

¹²C(⁸²Se,p2n γ) 2005Bu08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 114, 1293 (2013)	1-Sep-2013

Includes ⁸²Se(¹²C,p2n γ) at E(¹²C)=38 MeV.

E(⁸²Se)=470 MeV; Ta foil target with ¹²C present as contaminant; measured E γ , I γ , $\gamma\gamma\gamma$, n- γ coin, $\gamma(\theta)$, $\gamma\gamma(\theta)$ (DCO) using GASP array consisting of 40 HPGe detectors and 74 BGO detectors as a multiplicity filter, neutron detectors.

Preliminary experiments were performed using ⁸²Se(¹²C,p2n γ) reaction at E(¹²C)=38 MeV and three HPGe detectors, one planar Ge detector, ΔE -E Si detectors for charged particles, and scintillation detectors for neutrons. Measured γ , $\gamma\gamma$, n γ coin, p γ coin.

⁹¹Y Levels

The observed level energies were compared with spherical shell-model calculations and with systematics of high-spin states in this mass region.

E(level) [†]	J π [‡]	T _{1/2}	Comments
0	1/2 ⁻	58.51 d	J π , T _{1/2} : from Adopted Levels.
555.57 [#] 5	9/2 ⁺	49.71 min	%IT \approx 100 E,J,t,%IT from Adopted Levels.
1485.1 [#] 2	(13/2 ⁺)		
2157.1 [#] 3	(17/2 ⁺)		
3527.8 [#] 4	(21/2 ⁺)		
3733.3 5			
4147.0 [#] 5	(25/2 ⁺) [@]		
4481.7 5			
4809.1 5			

[†] From least-squares fit to E γ .

[‡] Proposed by 2005Bu08 based on measured transition multiplicities and deduced level scheme (providing basis for adopted J π), except As noted. supported by systematics for N=52 isotones and shell-model calculations.

[#] Band(A): $\Delta J=2$ sequence based on 9/2⁺ isomer.

[@] Differs from adopted value. See comment In (²⁴Mg,X γ) dataset.

γ (⁹¹Y)

E γ	I γ	E _i (level)	J π _i	E _f	J π _f	Mult. [†]	Comments
327.4 2	11.7 15	4809.1		4481.7			Mult.: R(ADO)=1.34 22, DCO=1.5 6 (929 γ +672 γ gate) favor $\Delta J=0,2$ but authors make No assignment.
334.7 2	21.5 20	4481.7		4147.0	(25/2 ⁺)		Mult.: R(ADO)=1.53 20, DCO=1.2 3 (929 γ +672 γ gate) favor $\Delta J=0,2$ but authors make No assignment.
413.8 2	<11	4147.0	(25/2 ⁺)	3733.3			E γ : from Adopted Levels.
555.57 5		555.57	9/2 ⁺	0	1/2 ⁻		
619.2 3	20.2 14	4147.0	(25/2 ⁺)	3527.8	(21/2 ⁺)		Mult.: R(ADO)=1.7 3, DCO=0.85 20 (929 γ +672 γ gate) favor $\Delta J=0,2$.
672.0 2	78 4	2157.1	(17/2 ⁺)	1485.1	(13/2 ⁺)	Q	Mult.: R(ADO)=1.78 12; DCO=1.26 17 (929 γ gate).
929.5 2	100 5	1485.1	(13/2 ⁺)	555.57	9/2 ⁺	Q	Mult.: R(ADO)=1.37 11.
1370.6 3	27 4	3527.8	(21/2 ⁺)	2157.1	(17/2 ⁺)	Q	Mult.: R(ADO)=1.33 20; DCO=0.80 16 (929 γ +672 γ gate).
1576.3 4	13.2 22	3733.3		2157.1	(17/2 ⁺)		

[†] From DCO ratios and/or R(ADO). DCO ratios were measured at $\theta=90^\circ$ and 34° or 146° , using $\Delta J=2$, Q gating transitions and

$^{12}\text{C}(^{82}\text{Se},\text{p}2\text{n}\gamma)$ 2005Bu08 (continued) $\gamma(^{91}\text{Y})$ (continued)

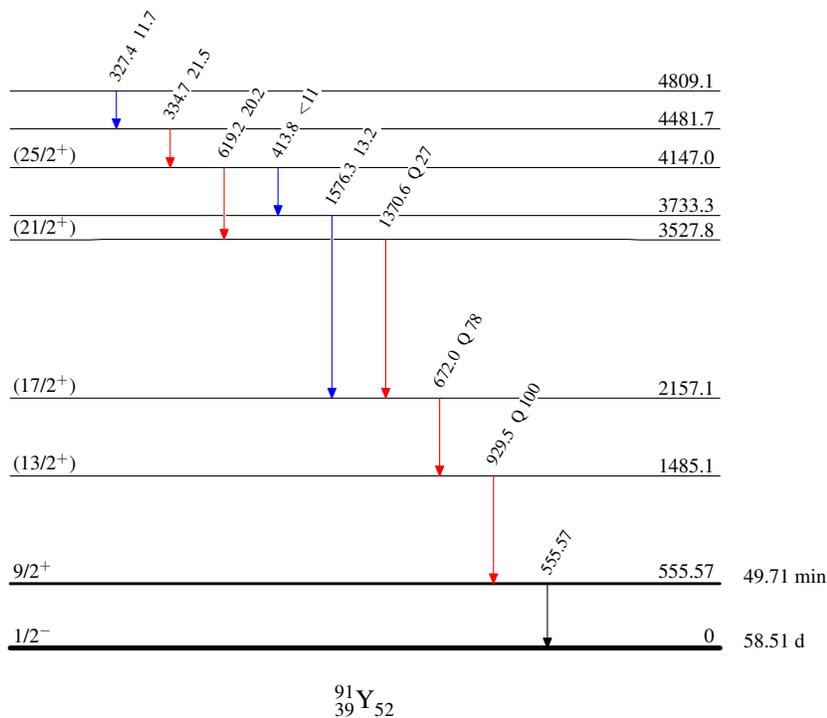
expected values are ≈ 1.0 for $\Delta J=2$, Q (or D, $\Delta J=0$) transitions and ≈ 0.5 for D, $\Delta J=1$ transitions. R(ADO) is the ratio of the intensities of γ rays observed in the rings of the detectors at $34^\circ+146^\circ$ and at 90° , and expected values are ≈ 1.3 for $\Delta J=2$, Q (or $\Delta J=0$, D) and ≈ 0.7 for D, $\Delta J=1$ transitions.

 $^{12}\text{C}(^{82}\text{Se},\text{p}2\text{n}\gamma)$ 2005Bu08

Legend

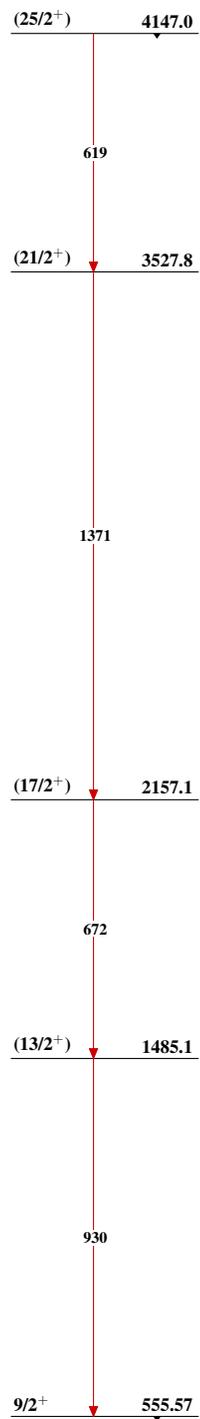
Level SchemeIntensities: Relative I_γ

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

 $^{91}_{39}\text{Y}_{52}$

${}^{12}\text{C}({}^{82}\text{Se},\text{p}2\text{n}\gamma)$ 2005Bu08

Band(A): $\Delta J=2$ sequence
based on $9/2^+$ isomer

 ${}^{91}_{39}\text{Y}_{52}$