^{196}Au IT decay (9.6 h) 1967Wa02,1982Ha04

History

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

Parent: ^{196}Au: E=595.66 *4*; $J^\pi=12^-$; $T_{1/2}$=9.6 h *1*; %IT decay=100.0

^{196}Au-%IT decay: Estimated from β decay systematics; branching by β decay is very small for 12^- to 9^- (log *ft*>12.8).

1967Wa02: source prepared by ^{197}Au(n,2n) with neutron filters to minimize secondary reactions; also ^{196}Pt(d,2n), 66% enriched ^{196}Pt, chem. Measured γ rays, Ice, $\gamma\gamma(\theta)$ at four angles, ceγ(t).

1982Ha04: source prepared by ^{198}Pt(d,4n), E=34 MeV. Measured I$\gamma(\theta$,t), NMR on oriented nuclei. Recoil implantation into Ni.

Others: 1975ChYL, 1974ChXH, 1973Ba11, 1971Ro16, 1963Ka24, 1963Ti02, 1962Bo12, 1960Ka21, 1960De15, 1960Ad02, 1959Va14.

^{196}Au Levels

E(level)†	J^π	$T_{1/2}$‡	Comments
0.0	2^-	6.1669 d *6*	$T_{1/2}$: from 2001Li17. Others: 6.183 d *10* (1963Ik01),6.1 d *1* (1976HeZF), 6.1 d *1* (1963Ti02), 6.07 d *11* (1962Li03), 6.15 d *15* (1962Wa16), 6.17 d *5* (1962Bo12), 5.3 d *3* (1963Ka24), 5.6 d *1* (1960Ba63).
84.660 *20*	5^+	8.1 s *2*	$T_{1/2}$: others: 8.2 s *2* (1971Ro16), 7.4 s *6* (1972GlZX).
232.47 *3*	7^+	1.65 ns *15*	
370.15 *3*	$(6,7)^+$	<30 ns	
400.84 *3*	6^+	<30 ns	
420.75 *3*	8^+	2.0 ns *2*	
595.66 *4*	12^-	9.6 h *1*	%IT=100 μ=+5.72 *8* (1982Ha04) μ: From g=+0.476 *7* (1982Ha04). Others: μ=+5.35 *20* (1971Ba94). $T_{1/2}$: weighted average of 9.7 h *3* (1960Ba63), 9.5 h *3* (1960Ka21), 9.7 h *1* (1962Bo12), 10.4 h *10* (1963Ka24), 9.5 h *5* (1963Ti02), 9.5 h *2* (1982Ho04).

† From least-squares fit to Eγ's.

‡ From 1967Wa02, except where noted.

γ(^{196}Au)

Iγ normalization: Normalized from γ and conversion electron feeding to 84.66-keV level.

E_γ[†]	I_γ[‡@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α[&]	$I_{(\gamma+ce)}$[@]	Comments
19.92 *1*	≈0.0328[#]	420.75	8^+	400.84	6^+	(E2)	1.177×10^4	≈386	ce(L)/(γ+ce)=0.753 *8*; ce(M)/(γ+ce)=0.193 *4*; ce(N+)/(γ+ce)=0.0545 *11* Mult.: L:M1:M2:M3:(N+O)=≈170:≤7:26:25:17; M1/E2<1.0 (1967Wa02).
30.71 *1*	2.59[#]	400.84	6^+	370.15	$(6,7)^+$	M1	41.5	110	ce(L)/(γ+ce)=0.750 *7*; ce(M)/(γ+ce)=0.174 *3*; ce(N+)/(γ+ce)=0.0520 *10* Mult.: L1:L2:L3:M1:(N+O)=67:11:<3:17:10; E2/M1<0.002 (1967Wa02).
50.57 *2*	<0.11[#]	420.75	8^+	370.15	$(6,7)^+$	(E2)	118.8	<13.42	ce(L)/(γ+ce)=0.744 *8*; ce(M)/(γ+ce)=0.193 *4*; ce(N+)/(γ+ce)=0.0548 *11* Mult.: L1:L2:L3:M=<1:4:5:3; M1/E2<0.4 (1967Wa02).
84.66 *2*	3.50[#] *6*	84.660	5^+	0.0	2^-	E3	327	1148 *11*	ce(K)/(γ+ce)=0.000882 *18*; ce(L)/(γ+ce)=0.729 *8*; ce(M)/(γ+ce)=0.207 *4*; ce(N+)/(γ+ce)=0.0600 *12* α: E3 α(theory)′s mult. By 0.975 *10* (Cf. 1990Ne01). Mult.: K:L1:L2:L3:M2:M3:(M4+M5):(N+O)=<10:18:450:340:100:85:6:65 (1967Wa02); α(exp)=240 *50* (1971Ro16). $I_{(\gamma+ce)}$: from I(γ+ce)=Ti(147γ+285γ+316γ). Σ Ice=1151. HF=160 wu, B(E3)=1.4×10^{-5}.
137.69 *3*	15 *5*	370.15	$(6,7)^+$	232.47	7^+	M1	2.91		α(K)=2.39 *4*; α(L)=0.400 *6*; α(M)=0.0928 *13*; α(N+..)=0.0277 *4* Mult.: K:L1:L2:L3:M=30:≤7:<2:<2:2; E2/M1<0.2 (1967Wa02).
147.81 *2*	500	232.47	7^+	84.660	5^+	E2	1.107		α(K)=0.346 *5*; α(L)=0.571 *8*; α(M)=0.1478 *21*; α(N+..)=0.0423 *6* Mult.: K:L1:L2:L3:M:(N+O)=160:25:165:110:100:25; M1/E2<0.03, A_2=−0.046 *65* from γγ(θ) supports E2 (1967Wa02). B(E2)=0.23 from $T_{1/2}$; HF=0.030 wu.
168.37 *2*	90 *5*	400.84	6^+	232.47	7^+	M1	1.647		α(K)=1.353 *19*; α(L)=0.226 *4*; α(M)=0.0524 *8*; α(N+..)=0.01561 *22* Mult.: K:L1:L2:L3=90:15:2:<1.5; E2/M1<0.06 (1967Wa02).
174.91 *2*	5.04[#] *9*	595.66	12^-	420.75	8^+	M4	227	1149	ce(K)/(γ+ce)=0.266 *5*; ce(L)/(γ+ce)=0.524 *8*; ce(M)/(γ+ce)=0.158 *3*; ce(N+)/(γ+ce)=0.0475 *10* α: M4 α(theory)′s mult. By 0.975 *5* (Cf. 1990Ne01). Mult.: K:L1:L2:L3:M1:M3:(M4+M5):(N+O)=265:220:50:340:75:110:13:70 (1967Wa02); α(exp)=250 *40* (1971Ro16). Hf(M4)=0.23.

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

E_γ[†]	I_γ[‡@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α[&]	$I_{(\gamma+ce)}$[@]	Comments
188.27 *3*	345[#] *12*	420.75	8^+	232.47	7^+	M1+E2	+0.12 *2*	1.193 *18*	757 *25*	α(K)=0.978 *15*; α(L)=0.1651 *24*; α(M)=0.0384 *6*; α(N+..)=0.01143 *16* Mult.: K:L1:L3:M=340 *60*:60:2:15; E2/M1=0.05 +*9*−*2* (1967Wa02). An intensity imbalance at the 232.5 level supports an E2 admixture. δ: from 1982Ha04. δ^2<0.025 (1967Wa02). Hf(M1)=1.8×10^4, Hf(E2)=0.020.
[x]264.0 *5*	15 *5*									
285.49 *7*	51 *5*	370.15	$(6,7)^+$	84.660	5^+	(E2)		0.1188		α(K)=0.0701 *10*; α(L)=0.0367 *6*; α(M)=0.00927 *13*; α(N+..)=0.00268 *4* Mult.: K:(L1+L2):L3=5 *1*:1.0 *3*:≤0.5; M1/E2<0.09 (1967Wa02).
316.19 *5*	34 *3*	400.84	6^+	84.660	5^+	M1+E2	>3	0.098 *10*		α(K)=0.064 *10*; α(L)=0.0257 *8*; α(M)=0.00642 *17*; α(N+..)=0.00186 *6* Mult.: K:(L1+L2):L3:M1=5 *1*:0.8 *3*:0.2:0.2; E2/M1=0.9 +*8*−*3* (1967Wa02).

[†] The energies of γ transitions reported by 1967Wa02 have been adjusted upward by 40 eV normalizing to more recent values of standards.

[‡] From 1967Wa02.

[#] From intensity balance at each level, measured Ice and theoretical α.

[@] For absolute intensity per 100 decays, multiply by 0.087 *3*.

[&] 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.

[x] γ ray not placed in level scheme.

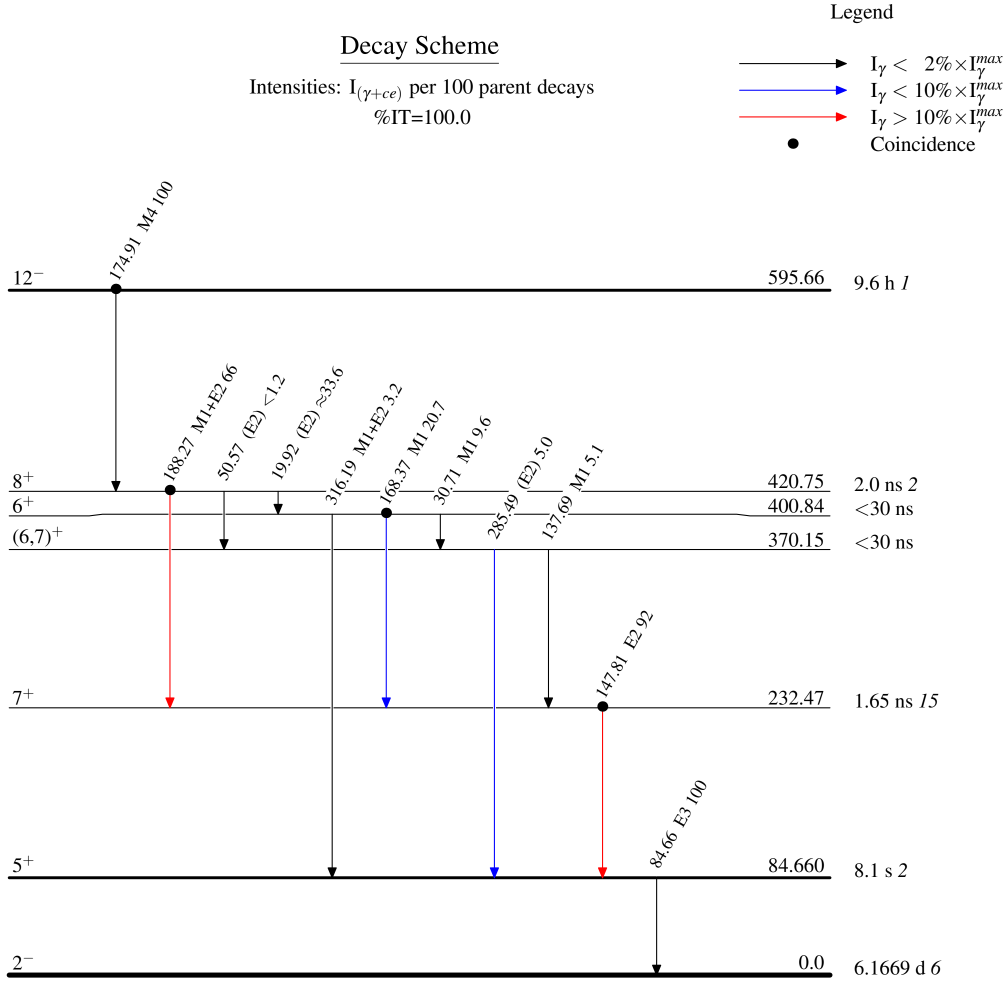
$^{196}_{79}Au_{117}$-3

^{196}Au IT decay (9.6 h) 1967Wa02,1982Ha04

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

%IT=100.0



$^{196}_{79}Au_{117}$