^{239}Pu(γ,γ') 2008Be31

	History			
Type	Author		Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 122, 293 (2014)	30-Jun-2013

Additional information 1.

$J^\pi(^{239}$Pu g.s.$)=1/2^+$.

E=2.8 MeV bremsstrahlung radiation provided by 4 MeV Van de Graaff electron accelerator at High Voltage Research Laboratory (HVRL), Massachusetts Institute of Technology (MIT) facility. Measured Eγ, Iγ using two HPGe detectors. Other: 2011Jo11.

^{239}Pu Levels

E(level)	J^π	Integrated cross section (eV*b)[†]	Comments
0.0	$1/2^{+\ddagger}$		
7.861 *3*	$3/2^{+\ddagger}$		
2040.25 *21*	$(1/2,3/2)^{\#}$	8 *2*	
2046.9 *3*	$(1/2,3/2)^{\#}$	5 *2*	
2135.0? *4*	$(1/2,3/2)^{\#}$	4 *2*	
2143.56 *13*	$(1/2,3/2)^{\#}$	<17	Integrated cross section (eV*b): Total cross section estimated by evaluators.
2151.0 *3*	$(1/2,3/2)^{\#}$	12 *7*	Total cross section estimated by evaluators.
2289.0 *3*	$(1/2,3/2)^{\#}$	8 *2*	
2431.7 *3*	$(1/2,3/2)^{\#}$	19 *4*	
2454.4 *3*	$(1/2,3/2)^{\#}$	9 *3*	
2460.5 *4*	$(1/2,3/2)^{\#}$	6 *4*	
2464.6 *3*	$(1/2,3/2)^{\#}$	8 *4*	
2471.1 *3*	$(1/2,3/2)^{\#}$	6 *2*	

[†] The cross section data were normalized by 2008Be31 to that of the 2211-keV transition in ^{27}Al and its known strength.

[‡] From Adopted Levels.

[#] From expected dominance of dipole excitation in (γ,γ').

$\gamma(^{239}$Pu$)$

E$_\gamma$	E$_i$(level)	J_i^π	E$_f$	J_f^π	Comments
7.860[†] *3*	7.861	$3/2^+$	0.0	$1/2^+$	
2040.25 *21*	2040.25	$(1/2,3/2)$	0.0	$1/2^+$	
2046.9 *3*	2046.9	$(1/2,3/2)$	0.0	$1/2^+$	
2135.0[‡#] *4*	2135.0?	$(1/2,3/2)$	0.0	$1/2^+$	Cross section=4 eVb *2*.
2135.0[‡#] *4*	2143.56	$(1/2,3/2)$	7.861	$3/2^+$	Cross section=4 eVb *2*. E$_\gamma$: placement is tentative since the energy difference is 8.6 keV *3* as compared to an expected 7.86 keV.
2143.56[‡] *13*	2143.56	$(1/2,3/2)$	0.0	$1/2^+$	Cross section=13 eVb *2*.
2143.56[‡] *13*	2151.0	$(1/2,3/2)$	7.861	$3/2^+$	Cross section=13 eVb *2*.
2151.0[#] *3*	2151.0	$(1/2,3/2)$	0.0	$1/2^+$	Cross section=5 eVb *2*.
2289.02 *25*	2289.0	$(1/2,3/2)$	0.0	$1/2^+$	
2423.48 *22*	2431.7	$(1/2,3/2)$	7.861	$3/2^+$	Cross section=10 eVb *2*.
2431.66 *25*	2431.7	$(1/2,3/2)$	0.0	$1/2^+$	Cross section=9 eVb *3*.
2454.4 *3*	2454.4	$(1/2,3/2)$	0.0	$1/2^+$	
2460.5 *4*	2460.5	$(1/2,3/2)$	0.0	$1/2^+$	

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^{239}Pu(γ,γ')   **2008Be31** (continued)

$\gamma(^{239}$Pu) (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π
2464.6 *3*	2464.6	(1/2,3/2)	0.0	1/2$^+$
2471.1 *3*	2471.1	(1/2,3/2)	0.0	1/2$^+$

† From Adopted Gammas.
‡ Multiply placed.
# Placement of transition in the level scheme is uncertain.

^{239}**Pu(γ,γ')**   **2008Be31**

Legend

Level Scheme

- - - - - ▶ γ Decay (Uncertain)

$^{239}_{94}$Pu$_{145}$