^{197}Au(α,5nγ),^{194}Pt(^{6}Li,4nγ) 1978Kr12

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong	NDS 108, 1093 (2007)	1-Jan-2006

E(α)≈65 MeV, E(^{6}Li)≈44 MeV.
Additional information 1.
Measured Eγ, Iγ, σ(E(α),Eγ,$\theta\gamma$,t), $\gamma\gamma$-coin, Xγ-coin.
$\gamma(\theta)$ spectra measured at six angles (θ=90°−165°).

^{196}Tl Levels

E(level)†	J$^{\pi}$‡	$T_{1/2}$	Comments
0.0	2$^-$	1.84‡ h *3*	
394.7	(7$^+$)	1.41‡ h *2*	%ε=96.2.
638.6		2.5 ns	$T_{1/2}$: from $\gamma\gamma$(t).
738.6#	(8$^-$)	21.3 ns *5*	$T_{1/2}$: from time distributions of 343.9γ. Assigned as the bandhead because 343.9γ is the strongest line and is in delayed coincidence with all the other members of the cascade.
738.6+x?	(9$^-$)		
800.0			
800.1+x#	(10$^-$)		
908.7+x#	(11$^-$)		
1180.1+x#	(12$^-$)		
1275.3			
1416.5+x#	(13$^-$)		
1545.1			
1813.4+x#	(14$^-$)		
1996.4			
2080.1+x#	(15$^-$)		
2171.6+x			
2223.7			
2335.5+x			
2527.7+x			
2527.9+x#	(16$^-$)		
2761.0+x#	(17$^-$)		
2847.2+x			
3046.3+x#	(18$^-$)		
3163.9+x			
3335.3+x#	(19$^-$)		
3500.1+x?			
3524.1+x#	(20$^-$)		
3630.5+x?#	(21$^-$)		

† From least-squares fit to Eγ's.
‡ From ^{196}Tl Adopted Levels.
# Band(A): the negative-parity band.

^{197}Au(α,5nγ),^{194}Pt(^{6}Li,4nγ) 1978Kr12 (continued)

$\gamma(^{196}Tl)$

E_γ[‡]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[@]	α[&]	Comments
x		738.6+x?	(9$^-$)	738.6	(8$^-$)	[M1]			E_γ: Eγ<34 keV.
61.5 *3*	8.0	800.1+x	(10$^-$)	738.6+x?	(9$^-$)	D+Q	−0.18 *+14−7*		A_2=−0.54 *10*; A_4=0.01 *1*.
106.4 *3*	1.8	3630.5+x?	(21$^-$)	3524.1+x	(20$^-$)	D+Q	−0.07 *+4−3*		A_2=−0.36 *6*; A_4=0.001 *2*.
108.6 *3*	8.9	908.7+x	(11$^-$)	800.1+x	(10$^-$)	D+Q	−0.05 *+1−2*		A_2=−0.34 *2*; A_4=0.001 *1*.
161.5[#] *3*	4.0	800.0		638.6		D+Q	−0.16 *+6−284*		A_2=−0.32 *2*, A_4=0.09 *8*.
163.5[#] *3*	6.5	2335.5+x		2171.6+x		D+Q	−0.25 *+5−7*		A_2=−0.37 *3*; A_4=0.07 *6*.
188.8 *3*	3.4	3524.1+x	(20$^-$)	3335.3+x	(19$^-$)	D+Q	−0.12 *4*		A_2=−0.39 *4*; A_4=0.004 *3*.
192.2 *3*	7.7	2527.7+x		2335.5+x		D+Q	−0.78 *+23−70*		A_2=−0.36 *3*; A_4=0.07 *6*.
227.3 *3*	4.8	2223.7		1996.4		D(+Q)	0.00 *10*		A_2=−0.14 *10*; A_4=0.00 *1*.
233.1 *3*	5.1	2761.0+x	(17$^-$)	2527.9+x	(16$^-$)	D+Q	−0.27 *+8−7*		A_2=−0.35 *5*; A_4=0.004 *2*.
236.4 *2*	18.4	1416.5+x	(13$^-$)	1180.1+x	(12$^-$)	D+Q	−0.44 *+8−11*		A_2=−0.39 *3*; A_4=0.01 *1*.
243.9 *2*	14.1	638.6		394.7	(7$^+$)				A_2=+0.14 *2*, A_4=0.04 *5*.
266.7 *3*	7.0	2080.1+x	(15$^-$)	1813.4+x	(14$^-$)	D+Q	−0.31 *+8−7*		A_2=−0.48 *3*; A_4=0.01 *1*.
269.8[a]		1545.1		1275.3					
271.4 *2*	30.2	1180.1+x	(12$^-$)	908.7+x	(11$^-$)	D+Q	−0.45 *+10−25*		A_2=−0.44 *4*; A_4=0.01 *1*.
285.3 *2*	11.4	3046.3+x	(18$^-$)	2761.0+x	(17$^-$)	D+Q	−0.07 *2*		A_2=−0.36 *4*; A_4=0.002 *1*.
289.0 *3*	7.8	3335.3+x	(19$^-$)	3046.3+x	(18$^-$)	D+Q	−0.46 *+16−21*		A_2=−0.35 *5*; A_4=0.005 *5*.
316.7 *3*	4.7	3163.9+x		2847.2+x		D+Q	−0.18 *+4−3*		A_2=−0.54 *5*; A_4=0.011 *8*.
319.5 *3*	6.4	2847.2+x		2527.7+x		D+Q	−0.78 *+18−65*		A_2=−0.53 *5*; A_4=0.02 *2*.
336.2[a] *3*	2.9	3500.1+x?		3163.9+x		D+Q	−0.14 *5*		A_2=−0.47 *8*; A_4=0.007 *6*.
343.9 *2*	87.4	738.6	(8$^-$)	394.7	(7$^+$)	E1+M2	−0.14 *+4−7*	0.039 *22*	α(K)=0.031 *17*; α(L)=0.006 *4*; α(M)=0.0014 *10*; α(N+..)=0.0004 *3* B(E1)=0.49×10^{-6} *2*. A_2=−0.21 *2*; A_4=0.005 *7*.
356.0[a]		2527.7+x		2171.6+x					
380.3 *3*	2.1	1180.1+x	(12$^-$)	800.1+x	(10$^-$)				A_2=+0.14 *1*; A_4=−0.01 *1*.
396.9 *2*	13.5	1813.4+x	(14$^-$)	1416.5+x	(13$^-$)	D+Q	−0.62 *+9−23*		A_2=−0.53 *2*; A_4=0.02 *1*.
447.8 *3*	7.7	2527.9+x	(16$^-$)	2080.1+x	(15$^-$)	D+Q	−0.55 *+6−12*		A_2=−0.57 *4*; A_4=0.02 *1*.
451.3 *3*	3.2	1996.4		1545.1		D+Q	−0.6 *+2−13*		A_2=−0.78 *10*; A_4=0.05 *5*.
475.3 *3*	7.3	1275.3		800.0		D+Q	−1.1 *+6−4*		A_2=−0.83 *7*, A_4=0.11 *8*.
507.6 *2*	10.7	1416.5+x	(13$^-$)	908.7+x	(11$^-$)				A_2=+0.22 *2*; A_4=−0.03 *2*.
633.3 *3*	5.5	1813.4+x	(14$^-$)	1180.1+x	(12$^-$)				A_2=+0.34 *3*; A_4=−0.10 *8*.
663.3 *2*	16.3	2080.1+x	(15$^-$)	1416.5+x	(13$^-$)				A_2=+0.25 *2*; A_4=−0.04 *4*.
678.2[#] *3*	9.1	2223.7		1545.1					A_2=+0.17 *2*; A_4=0.02 *3*.
680.6 *2*	11.4	2761.0+x	(17$^-$)	2080.1+x	(15$^-$)				A_2=+0.33 *2*; A_4=−0.09 *8*.
714.6 *3*	7.0	2527.9+x	(16$^-$)	1813.4+x	(14$^-$)				A_2=+0.27 *4*; A_4=−0.06 *4*.
721.0 *3*	3.2	1996.4		1275.3					A_2=+0.28 *6*; A_4=−0.06 *5*.
745.3[#] *2*	10.7	1545.1		800.0					A_2=+0.23 *3*; A_4=−0.04 *4*.
991.5 *3*	4.5	2171.6+x		1180.1+x	(12$^-$)				A_2=+0.45 *9*; A_4=0.05 *4*.

[†] Uncertainties range from 5% to 15% (for the weakest lines).
[‡] Assigning ΔE=0.2 keV for Iγ>10, 0.3 keV for the others.
[#] From authors level scheme, and also given in their spectrum.
[@] From $\gamma(\theta)$.
[&] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[a] Placement of transition in the level scheme is uncertain.

^{197}Au(α,5nγ),^{194}Pt(^{6}Li,4nγ) **1978Kr12**

Level Scheme

Intensities: Relative I_γ

Legend

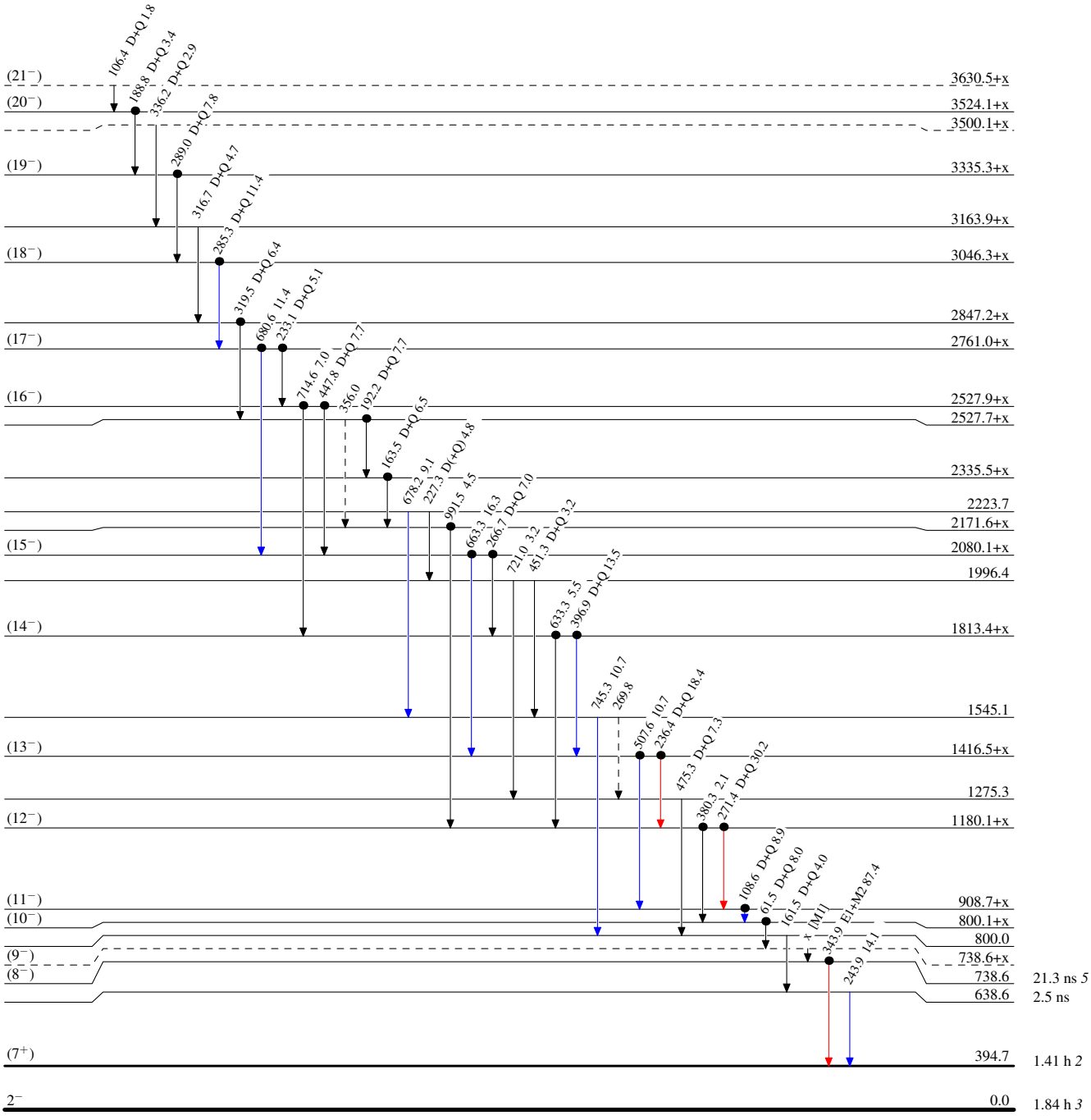
$I_\gamma < 2\% \times I_\gamma^{max}$

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

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

γ Decay (Uncertain)

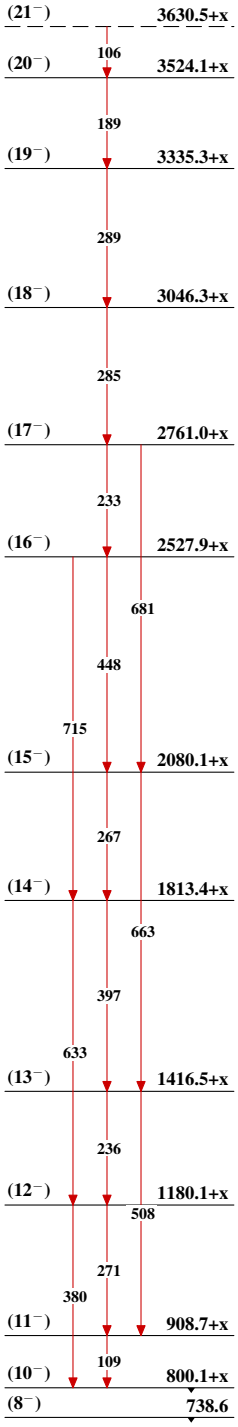
Coincidence



$^{196}_{81}Tl_{115}$

^{197}Au(α,5nγ),^{194}Pt(^{6}Li,4nγ) 1978Kr12

Band(A): The negative-parity band



$^{196}_{81}Tl_{115}$