Coulomb excitation   1976Tu02

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	Jean Blachot	NDS 111,1471 (2010)	1-May-2009

E(α)=9.4, 10.0, 10.6 MeV.
E(^{16}O)=42, 45 MeV.
Enriched target (96%) were chemically processed to eliminate contaminants.
Measured: γ singles, $\gamma(\theta)$ and $\gamma\gamma$ coin, semi, Doppler broadening.
Others: 1970Be02, 1974Er06, 1974Le34.

^{113}In Levels

B(E2): B(E2) and B(E3) values were calculated from measured yield at 55° in ^{113}In($\alpha,\alpha'\gamma$); see 1976Tu02.

E(level)	J$^{\pi\dagger}$	T$_{1/2}$	Comments
0	9/2$^+$	stable	
391.7 8	1/2$^-$		
646.9 8	3/2$^-$		B(E3)↑=0.0048 5
1024.2 7	5/2$^+$	3.6 ps 3	B(E2)↑=0.0075 6
			T$_{1/2}$: from B(E2). 3.8 ps 7 from DSA.
1131.7 7	5/2$^+$	0.97 ps 7	B(E2)↑=0.0160 10
			T$_{1/2}$: from B(E2).
1173.0 7	11/2$^+$	0.07‡ ps 4	B(E2)↑=0.093 6
			T$_{1/2}$: from B(E2).
			J$^\pi$: x,$\gamma(\theta)$ for 171γ and 1173γ consistent with 11/2$^+$ only.
1344.4 8	13/2$^+$	0.33 ps 3	B(E2)↑=0.053 3
			J$^\pi$: x,$\gamma(\theta)$ gives 9/2$^+$ or 13/2$^+$. T$_{1/2}$(DSA) and B(E2) not mutually consistent with 9/2$^+$.
			T$_{1/2}$: from B(E2). 0.28 ps 7 from DSA.
1509.5 8	7/2$^+$,9/2$^+$	≤0.2‡ ps	B(E2)↑=0.0145 10
			T$_{1/2}$: from B(E2).
			J$^\pi$: from x,$\gamma(\theta)$ and Adopted Levels.
1566.9 8	7/2$^+$,9/2$^+$	0.24‡ ps 10	B(E2)↑=0.0178 12
			J$^\pi$: from x,$\gamma(\theta)$ and Adopted Levels.
			T$_{1/2}$: from B(E2).
1630.7 7			B(E2)↑=0.0032 12

† From Adopted Levels, except as noted.
‡ From DSA-method line shapes in ^{113}In(^{16}O,^{16}O$'\gamma$).

$\gamma(^{113}$In$)$

E$_\gamma^\dagger$	I$_\gamma^\ddagger$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.$^\#$	δ	Comments
107.5	0.9 2	1131.7	5/2$^+$	1024.2	5/2$^+$			
171.4	2.1 1	1344.4	13/2$^+$	1173.0	11/2$^+$	M1+E2	+0.03 3	B(M1)(W.u.)=0.28 3; B(E2)(W.u.)=7 +14−7
255.3		646.9	3/2$^-$	391.7	1/2$^-$			
377.3	9.0 6	1024.2	5/2$^+$	646.9	3/2$^-$			
377.8	6.5 32	1509.5	7/2$^+$,9/2$^+$	1131.7	5/2$^+$			
391.7		391.7	1/2$^-$	0	9/2$^+$			
393.9	12.5 9	1566.9	7/2$^+$,9/2$^+$	1173.0	11/2$^+$			
457.7	25.9 48	1630.7		1173.0	11/2$^+$			
484.8	14.0 3	1131.7	5/2$^+$	646.9	3/2$^-$	E1(+M2)	−0.03 5	B(E1)(W.u.)=0.00037 3; B(M2)(W.u.)=6 +22−6
								δ: −3.0 5 excluded from transition strength.

Continued on next page (footnotes at end of table)

Coulomb excitation   1976Tu02 (continued)

$\gamma(^{113}$In$)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Comments
606.5	≤1.0	1630.7		1024.2	5/2$^+$		
1024.2	91.0 *6*	1024.2	5/2$^+$	0	9/2$^+$	E2	B(E2)(W.u.)=3.9 *4*
1131.7	85.1 *5*	1131.7	5/2$^+$	0	9/2$^+$	E2	B(E2)(W.u.)=8.2 *6*
1173.0	100	1173.0	11/2$^+$	0	9/2$^+$		
1344.4	97.9 *1*	1344.4	13/2$^+$	0	9/2$^+$	E2	B(E2)(W.u.)=11.8 *11*
1509.5	93.5 *32*	1509.5	7/2$^+$,9/2$^+$	0	9/2$^+$		
1566.9	87.5 *9*	1566.9	7/2$^+$,9/2$^+$	0	9/2$^+$		
1630.7	73.1 *48*	1630.7		0	9/2$^+$		

[†] Uncertainty not given, 1 keV assumed by evaluator.
[‡] % photon branching from each level.
[#] Mult and δ from $\gamma(\theta)$.

Coulomb excitation　　1976Tu02

Legend

Level Scheme

Intensities: Relative I$_\gamma$

→ I$_\gamma$ <　2%×I$_\gamma^{max}$
→ I$_\gamma$ < 10%×I$_\gamma^{max}$
→ I$_\gamma$ > 10%×I$_\gamma^{max}$
● Coincidence

Level scheme for $^{113}_{49}$In$_{64}$

Levels (keV): 1630.7; 1566.9 (7/2$^+$,9/2$^+$) 0.24 ps *10*; 1509.5 (7/2$^+$,9/2$^+$) ≤0.2 ps; 1344.4 (13/2$^+$) 0.33 ps *3*; 1173.0 (11/2$^+$) 0.07 ps *4*; 1131.7 (5/2$^+$) 0.97 ps *7*; 1024.2 (5/2$^+$) 3.6 ps *3*; 646.9 (3/2$^-$); 391.7 (1/2$^-$); 0 (9/2$^+$) stable

Transition labels: 1630.7 73.1; 606.5 ≤1.0; 457.7 25.9; 1566.9 87.5; 393.9 12.5; 1509.5 93.5; 377.8 6.5; 1344.4 E2 97.9; 171.4 M1+E2 2.1; 1173.0 100; 1131.7 E2 85.1; 484.8 E1(+M2) 14.0; 107.5 0.9; 1024.2 E2 91.0; 377.3 9.0; 255.3; 391.7

$^{113}_{49}$In$_{64}$