^{18}O(^{13}C,αnγ) 2014Bh03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst	NDS 134,1 (2016)	1-Feb-2016

Target: Ta_2O_5 (effective ^{18}O thickness ≈1.6 mg/cm^2), was prepared heating 50 mg/cm^2 thick Ta foil in enriched ^{18}O; Projectile: ^{13}C, E=30 MeV; Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma(\theta)$, $\gamma\gamma(\theta)$, $\gamma\gamma$(linear polarization) using an array of 15 Compton-suppressed Clover detectors.

^{26}Mg Levels

E(level)†	J$^\pi$	Comments
0.0	0$^+$	
1809.0 *8*	2$^+$	
2939.3 *8*	2$^+$	
3083.2 *22*		
3420.5 *19*		
3565.2 *21*		
3588.7 *23*	0$^+$	
3943.0 *10*	3$^+$	
4318.4 *11*	4$^+$	
4332.0 *14*	2$^+$	
4350.7 *9*	3$^+$	
4645.2 *15*		
4839.2 *13*	2$^+$	
4901.2 *22*	4$^+$	
5181.9 *12*		
5292.4 *22*	2$^+$	
5476.6 *11*	4$^+$	
5691.5 *14*	1$^+$	
5711.3 *24*		
5715.5 *11*	4$^+$	
6125.6 *25*	3$^+$	
6256.6 *19*	0$^+$	
6484.7 *18*		
6622.6 *13*	4$^+$	
6634.6 *22*	1$^+$	
6953.1 *19*	(2)$^+$	J$^\pi$: From shell model calculations.
6973.2 *22*	4$^+$	J$^\pi$: 3030γ D+Q to 3$^+$ and parity from shell model calculations.
6978.5 *13*	5$^+$	
7099.7 *22*	2$^+$	
7261.2 *22*	2$^-$	
7283.2 *22*	4$^-$	
7395.5 *15*	5$^+$	
7543.3 *22*	2$^-$	
7771.6 *23*	4$^+$	
7952.6 *23*	5$^-$	
8201 *3*	6$^+$	
8472.6 *19*	6$^+$	
8903.6 *24*	3$^-$	
9171 *4*	6$^-$	
9539.9 *17*	5$^+$	
9830 *4*	7$^+$	

† From a least-squares fit to Eγ.

$^{18}O(^{13}C,\alpha n\gamma)$ 2014Bh03 (continued)

$\gamma(^{26}Mg)$

R(θ)=γ anisotropy ratio for 40°, 65° and 90° geometry. For a ΔJ=1, dipole transition, expected ratios are 0.95 and 1.13 for gating on ΔJ=1 and ΔJ=2 transitions, respectively. Similarly, for a ΔJ=2, quadrupole transition, expected ratios are 1.82 and 1.68 for gating on ΔJ=1 and ΔJ=2 transitions, respectively.

Polarization values are integral polarization asymmetries from oriented nuclei. Expected value is positive for electric and negative for magnetic transitions.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	Comments
565.1 *13*		6256.6	0^+	5691.5	1^+	D[#]		
833.1 *13*		6125.6	3^+	5292.4	2^+			
896.0 *13*	2.1 *22*	4839.2	2^+	3943.0	3^+	M1+E2		R(θ)=1.01 *1*, pol=+0.21 *33*.
1004.1 *16*	29 *8*	3943.0	3^+	2939.3	2^+	M1+E2		R(θ)=0.92 *16*, pol=−0.20 *6*.
1130.4 *3*	100 *7*	2939.3	2^+	1809.0	2^+	M1+E2	−0.14 *5*	R(θ)=1.24 *1*, pol=−0.15 *4*, A_2=+0.23 *1*, A_4=−0.07 *1*. δ: Rose-Brink convention used in 2014Bh03. Sign reversed to Krane-Steffen convention for ENSDF policy.
1158.3 *12*	18.6 *32*	5476.6	4^+	4318.4	4^+	M1+E2[#]		R(θ)=1.42 *7*.
1218.7 *23*	9.5 *27*	9171	6^-	7952.6	5^-	M1+E2[#]		pol=−0.66 *10*.
1238.9 *7*		5181.9		3943.0	3^+			
1263.7 *21*		6978.5	5^+	5715.5	4^+			
1274.1 *20*		3083.2		1809.0	2^+			
1302.7 *13*		6484.7		5181.9				
1359.4 *3*		5691.5	1^+	4332.0	2^+			
1365.0 *11*		5715.5	4^+	4350.7	3^+	M1+E2[#]		
1379.2 *11*		4318.4	4^+	2939.3	2^+			
1411.4 *4*	24.0 *30*	4350.7	3^+	2939.3	2^+	M1+E2		R(θ)=1.16 *3*, pol=−0.05 *6*.
1494.0 *14*		8472.6	6^+	6978.5	5^+	M1+E2[#]		
1501.8 *10*		6978.5	5^+	5476.6	4^+	M1+E2		R(θ)=0.6 *8*, pol=−0.47 *12*.
1533.4 *8*	8.0 *27*	5476.6	4^+	3943.0	3^+	M1+E2		R(θ)=1.19 *83*, pol=−0.12 *15*.
1611.4 *17*		3420.5		1809.0	2^+	D+Q		R(θ)=1.08 *2*.
1628.3 *12*		9830	7^+	8201	6^+	M1(+E2)[#]		
1642.3 *7*		8903.6	3^-	7261.2	2^-			
1680.0 *10*		7395.5	5^+	5715.5	4^+	M1+E2[#]		
1756.1 *19*		3565.2		1809.0	2^+			
1771.1 *14*		6953.1	$(2)^+$	5181.9				
1772.0 *11*		5715.5	4^+	3943.0	3^+	M1+E2[#]		
1779.6 *21*		3588.7	0^+	1809.0	2^+	E2		R(θ)=2.2 *15*, pol=+1.7 *28*.
1809.2 *10*	259 *10*	1809.0	2^+	0.0	0^+	E2[‡]		R(θ)=1.87 *4*; pol=+0.53 *15*.
1900.1 *20*	10.0 *27*	4839.2	2^+	2939.3	2^+	M1(+E2)[#]		
2122.5 *8*		5711.3		3588.7	0^+			
2133.1 *10*	17.1 *27*	3943.0	3^+	1809.0	2^+	M1(+E2)		R(θ)=1.11 *5*, pol=−0.63 *55*.
2271.8 *10*		6622.6	4^+	4350.7	3^+			
2353.0 *20*		5292.4	2^+	2939.3	2^+			
2509.0 *20*	73 *21*	4318.4	4^+	1809.0	2^+	(E2)[#]		R(θ)=1.2 *16*.
2523.0 *20*	40 *53*	4332.0	2^+	1809.0	2^+			pol=−0.57 *61*.
2541.0 *20*		4350.7	3^+	1809.0	2^+	M1+E2[#]		pol=−0.34 *91*.
2660.0 *20*		6978.5	5^+	4318.4	4^+	M1+E2[#]		
2752.0 *20*		5691.5	1^+	2939.3	2^+			
2777.0 *20*		5715.5	4^+	2939.3	2^+	[E2][#]		
2836.0 *13*		4645.2		1809.0	2^+	D+Q		R(θ)=1.13 *7*.
2938.9 *10*		2939.3	2^+	0.0	0^+	E2[‡]		R(θ)=2.20 *17*, pol=+1.05 *33*.

Continued on next page (footnotes at end of table)

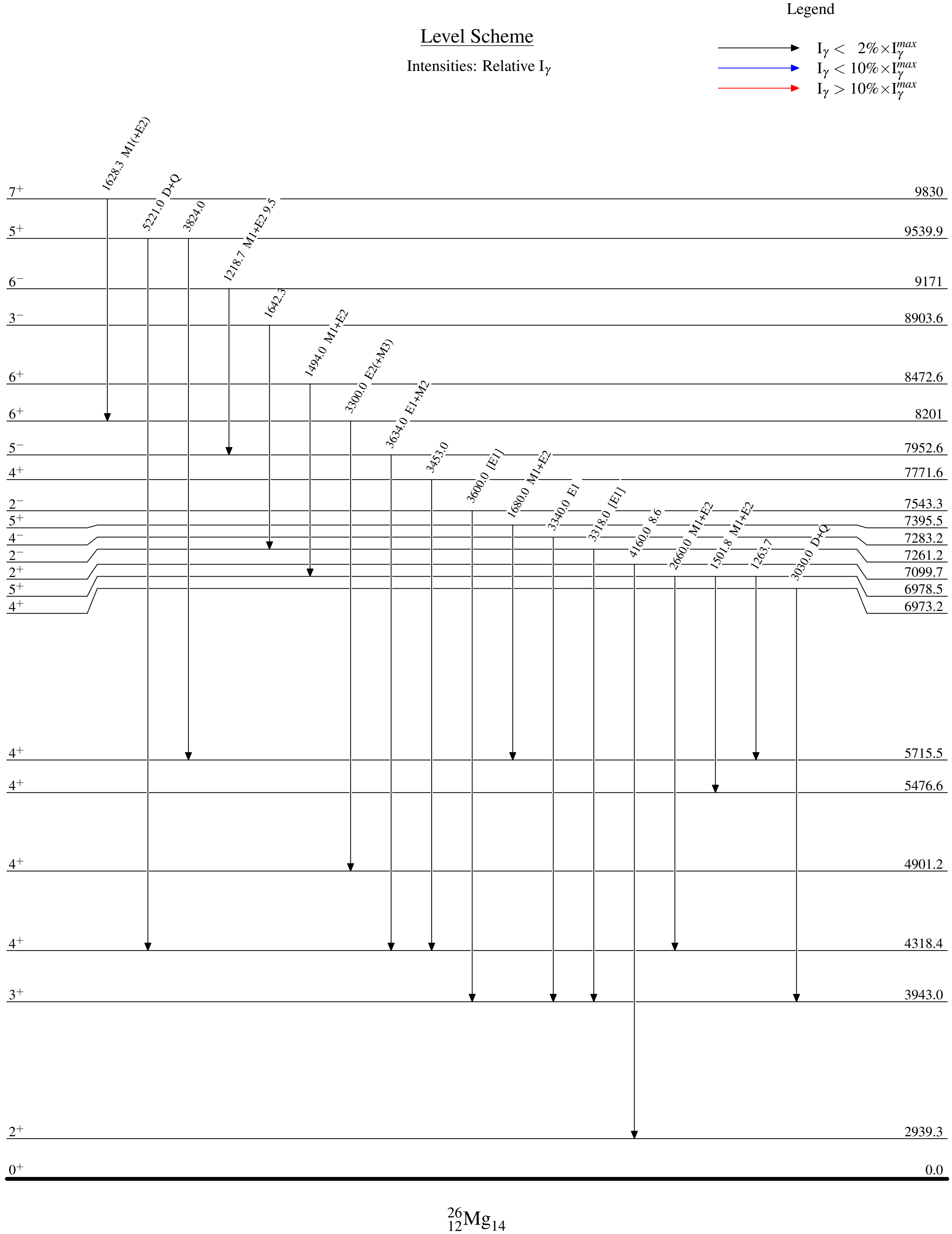
$^{18}O(^{13}C,\alpha n\gamma)$ 2014Bh03 (continued)

$\gamma(^{26}Mg)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	Comments
3030.0 *20*		4839.2	2^+	1809.0	2^+		
3030.0 *20*		6973.2	4^+	3943.0	3^+	D+Q‡	R(θ)=0.95 *3*.
3092.0 *20*	35.3 *34*	4901.2	4^+	1809.0	2^+	E2(+M3)	R(θ)=1.74 *4*, pol=+0.17 *12*.
3300.0 *20*		8201	6^+	4901.2	4^+	E2(+M3)#	
3318.0 *20*		7261.2	2^-	3943.0	3^+	[E1]#	
3340.0 *20*		7283.2	4^-	3943.0	3^+	E1	R(θ)=1.09 *1*, pol=+0.8 *13*.
3453.0 *20*		7771.6	4^+	4318.4	4^+		
3600.0 *20*		7543.3	2^-	3943.0	3^+	[E1]#	
3634.0 *20*		7952.6	5^-	4318.4	4^+	E1+M2	R(θ)=1.19 *1*, pol=+0.8 *14*.
3667.0 *20*		5476.6	4^+	1809.0	2^+	[E2]#	
3695.0 *20*		6634.6	1^+	2939.3	2^+		
3824.0 *20*		9539.9	5^+	5715.5	4^+		
3882.0 *20*		5691.5	1^+	1809.0	2^+		
4160.0 *20*	8.6 *25*	7099.7	2^+	2939.3	2^+		
5221.0 *20*		9539.9	5^+	4318.4	4^+	D+Q#	

† From R(θ) with gate on ΔJ=2 transition and polarization (pol) values, unless otherwise stated.
‡ R(θ) value for gate on ΔJ=1 transition.
# From Adopted Levels.

$^{18}O(^{13}C,\alpha n\gamma)$ 2014Bh03



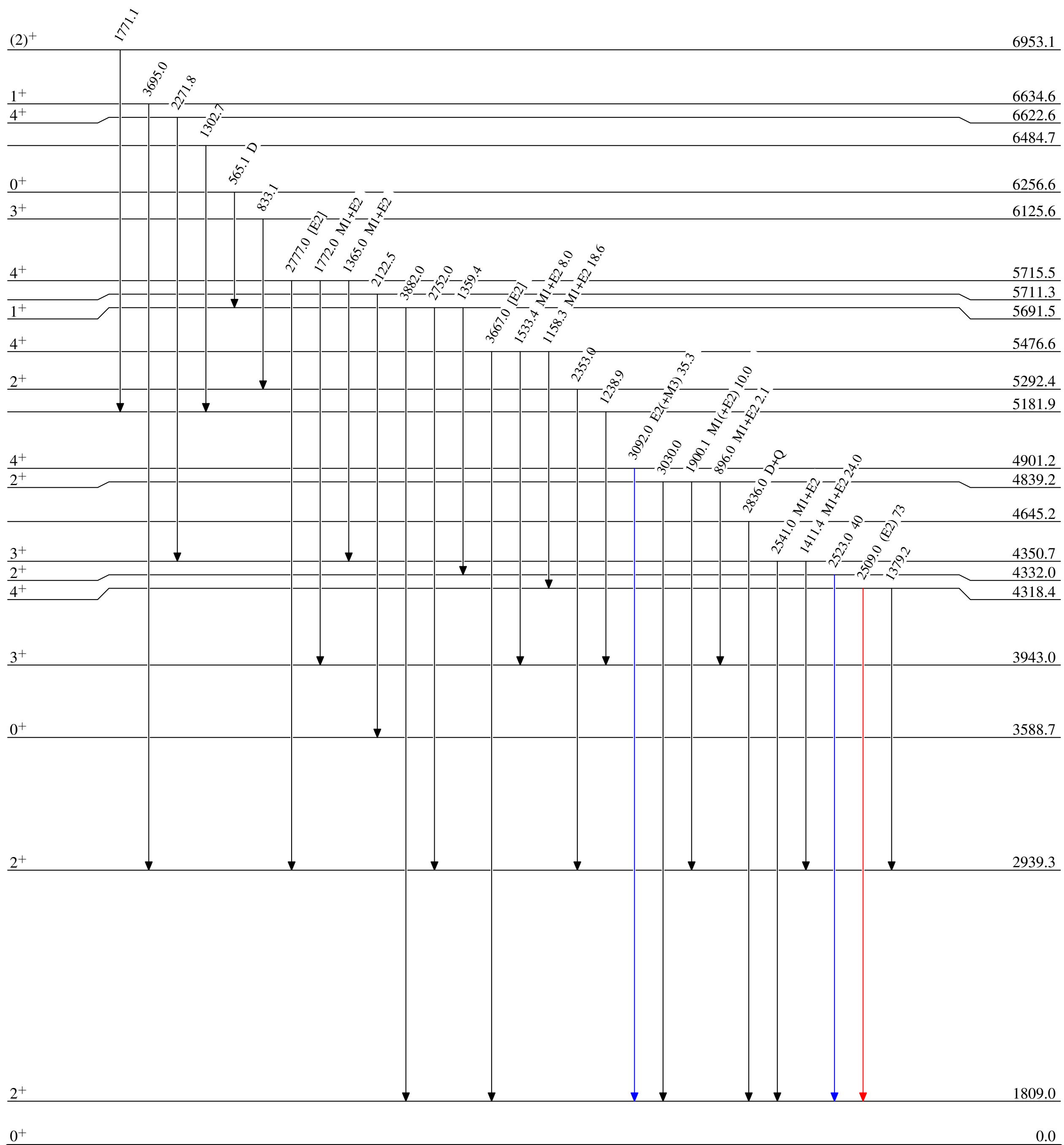
$^{18}O(^{13}C,\alpha n\gamma)$ 2014Bh03

Level Scheme (continued)

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$

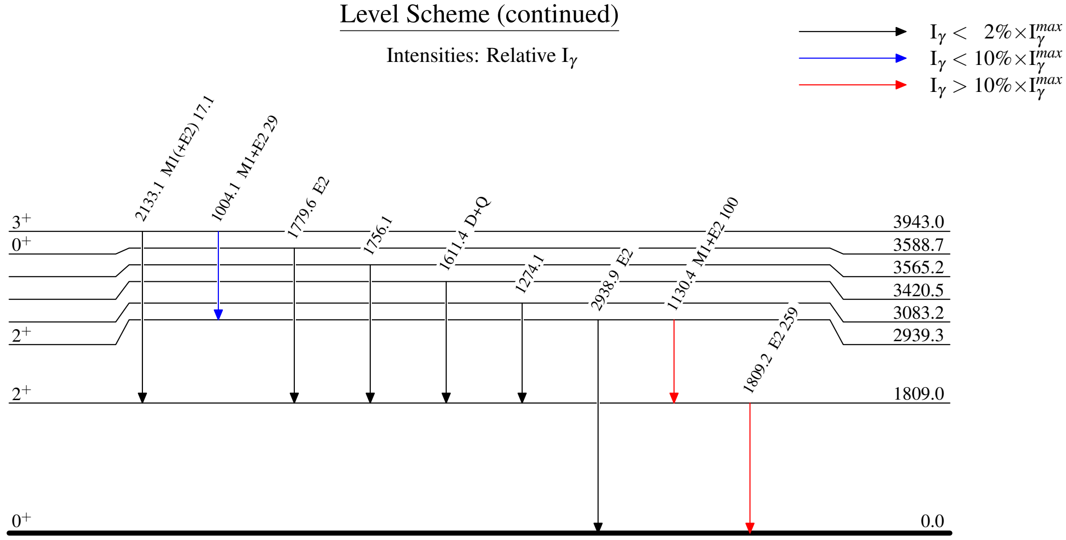


$^{26}_{12}Mg_{14}$

$^{18}O(^{13}C,\alpha n\gamma)$ 2014Bh03

Level Scheme (continued)

Intensities: Relative I_γ



$^{26}_{12}Mg_{14}$