^{196}Tl IT decay (1.41 h) 1960Ju01

History

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

Parent: ^{196}Tl: E=394.6 *6*; J^π=(7$^+$); $T_{1/2}$=1.41 h *2*; %IT decay=3.8 *4*

^{196}Tl-%IT decay: Based upon the assumption that essentially all ε decays go through the 84(E2) transition in ^{196}Hg and all IT decays go through the 120(M4) transition in ^{196}Tl; ce(L3)(84)/ce(L3)(120)=16.9 *17* (1960Ju01), and theoretical conversion coefficients with 1.5% uncertainties.

Source prepared by natural Hg(p,xn)^{196}Tl, E(p)=80-90 MeV; chem; isotope separator, ce, spectrometer.

^{196}Tl Levels

E(level)†	J^π‡	$T_{1/2}$‡
0.0	2$^-$	1.84 h *3*
240.8 *5*	(2)$^-$	
274.5 *5*	(3$^-$)	
394.6 *6*	(7$^+$)	1.41 h *2*

† From least-squares fit to Eγ′s.
‡ From Adopted Levels.

γ(^{196}Tl)

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   Measured electron intensities from 1960Ju01

   Eγ(keV)      Mult      Shell        Ie
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   33.7  3      M1        Li         25  10
   120.1  3     M4        Liii      100
   240.7  6     M1        K           ≤23
   274.6  6     M1        K           50  10
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E_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α‡	$I_{(\gamma+ce)}$†	Comments
33.7 *3*	274.5	(3$^-$)	240.8	(2)$^-$	(M1)		38.2 *12*	36 *15*	ce(L)/(γ+ce)=0.746 *16*; ce(M)/(γ+ce)=0.175 *7*; ce(N+)/(γ+ce)=0.0535 *22* Mult.: Ice(L1)(33.7)/Ice(L3)(120.1)=0.25 *10* (1960Ju01). $I_{(\gamma+ce)}$: From Ice(L1)=25 *10* and α_{L1}(M1)/α(M1)=0.69.
120.1 *3*	394.6	(7$^+$)	274.5	(3$^-$)	M4		2.30×10^3 *5*	223 *7*	ce(K)/(γ+ce)=0.0676 *17*; ce(L)/(γ+ce)=0.649 *12*; ce(M)/(γ+ce)=0.216 *6*; ce(N+)/(γ+ce)=0.0671 *20* B(M4)(W.u.)=3.4 *4* Additional information 1. Mult.: supported by K:L:M:N=0.14 *7*:1.00:0.33 *3*:0.13 *3* and L1:L2:L3=0.36 *7*:0.14 *5*:1.00 (1960Ju01); M4 theory: K:L:M=0.11:1.0:0.33, L1:L2:L3=0.37:0.078:1.0. $I_{(\gamma+ce)}$: From measured conversion-electron data(1960Ju01).

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^{196}Tl IT decay (1.41 h) 1960Ju01 (continued)

$\gamma(^{196}Tl)$ (continued)

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α‡	$I_{(\gamma+ce)}$†	Comments
240.7 *6*	240.8	(2)$^-$	0.0	2$^-$	M1+E2	<0.6	0.65 *7*	36 *15*	ce(K)/(γ+ce)=0.32 *3*; ce(L)/(γ+ce)=0.059 *3*; ce(M)/(γ+ce)=0.0139 *7*; ce(N+)/(γ+ce)=0.00425 *20* Mult.: Ice(K)(240.7)/Ice(L3)(120.1)≤0.23 (1960Ju01); in ^{196}Pb ε decay, K/L≥2.8, K/L3>60 (1961Sv01); M1 theory: K/L=5.8, K/L3=850; E2 theory: K/L=1.3, K/L3=4.4. $I_{(\gamma+ce)}$: From intensity balance at 240.8keV level.
274.6 *6*	274.5	(3$^-$)	0.0	2$^-$	(M1)		0.500 *8*	183 *38*	ce(K)/(γ+ce)=0.273 *4*; ce(L)/(γ+ce)=0.0461 *8*; ce(M)/(γ+ce)=0.01077 *18*; ce(N+)/(γ+ce)=0.00330 *6* Mult.: K/L≥6; M1 theory: K/L=5.9 Ice(K)(274.6)/Ice(L3)(120.1)=0.50 *10* (1960Ju01). $I_{(\gamma+ce)}$: From measured conversion-electron data(1960Ju01).

† For absolute intensity per 100 decays, multiply by 0.0172 *18*.
‡ 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.