	$1/2^+$	3981.1	E_γ: 4810.3 *5* (1968Wi25).
4851.8 *15*	0.8 *1*	(8791.2)	$1/2^+$	3938.5	E_γ: 4851.8 *15* (1968Wi25).
5272.6 *9*	25.0 *15*	(8791.2)	$1/2^+$	3518.0	E_γ: 5272 *5* (1967Ar14); 5273.5 *8* (1968Wi25); 5270.6 *12* (1970Ha56).
6299.7 *6*	37.5 *3*	(8791.2)	$1/2^+$	2490.9	E_γ: 6298 *5* (1967Ar14); 6300.2 *8* (1968Wi25); 6298.9 *10* (1970Ha56).
7380.3 *20*		(8791.2)	$1/2^+$	1410.6	E_γ: 7380.3 *20* (1970Ha56).
8790.4 *8*	10.9 *8*	(8791.2)	$1/2^+$	0.0	E_γ: 8791 *5* (1967Ar14); 8790.8 *8* (1968Wi25); 8787.7 *20* (1970Ha56).

[†] Weighted average of the values given In comments.
[‡] Photon intensity per 100 thermal neutron captures of ^{36}Ar from 1968Wi25.
[#] Intensity per 100 neutron captures.

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Level Scheme

Intensities: I_γ per 100 neutron captures

Legend

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