

$^{147}\text{Sm}(\text{n},\gamma)$ E=thermal [1971Gr37,1993Ju01](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

[1971Gr37](#): thermal-neutron capture; measured $E\gamma$, $I\gamma$.

[1993Ju01](#): thermal-neutron capture; measured $T_{1/2}$ using the γ -ray induced Doppler (GRID) broadening technique.

Other: [1969Re04](#).

 ^{148}Sm Levels

E(level) [†]	J $\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0	0 ⁺		
550.0 5	2 ⁺		
1161.0 7	3 ⁻	0.6 ps +4-2	$T_{1/2}$: from 1993Ju01 deduced using Bethe level density formula; 0.5 ps +4-2 if a constant temperature Fermi-gas model is used.
1180.3 7	4 ⁺		
1434.0 8			
1455.8 6	2 ⁺		
1465.0 10	1 ⁻		
1593.7 7	5 ⁻		
1659.4 8	(2,3,4 ⁺)		
1717.8 10			
1733.4 7	4 ⁺		
1893.9 8	4 ⁺		
2031.8 10	4 ⁻		
2110.8 10	4 ⁺		
2146.8 10	2 ⁺		
2215.8 10	5 ⁺		
2227.8 10	4 ⁺		
2326.8 10	4 ⁺		
2397.8 10			
2440.8 10			
2524.8 10	4 ⁺		
2541.8 10			
2631.8 10			
2640.8 10	5 ⁺		
2681.8 10			
2692.8 10			
2711.8 10			
2722.8 10	4 ⁺		
2753.8 10	3 ⁺		
2812.8 20			
2860.8 10	4 ⁻ ,5 ⁻		
2890.8 10			
2917.8 10			
2965.8 10	3 ⁺ ,4 ⁺		
2991.8 10	3 ⁺ ,4 ⁺		
3049.8 10			
3062.8 10	3 ⁻		
3088.8 10	2 ⁺ ,3 ⁻		
3106.8 10	3 ⁺ ,4 ⁺		
3138.8 10	3 ⁽⁻⁾ ,4 ⁽⁻⁾		
3163.8 10	3 ⁺ ,4 ⁺		
3235.8 10			
3261.8 10			
3286.8 10			
3308.8 10			

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$^{147}\text{Sm}(n,\gamma) E=\text{thermal}$ **1971Gr37,1993Ju01** (continued) ^{148}Sm Levels (continued)

$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$E(\text{level})^\dagger$	$J^\pi^\ddagger$
3337.8 <i>10</i>		3465.8 <i>10</i>		3613.8 <i>10</i>		3865.8 <i>10</i>	$3^-,4^-$
3375.8 <i>10</i>		3479.8 <i>10</i>		3635.8 <i>10</i>		3920.8 <i>10</i>	$3^-,4^-$
3387.8 <i>10</i>	$3^-,4^-$	3507.8 <i>10</i>		3701.8 <i>10</i>	$(3^-,4^-)$	3971.8 <i>10</i>	$(3^-,4^-)$
3403.8 <i>10</i>		3519.8 <i>10</i>		3766.8 <i>10</i>		4122.8 <i>10</i>	
3413.8 <i>10</i>		3562.8 <i>10</i>		3831.8 <i>10</i>		8141.9 [#]	$3^-,4^-@$
3437.8 <i>10</i>		3598.8 <i>10</i>	$(3^-,4^-)$	3844.8 <i>10</i>			

[†] From a least-squares fit to E_γ data with the thermal-neutron capture level held fixed at 8141.9 keV.

[‡] Adopted values.

[#] The energy of the thermal-neutron capture state 8149.9 (**1971Gr37**) is considered to be a typographical error and should be 8141.9. The value adopted in this evaluation for the neutron separation energy is $S(n)=8141.37 \pm 28$ (**2012Wa38**).

[@] For s-wave capture on a $7/2^-$ target.

 $\gamma(^{148}\text{Sm})$

$E_\gamma^\dagger$	$I_\gamma^{\ddagger@}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
413.7 <i>10</i>	4.3	1593.7	5^-	1180.3	4^+
432.4 <i>10</i>	1.3	1593.7	5^-	1161.0	3^-
^x 479.1 <i>10</i>	$<7.6^\#$				
^x 497.7 <i>10</i>	2.0				
550.0 <i>10</i>	50	550.0	2^+	0.0	0^+
572.3 <i>10</i>	2.2	1733.4	4^+	1161.0	3^-
611.1 <i>10</i>	11	1161.0	3^-	550.0	2^+
630.2 <i>10</i>	19	1180.3	4^+	550.0	2^+
884.2 <i>10</i>	1.2	1434.0		550.0	2^+
905.5 <i>10</i>	1.0	1455.8	2^+	550.0	2^+
^x 915.2 <i>10</i>	1.8				
1109 <i>1</i>	1.4	1659.4	$(2,3,4^+)$	550.0	2^+
1183 <i>1</i>	1.2	1733.4	4^+	550.0	2^+
1344 <i>1</i>	1.7	1893.9	4^+	550.0	2^+
1456 <i>1</i>	0.8	1455.8	2^+	0.0	0^+
1465 <i>1</i>	1.5	1465.0	1^-	0.0	0^+
^x 3937 <i>1</i>	0.07				
4019 <i>1</i>	0.17	8141.9	$3^-,4^-$	4122.8	
4170 <i>1</i>	0.04	8141.9	$3^-,4^-$	3971.8	$(3^-,4^-)$
4221 <i>1</i>	0.06	8141.9	$3^-,4^-$	3920.8	$3^-,4^-$
4276 <i>1</i>	0.19	8141.9	$3^-,4^-$	3865.8	$3^-,4^-$
4297 <i>1</i>	0.08	8141.9	$3^-,4^-$	3844.8	
4310 <i>1</i>	0.08	8141.9	$3^-,4^-$	3831.8	
4375 <i>1</i>	0.04	8141.9	$3^-,4^-$	3766.8	
4440 <i>1</i>	0.04	8141.9	$3^-,4^-$	3701.8	$(3^-,4^-)$
4506 <i>1</i>	0.16	8141.9	$3^-,4^-$	3635.8	
4528 <i>1</i>	0.11	8141.9	$3^-,4^-$	3613.8	
4543 <i>1</i>	0.04	8141.9	$3^-,4^-$	3598.8	$(3^-,4^-)$
4579 <i>1</i>	0.07	8141.9	$3^-,4^-$	3562.8	
4622 <i>1</i>	0.17	8141.9	$3^-,4^-$	3519.8	
4634 <i>1</i>	0.07	8141.9	$3^-,4^-$	3507.8	
4662 <i>1</i>	0.03	8141.9	$3^-,4^-$	3479.8	
4676 <i>1</i>	0.05	8141.9	$3^-,4^-$	3465.8	
4704 <i>1</i>	0.04	8141.9	$3^-,4^-$	3437.8	
4728 <i>1</i>	0.06	8141.9	$3^-,4^-$	3413.8	

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$^{147}\text{Sm}(\text{n},\gamma)$ E=thermal **1971Gr37,1993Ju01** (continued) $\gamma(^{148}\text{Sm})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^{\ddagger@}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger@}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
4738	1	0.07	8141.9	$3^-,4^-$	3403.8	5460	1	0.11	8141.9	$3^-,4^-$	2681.8
4754	1	0.03	8141.9	$3^-,4^-$	3387.8	5501	1	0.13	8141.9	$3^-,4^-$	2640.8
4766	1	0.05	8141.9	$3^-,4^-$	3375.8	5510	1	0.02	8141.9	$3^-,4^-$	2631.8
4804	1	0.14	8141.9	$3^-,4^-$	3337.8	5600	1	0.01	8141.9	$3^-,4^-$	2541.8
4833	1	0.15	8141.9	$3^-,4^-$	3308.8	5617	1	0.20	8141.9	$3^-,4^-$	2524.8
4855	1	0.06	8141.9	$3^-,4^-$	3286.8	5701	1	0.26	8141.9	$3^-,4^-$	2440.8
4880	1	0.05	8141.9	$3^-,4^-$	3261.8	5744	1	0.05	8141.9	$3^-,4^-$	2397.8
4906	1	0.04	8141.9	$3^-,4^-$	3235.8	5815	1	0.06	8141.9	$3^-,4^-$	2326.8
4978	1	0.12	8141.9	$3^-,4^-$	3163.8	5914	1	0.21	8141.9	$3^-,4^-$	2227.8
5003	1	0.10	8141.9	$3^-,4^-$	3138.8	5926	1	0.01	8141.9	$3^-,4^-$	2215.8
5035	1	0.17	8141.9	$3^-,4^-$	3106.8	5995	1	0.03	8141.9	$3^-,4^-$	2146.8
5053	1	0.03	8141.9	$3^-,4^-$	3088.8	6031	1	0.08	8141.9	$3^-,4^-$	2110.8
5079	1	0.07	8141.9	$3^-,4^-$	3062.8	6110	1	0.19	8141.9	$3^-,4^-$	2031.8
5092	1	0.06	8141.9	$3^-,4^-$	3049.8	6248	1	1.1	8141.9	$3^-,4^-$	1893.9
5150	1	0.22	8141.9	$3^-,4^-$	2991.8	6408	1	0.09	8141.9	$3^-,4^-$	1733.4
5176	1	0.15	8141.9	$3^-,4^-$	2965.8	6424	1	0.01	8141.9	$3^-,4^-$	1717.8
5224	1	0.04	8141.9	$3^-,4^-$	2917.8	6482	1	0.11	8141.9	$3^-,4^-$	1659.4
5251	1	0.19	8141.9	$3^-,4^-$	2890.8	6548	1	0.02	8141.9	$3^-,4^-$	1593.7
5281	1	0.21	8141.9	$3^-,4^-$	2860.8	6686	1	0.01	8141.9	$3^-,4^-$	1455.8
5329	2	0.007	8141.9	$3^-,4^-$	2812.8	6708	1	0.10	8141.9	$3^-,4^-$	1434.0
5388	1	0.03	8141.9	$3^-,4^-$	2753.8	6961	1	0.14	8141.9	$3^-,4^-$	1180.3
5419	1	0.05	8141.9	$3^-,4^-$	2722.8	6983	2	0.006	8141.9	$3^-,4^-$	1161.0
5430	1	0.17	8141.9	$3^-,4^-$	2711.8	7592	1	0.70	8141.9	$3^-,4^-$	550.0
5449	1	0.08	8141.9	$3^-,4^-$	2692.8						

[†] From 1971Gr37.[‡] I_γ per 100 n-captures (1971Gr37).

Contaminated by impurity line.

@ Intensity per 100 neutron captures.

^x γ ray not placed in level scheme.

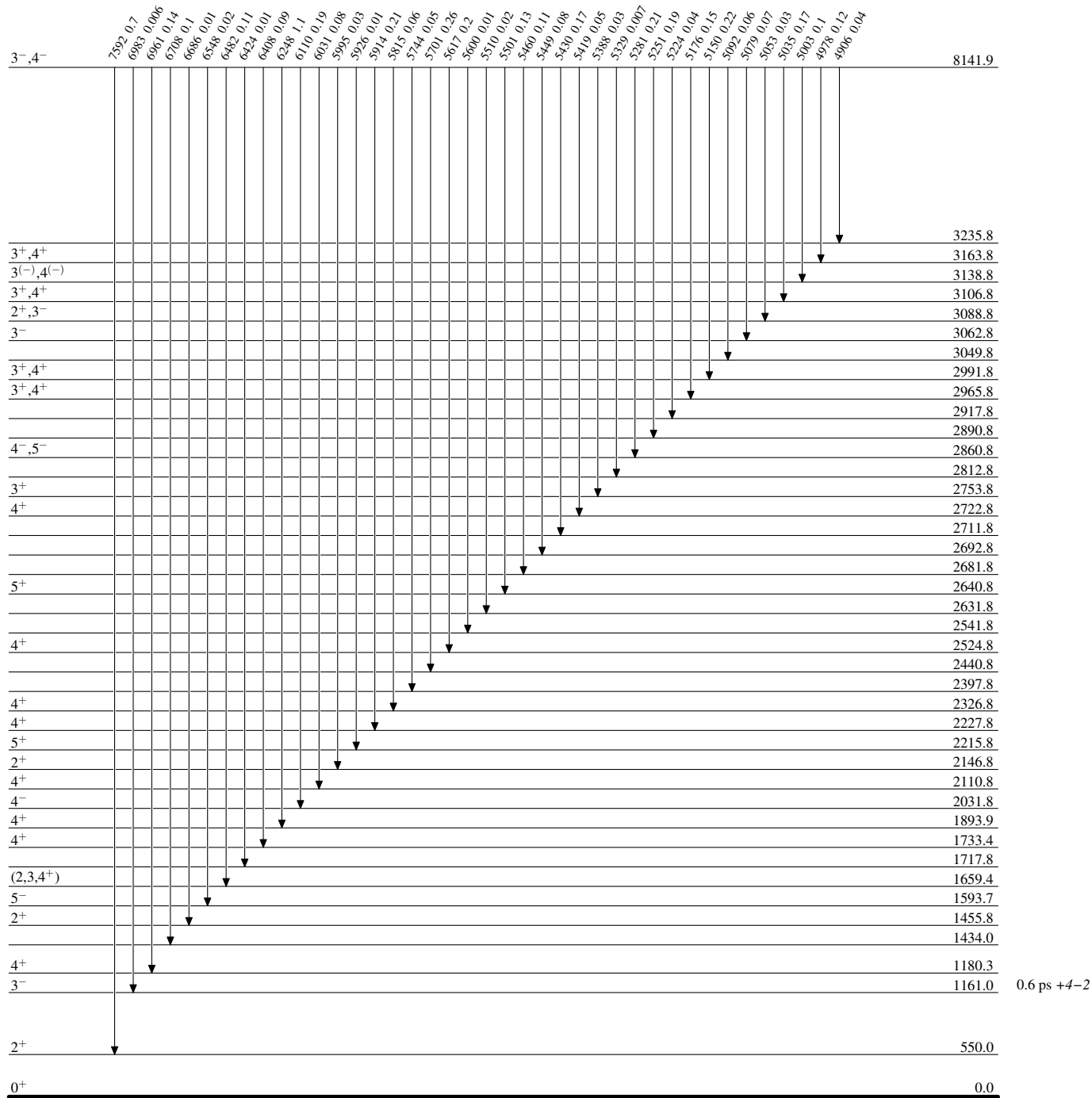
$^{147}\text{Sm}(n,\gamma) \text{ E=thermal}$ 1971Gr37,1993Ju01

Level Scheme

Intensities: Intensity per 100 neutron captures

Legend

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



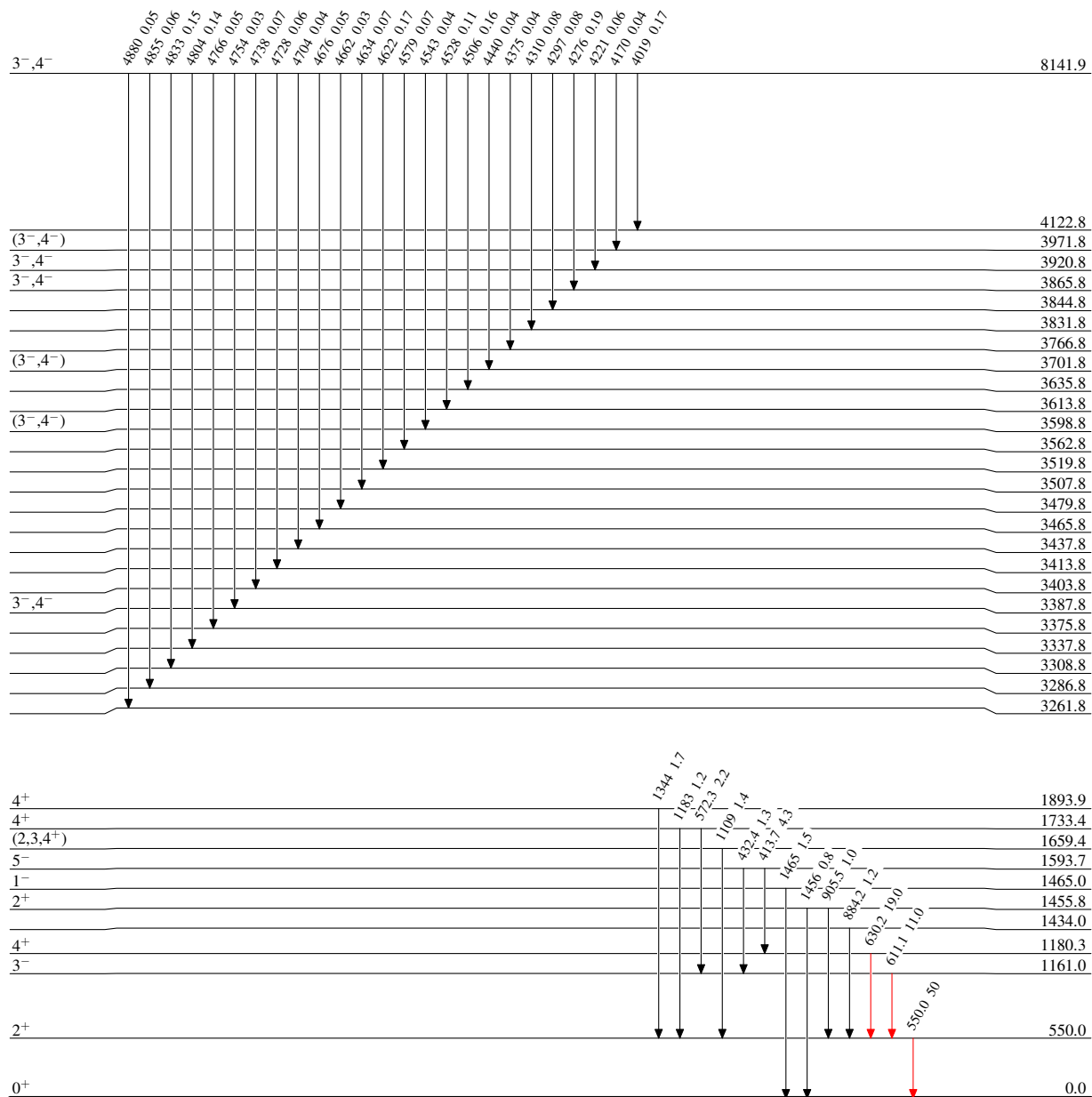
$^{147}\text{Sm}(n,\gamma) E=\text{thermal}$ 1971Gr37,1993Ju01

Level Scheme (continued)

Intensities: Intensity per 100 neutron captures

Legend

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

 $^{148}_{62}\text{Sm}_{86}$