$^{197}\text{Au}(n,n'\gamma)$ **1971Ba29**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong, Zhou Chunmei	NDS 104, 283 (2005)	1-Jan-2002

Others: 1966Be14, 1968Bo52, 1971Ne01, 1986Jo11.

1971Ba29: E=0.4-1.3 MeV; timed semi γ spectra; Eγ, Iγ measured at E(n)=1.3, 1.2, 1.1, 1.03, 0.92, 0.82, 0.72, 0.4 MeV (1971Ba29); at E(n)=1.4,1.8,1.9,2.2 MeV (1971Ne01).

^{197}Au Levels

Iγ-branching ratios of 1971Ba29 (E(n)=1.3 MeV) and 1971Ne01 (E(n)=1.4 MeV) are compared for consistency.

Iγ(n,n'γ)/σ(n,n') ratios at E(n)=0.8-1.3 MeV are determined for E(levels)=0.50-1.24 MeV. Above threshold, intensity ratios are characteristic of populated levels but independent of incident E(n).

E(level)[†]	J$^{\pi}$[‡]	Comments
0.0	3/2$^+$	
77.4 *3*	1/2$^+$	
268.68 *24*	(3/2$^+$)	
278.8 *3*	5/2$^+$	
502.5 *5*	(3/2$^+$,5/2$^+$)	Branching: Iγ(425γ)/Iγ(502γ)=0.025 *7* (1971Ba29).
547.5 *5*	(7/2$^+$)	
736.7 *5*	7/2$^+$[#]	J$^{\pi}$: other: J=(7/2$^+$) (1971Ba29).
		Branching: Iγ(468γ)/Iγ(458γ)≈0.05 (1971Ba29) at E(n)≥1 MeV.
855.3 *6*	(9/2$^+$)	
888.1 *4*	(1/2$^+$)	Branching: Iγ(619γ):Iγ(811γ):Iγ(888γ)=18 *5*:100:9 *3* (1971Ba29).
936.0 *3*	(5/2$^+$)	Branching: Iγ(432γ):Iγ(657γ):Iγ(667γ):Iγ(858γ):Iγ(936γ)=24 *5*:20 4:61 *8*:25 *6*:100 (1971Ba29), −:20:86:−:100 (1971Ne01).
1045.0 *4*	(5/2$^+$)	Branching: Iγ(766γ):Iγ(777γ):Iγ(1044γ)=100:69 *16*:48 *16* (1971Ba29), 100:50:− (1971Ne01).
1150.5 *4*	(3/2$^+$,5/2$^+$)	Branching: Iγ(882γ):Iγ(1073γ):Iγ(1151γ)=100:93 *29*: ≈26 (1971Ba29), 100:89: <13 (1971Ne01).
1217.3 *4*	(3/2$^+$)	Branching: Iγ(1140γ)/Iγ(1218γ)=0.62 *25* (1971Ba29).
1241.9 *4*	(1/2$^+$)	Branching: Iγ(973γ)/Iγ(1242γ)≈0.17 (1971Ba29), 0.55 (1971Ne01).

[†] From Eγ's and scheme by using least-squares fit to data.

[‡] Above 0.5 MeV, assignments are based on observed γ decays, Hauser-Feshbach calc, and unified-model predictions; except J$^{\pi}$=7/2$^+$ (from Adopted Levels) for E(level)=736.7.

[#] From Adopted Levels.

$\gamma(^{197}\text{Au})$

All data are from 1971Ba29.

E$_\gamma$	I$_\gamma$[‡]	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$
77.4 *5*		77.4	1/2$^+$	0.0	3/2$^+$
191.2 *5*		268.68	(3/2$^+$)	77.4	1/2$^+$
268.7 *5*		268.68	(3/2$^+$)	0.0	3/2$^+$
278.8 *5*		278.8	5/2$^+$	0.0	3/2$^+$
308.0[@] *5*		855.3	(9/2$^+$)	547.5	(7/2$^+$)
[x]363.2 *5*					
[x]418.3 *5*	2.1 *7*				
425.0[@] *5*	2.5 *7*	502.5	(3/2$^+$,5/2$^+$)	77.4	1/2$^+$
432.5[@] *5*	3.9 *7*	936.0	(5/2$^+$)	502.5	(3/2$^+$,5/2$^+$)

Continued on next page (footnotes at end of table)

^{197}Au(n,n′γ)　　**1971Ba29 (continued)**

γ(^{197}Au) (continued)

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π
457.7 5	57.4 15	736.7	$7/2^+$	278.8	$5/2^+$
468.1 5	1.1 7	736.7	$7/2^+$	268.68	$(3/2^+)$
502.5 5	100 2	502.5	$(3/2^+,5/2^+)$	0.0	$3/2^+$
^{x}535.4 5	11.9 9				
^{x}539.0 5	3.4 6				
547.5 5	92.3 19	547.5	$(7/2^+)$	0.0	$3/2^+$
^{x}557.7 5	1.7 6				
576.5 5	14.8 10	855.3	$(9/2^+)$	278.8	$5/2^+$
619.0 5	2.7 7	888.1	$(1/2^+)$	268.68	$(3/2^+)$
^{x}652.2 5	0.9 6				
657.1 5	3.2 6	936.0	$(5/2^+)$	278.8	$5/2^+$
667.1 5	10.0 10	936.0	$(5/2^+)$	268.68	$(3/2^+)$
766.3 5	6.2 10	1045.0	$(5/2^+)$	278.8	$5/2^+$
776.9 5	4.3 7	1045.0	$(5/2^+)$	268.68	$(3/2^+)$
810.8 5	15.2 12	888.1	$(1/2^+)$	77.4	$1/2^+$
858.6 5	4.0 9	936.0	$(5/2^+)$	77.4	$1/2^+$
^{x}870.6 5	10.3 22				
881.9† 5	5.8 11	1150.5	$(3/2^+,5/2^+)$	268.68	$(3/2^+)$
888.3 5	1.4# CA	888.1	$(1/2^+)$	0.0	$3/2^+$
936.2 5	16.3 14	936.0	$(5/2^+)$	0.0	$3/2^+$
973.0 5	0.7 6	1241.9	$(1/2^+)$	268.68	$(3/2^+)$
^{x}986.0 5	1.4 9				
1044.2 5	3.0 13	1045.0	$(5/2^+)$	0.0	$3/2^+$
^{x}1055.1 4	0.8 7				
1073.4† 5	5.4 13	1150.5	$(3/2^+,5/2^+)$	77.4	$1/2^+$
1139.5 5	4.2 14	1217.3	$(3/2^+)$	77.4	$1/2^+$
1150.2† 5	1.5 13	1150.5	$(3/2^+,5/2^+)$	0.0	$3/2^+$
1217.7 5	6.8 16	1217.3	$(3/2^+)$	0.0	$3/2^+$
1242.2 5	4.2 14	1241.9	$(1/2^+)$	0.0	$3/2^+$

† Possible doublet.
‡ Photon intensity relative to Iγ(502.5γ)=100 at E(n)=1300 keV.
# Calc from Iγ-branching at E(n)=1.2 MeV (1971Ba29).
@ Placement of transition in the level scheme is uncertain.
^{x} γ ray not placed in level scheme.

^{197}**Au(n,n′γ)**　　**1971Ba29**

Level Scheme

Intensities: Relative I$_\gamma$

Legend

→　I$_\gamma$ < 2%×I$_\gamma^{max}$
→　I$_\gamma$ < 10%×I$_\gamma^{max}$
→　I$_\gamma$ > 10%×I$_\gamma^{max}$
- - →　γ Decay (Uncertain)

$^{197}_{79}$Au$_{118}$