^{172}Yb(n,γ) E=thermal 1971Al01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	V. S. Shirley	NDS 75,377 (1995)	1-Oct-1993

Yb oxide targets enriched to 91.5% in ^{172}Yb; measured Eγ, Iγ (3-crystal Ge(Li) pair spect for Eγ>3400, anti-Compton spect for Eγ<1300).
Other: 1969Na08.

^{173}Yb Levels

E(level)	J^π †	Comments
0.0		
77.1 *8*		
399.1 *6*	$1/2^{(-)},3/2^{(-)}$	
461.8 *6*	$1/2^{(-)},3/2^{(-)}$	
482.0 *9*		
623.6 *8*		
632.1 *13*		
1030.5 *7*	$1/2^{(-)},3/2^{(-)}$	
1073.3 *7*	$1/2^{(-)},3/2^{(-)}$	
1230.9 *10*	$1/2^{(-)},3/2^{(-)}$	
1338.6 *10*	$1/2^{(-)},3/2^{(-)}$	
1492.3 *10*	1/2,3/2	J^π: from feeding by primary transition.
(6367.1 *7*)	$1/2^+$	E(level): thermal capture state, as deduced from these data; Sn(adopted, 1993Au05)=6367.6 *5*. J^π: s-wave capture by even-even nucleus assumed.

† From (E1) multipolarity of primary transitions except where noted.

γ(^{173}Yb)

E_γ	I_γ †‡	E_i(level)	J_i^π	E_f	J_f^π
76.5[a] *10*	2.1	77.1		0.0	
82.8[a] *15*	0.93	482.0		399.1	$1/2^{(-)},3/2^{(-)}$
[x]116.1 *10*	3.1				
[x]120.0 *15*	2.4				
141.1 *10*	0.74	623.6		482.0	
399.4 *8*	26.4	399.1	$1/2^{(-)},3/2^{(-)}$	0.0	
461.8 *8*	2.5	461.8	$1/2^{(-)},3/2^{(-)}$	0.0	
[x]564.8 *15*	0.43				
568.4 *10*	2.0	1030.5	$1/2^{(-)},3/2^{(-)}$	461.8	$1/2^{(-)},3/2^{(-)}$
[x]589.0 *15*	0.25				
592.3 *15*	0.42	1073.3	$1/2^{(-)},3/2^{(-)}$	482.0	
[x]596.2 *20*	0.16				
611.3 *15*	0.76	1073.3	$1/2^{(-)},3/2^{(-)}$	461.8	$1/2^{(-)},3/2^{(-)}$
623.3 *10*	0.17	623.6		0.0	
633.4[&] *20*	<0.45[&]	632.1		0.0	
633.4[&] *20*	<0.45[&]	1030.5	$1/2^{(-)},3/2^{(-)}$	399.1	$1/2^{(-)},3/2^{(-)}$
674.2 *15*	1.2	1073.3	$1/2^{(-)},3/2^{(-)}$	399.1	$1/2^{(-)},3/2^{(-)}$
707.2[a] *15*	0.20	1338.6	$1/2^{(-)},3/2^{(-)}$	632.1	
714.2 *10*	0.18	1338.6	$1/2^{(-)},3/2^{(-)}$	623.6	
769.1 *15*	0.68	1230.9	$1/2^{(-)},3/2^{(-)}$	461.8	$1/2^{(-)},3/2^{(-)}$
831.6 *15*	0.44	1230.9	$1/2^{(-)},3/2^{(-)}$	399.1	$1/2^{(-)},3/2^{(-)}$
995.6 *10*	0.32	1073.3	$1/2^{(-)},3/2^{(-)}$	77.1	

Continued on next page (footnotes at end of table)

^{172}Yb(n,γ) E=thermal 1971Al01 (continued)

γ(^{173}Yb) (continued)

E_γ	I_γ †‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#
x1002.6 *10*	0.23					
1030.6& *10*	<1.5&	1030.5	1/2(−),3/2(−)	0.0		
1030.6& *10*	<1.5&	1492.3	1/2,3/2	461.8	1/2(−),3/2(−)	
x1255.7 *10*	0.30					
x3467.2a *20*	0.36					
x3491.7a *20*	0.43					
x4101.8 *15*	0.54					
x4167.1a *15*	0.26					
x4213.9a *20*	0.22					
4875.5 *20*	0.54	(6367.1)	1/2+	1492.3	1/2,3/2	
5027.5 *15*	0.24	(6367.1)	1/2+	1338.6	1/2(−),3/2(−)	(E1)
5135.9 *15*	0.58	(6367.1)	1/2+	1230.9	1/2(−),3/2(−)	(E1)
5293.6 *10*	2.2	(6367.1)	1/2+	1073.3	1/2(−),3/2(−)	(E1)
5336.8 *10*	2.6	(6367.1)	1/2+	1030.5	1/2(−),3/2(−)	(E1)
5905.4@ *15*	0.38	(6367.1)	1/2+	461.8	1/2(−),3/2(−)	(E1)
5968.1 *10*	2.8	(6367.1)	1/2+	399.1	1/2(−),3/2(−)	(E1)

† Number of γ-rays per 100 neutron captures. Iγ values for secondary transitions are normalized to Iγ(831.6γ)=0.44, corresponding to absolute yield from natural Yb of Iγ(809.3γ, ^{175}Yb)=2.2% (1970Or05). Iγ values for primary transitions are normalized to Iγ(5293.6γ)=2.2, corresponding to absolute yield from natural Yb of Iγ(5265.7γ, ^{175}Yb)=4.3% (1971Al01).

‡ Uncertainties range from≈10% for strong lines up to≈100% for weak lines.

From radiative strengths of primary transitions ($E\gamma^3$ law assumed for E1).

@ Complex (broad) peak, partially attributed to ^{174}Yb.

& Multiply placed with undivided intensity.

a Placement of transition in the level scheme is uncertain.

x γ ray not placed in level scheme.

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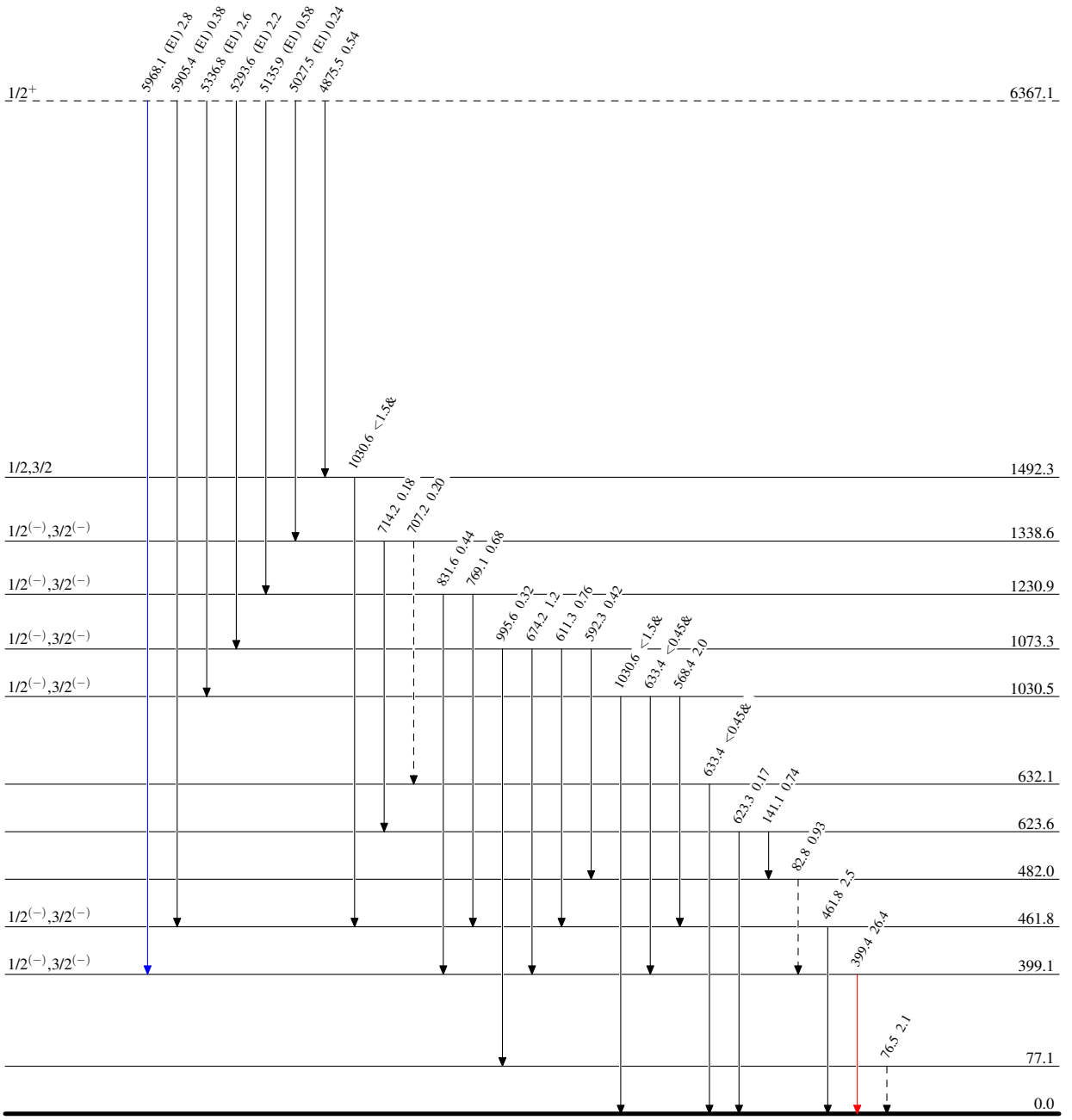
Level Scheme

Intensities: Iγ per 100 neutron captures.
& Multiply placed: undivided intensity given

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{173}_{70}Yb_{103}$