$^{12}C(^{16}O,2n\gamma)$ 2007Se02

History

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

2007Se02: Fusion-evaporation reaction $^{12}C(^{16}O,2n)^{26}Si$, $E(^{16}O)$=58 MeV, stacked 150−μg/cm^2 ^{12}C targets, coincidence γ-ray spectroscopy and levels structure of ^{26}Si. γ rays detected using Gammasphere, particles detected using Argonne Fragment Mass Analyzer. Measured γ-ray energies, intensities, anisotropy coefficients, J^π values and multipolarities. Pure ΔI=2 quadrupole transition: (A_2,A_4)=(+0.357,−0.107), pure ΔI=±1 dipole transition: (A_2,A_4)=(−0.25,0), and pure ΔI=0 dipole transition: (A_2,A_4)=(+0.5,0).

^{26}Si Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0	0^+	3757.03 *20*	3^+	4798.5 *5*	4^+	5288.2 *4*	4^+
1797.30 *10*	2^+	4139.6 *6*	2^+	4810.9 *6*	(2^+)	5517.8 *4*	4^+
2786.58 *19*	2^+	4188.1 *3*	3^+	4831.6 *10*	(0^+)	5677.0 *17*	1^+
3336.4 *5*	0^+	4446.1 *3*	4^+	5147.1 *8*	2^+		

† From least-squares fit to E_γ data by evaluators. The uncertainties of the following E_γ transitions were doubled (during fitting only) to generate an acceptable fit for a reduced χ^2=2.24 which compares well with the critical value of 2.13: 988.8, 1400.7, 1764.4, 1960.4, and 2787.5 keV. Using the uncertainties given in 2007Se02 gives a reduced χ^2=6.56.

‡ Proposed in 2007Se02 based on angular distribution measurements.

$\gamma(^{26}Si)$

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.‡	Comments
842.1 *3*	3.6 *4*	5288.2	4^+	4446.1	4^+		
970.4 *1*	8.1 *4*	3757.03	3^+	2786.58	2^+	D	A_2=−0.30 *9*; A_4=+0.07 *11*
988.8† *1*	26.4 *7*	2786.58	2^+	1797.30	2^+	D	A_2=+0.14 *5*; A_4=+0.01 *7*
1071.8 *4*	2.9 *4*	5517.8	4^+	4446.1	4^+		
1329.4 *3*	3.9 *4*	5517.8	4^+	4188.1	3^+		
1355 *2*		4139.6	2^+	2786.58	2^+		
1400.7† *2*	10.1 *6*	4188.1	3^+	2786.58	2^+	D	A_2=+0.41 *13*; A_4=+0.09 *15*
1531.1 *5*	4.8 *5*	5288.2	4^+	3757.03	3^+		
1539.1 *5*	2.6 *5*	3336.4	0^+	1797.30	2^+		
1657 *2*		4446.1	4^+	2786.58	2^+		
1764.4† *8*	4.0 *7*	5517.8	4^+	3757.03	3^+		
1797.2 *1*	100.0 *15*	1797.30	2^+	0	0^+	Q	A_2=+0.18 *4*; A_4=−0.08 *4*
1960.4† *2*	10.6 *6*	3757.03	3^+	1797.30	2^+	D	A_2=−0.15 *11*; A_4=+0.01 *15*
2024.2 *5*	4.3 *5*	4810.9	(2^+)	2786.58	2^+		
2044.9 *9*	1.2 *4*	4831.6	(0^+)	2786.58	2^+		
2341.9 *6*	6.8 *6*	4139.6	2^+	1797.30	2^+		
2360.2 *8*	3.6 *5*	5147.1	2^+	2786.58	2^+	D	A_2=+0.42 *24*; A_4=+0.17 *26*
2391.4 *5*	5.8 *6*	4188.1	3^+	1797.30	2^+	D	A_2=+0.52 *18*; A_4=+0.20 *20*
2503 *2*		5288.2	4^+	2786.58	2^+		
2648.8 *3*	17.3 *8*	4446.1	4^+	1797.30	2^+	Q	A_2=+0.32 *11*; A_4=−0.15 *13*
2733 *3*		5517.8	4^+	2786.58	2^+		
2787.5† *3*	12.9 *7*	2786.58	2^+	0	0^+	Q	A_2=+0.36 *12*; A_4=−0.22 *14*
3001.0 *4*	12.4 *8*	4798.5	4^+	1797.30	2^+		A_2=+0.12 *11*; A_4=−0.37 *14*
3351 *2*		5147.1	2^+	1797.30	2^+		
3879.4 *17*	1.4 *4*	5677.0	1^+	1797.30	2^+		
4141 *3*	0.8 *4*	4139.6	2^+	0	0^+		

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

† Uncertainty doubled by evaluators only during the least-squares fitting procedure.
‡ Multipolarity assignments based on anisotropy coefficients and discussion in 2007Se02.

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Level Scheme

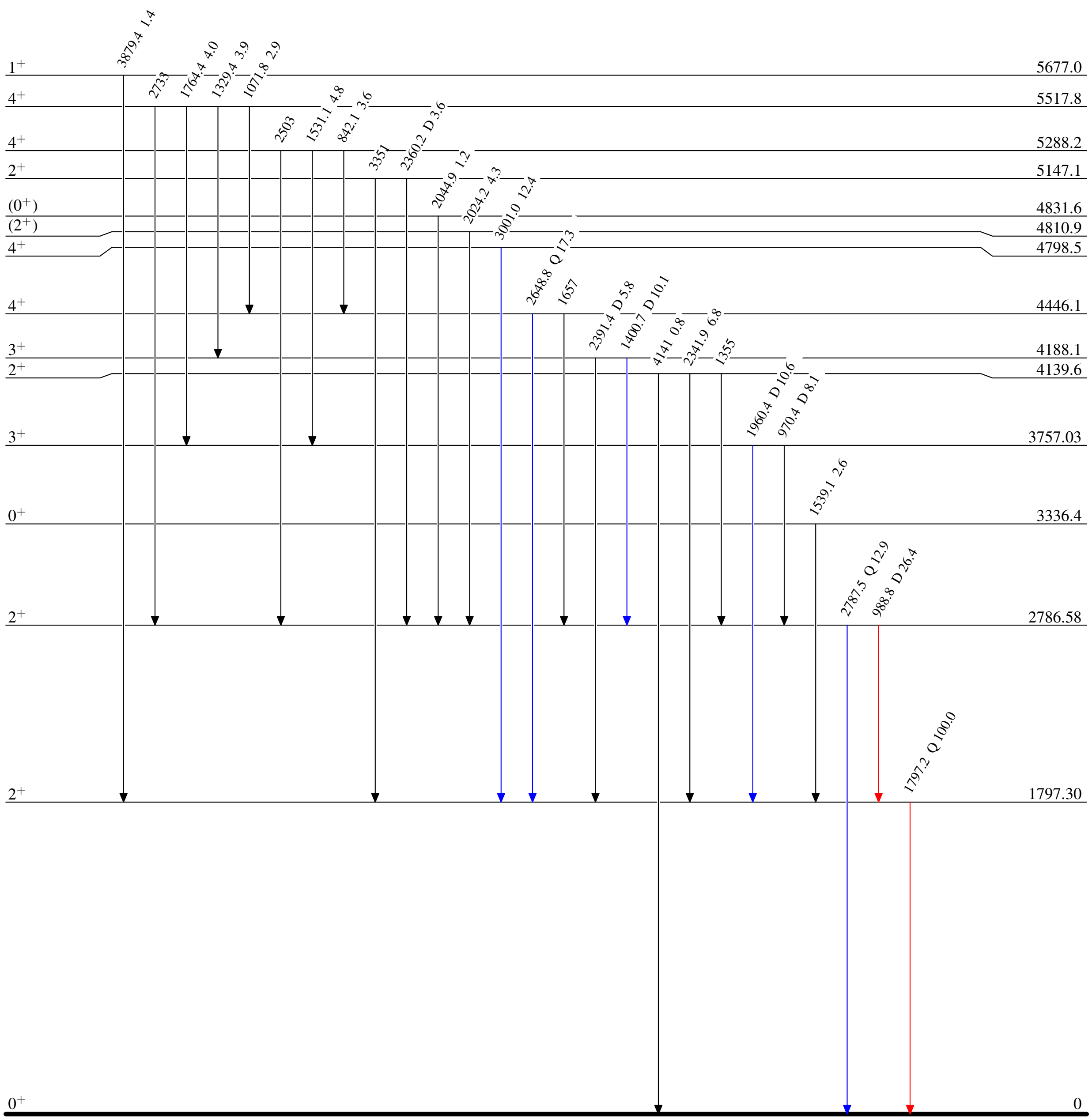
Intensities: Relative I_γ

Legend

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

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

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



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