

$^{116}\text{Sn}(^3\text{He},2n\gamma)$  1986Lo14

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Jean Blachot	ENSDF	1-Mar-2009

Enriched  $^{116}\text{Sn}$ ,  $E(^3\text{He})=20.9\text{-}27.5$  MeV, 96.8%.

Measured:  $\gamma$ ,  $\gamma\gamma$ ,  $\gamma(\theta)$ , Ge(Li), ce electron spectrum.

Many levels given by 1986Lo14 have not been confirmed by 1999Mo30, see the comments on these levels.

 $^{117}\text{Te}$  Levels

E(level)	$J^{\pi\dagger}$	Comments
0.0	$1/2^+$	
x		E(level): $x=0$ , see Adopted Levels.
274.6 $\ddagger$	$5/2^+$	
296.0@	$7/2^+$	
296+x&	$11/2^-$	E(level): the isomeric transition x is not known.
326.0	$3/2^+$	
373+x <sup>a</sup>	$(9/2)^-$	E(level): probably decays by an unobserved 77-keV $\gamma$ to the $(11/2^-)$ level.
540.0	$5/2^+$	E(level): the $\gamma$ which deexcites this level is placed as deexciting a 1176 keV level in Adopted Levels.
578.1	$7/2^+$	
681.8#	$7/2^+$	
821.8@	$9/2^+$	
875.0	$(7/2)^+$	E(level): the $\gamma$ which deexcites this level is placed as deexciting a 1726 keV level in Adopted Levels.
919.4	$9/2^+$	E(level): the $\gamma$ which deexcites this level is placed as deexciting a 636 keV level in Adopted Levels.
930.3#	$9/2^+$	
967+x&	$15/2^-$	
1021.8 $\ddagger$	$9/2^+$	E(level): the $\gamma$ which deexcites this level is placed as deexciting a 1042 keV level in Adopted Levels.
1094+x <sup>a</sup>	$13/2^-$	
1187.8#	$11/2^+$	
1417.2@	$13/2^+$	
1460.2	$11/2^+$	
1482.2#	$13/2^+$	
1676.3 $\ddagger$	$(13/2)^+$	E(level): the $\gamma$ which deexcites this level is placed as deexciting a 1696 keV level in Adopted Levels.
1680+x&	$19/2^-$	
1726+x <sup>a</sup>	$17/2^-$	
1789.2#	$15/2^+$	
2023.0@		
2128.9#		
2303+x&	$23/2^-$	
2344+x <sup>a</sup>	$21/2^-$	

$\dagger$  From 1986Lo14.

$\ddagger$  Band(A): positive parity band based on  $5/2^+$ .

# Band(B): positive parity band based on  $7/2^+$ .

@ Band(C): positive parity band based on  $7/2^+$ .

& Band(D):  $11/2^-$  band, the energy of  $11/2^-$  level is not known (296+X).

<sup>a</sup> Band(E):  $9/2^-$  band, the energy of  $9/2^-$  level is not known (373+X).

$^{116}\text{Sn}(^3\text{He},2n\gamma)$  **1986Lo14** (continued)

$\gamma(^{117}\text{Te})$

$\alpha(\text{K})\text{exp}$ :  $\alpha(\text{K})\text{exp}$  determined from ce and  $\gamma$  spectra. Normalization from known transitions in  $^{116}\text{Te}$ .

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	$\delta$	Comments
21.6		296.0	7/2 <sup>+</sup>	274.6	5/2 <sup>+</sup>			
77.5		373+x	(9/2) <sup>-</sup>	296.0	7/2 <sup>+</sup>			$I_\gamma$ : no intensity given by authors.
140.0	10 3	821.8	9/2 <sup>+</sup>	681.8	7/2 <sup>+</sup>	(M1+E2)	0 +7-6	Mult.: $A_2=-0.10$ 10, $A_4=0.15$ 14.
248.5	8 3	930.3	9/2 <sup>+</sup>	681.8	7/2 <sup>+</sup>	M1+E2	-0.8 +5-12	$\alpha(\text{K})\text{exp}=0.027$ 6
257.2	5 2	1187.8	11/2 <sup>+</sup>	930.3	9/2 <sup>+</sup>	M1+E2	-0.7 +4-14	Mult.: $A_2=-0.63$ 4, $A_4=0.02$ 6.
274.7	1000	274.6	5/2 <sup>+</sup>	0.0	1/2 <sup>+</sup>	E2		$\alpha(\text{K})\text{exp}=0.070$ 2
295.0	84 11	1482.2	13/2 <sup>+</sup>	1187.8	11/2 <sup>+</sup>	M1		Mult.: $A_2=-0.55$ 7, $A_4=-0.02$ 11.
303.5	20 6	578.1	7/2 <sup>+</sup>	274.6	5/2 <sup>+</sup>	M1+E2	-0.5 +5-40	$\alpha(\text{K})\text{exp}=34$ 7
306.7	3 1	1789.2	15/2 <sup>+</sup>	1482.2	13/2 <sup>+</sup>	M1+E2	-0.3 +2-3	$\alpha(\text{L})\text{exp}=0.0052$ 13
326.0	75 12	326.0	3/2 <sup>+</sup>	0.0	1/2 <sup>+</sup>	(M1+E2)	-1.3	Mult.: $A_2=-0.03$ 4, $A_4=0.01$ 6.
341.0	99 10	919.4	9/2 <sup>+</sup>	578.1	7/2 <sup>+</sup>	(M1+E2)	0.27 +18-13	$\alpha(\text{K})\text{exp}=0.026$ 5
366.1	13 4	1187.8	11/2 <sup>+</sup>	821.8	9/2 <sup>+</sup>	M1+E2	-0.2 2	Mult.: $A_2=-0.34$ 10, $A_4=-0.09$ 15.
385.8	14 4	681.8	7/2 <sup>+</sup>	296.0	7/2 <sup>+</sup>	(M1+E2)	-0.1 +3-2	Mult.: $A_2=-0.50$ 7, $A_4=-0.02$ 11.
407.2	72 12	681.8	7/2 <sup>+</sup>	274.6	5/2 <sup>+</sup>	M1+E2	-0.8 +5-2	$\alpha(\text{K})\text{exp}=0.021$ 4
438.4	8 3	1460.2	11/2 <sup>+</sup>	1021.8	9/2 <sup>+</sup>	(M1+E2)	-5 +2-7	Mult.: $A_2=-0.06$ 5, $A_4=-0.01$ 7.
486.8	6 2	1417.2	13/2 <sup>+</sup>	930.3	9/2 <sup>+</sup>	(E2)		$\alpha(\text{K})\text{exp}=0.019$ 4
506.6	52 10	1187.8	11/2 <sup>+</sup>	681.8	7/2 <sup>+</sup>	(E2)		Mult.: $A_2=0.09$ 5, $A_4=0.02$ 7.
525.8	51 10	821.8	9/2 <sup>+</sup>	296.0	7/2 <sup>+</sup>	M1+(E2)	-0.4 +4-60	$\alpha(\text{K})\text{exp}=0.025$ 6
540.0	31 8	540.0	5/2 <sup>+</sup>	0.0	1/2 <sup>+</sup>	E2		Mult.: $A_2=-0.30$ 2, $A_4=-0.16$ 3.
540.0		1460.2	11/2 <sup>+</sup>	919.4	9/2 <sup>+</sup>	(E2)		$\alpha(\text{K})\text{exp}=0.012$ 6
547.1	21 6	821.8	9/2 <sup>+</sup>	274.6	5/2 <sup>+</sup>	(E2)		Mult.: $A_2=0.18$ 6, $A_4=-0.04$ 9.
549.0	23 6	875.0	(7/2) <sup>+</sup>	326.0	3/2 <sup>+</sup>	E2		$\alpha(\text{K})\text{exp}=0.012$ 2
552.2	23 6	1482.2	13/2 <sup>+</sup>	930.3	9/2 <sup>+</sup>	E2		Mult.: $A_2=-0.41$ 4, $A_4=0.03$ 7.
595.4	30 8	1417.2	13/2 <sup>+</sup>	821.8	9/2 <sup>+</sup>	(E2)		$\alpha(\text{K})\text{exp}=0.015$ 5
605.8		2023.0		1417.2	13/2 <sup>+</sup>			Mult.: $A_2=-0.20$ 5, $A_4=0.09$ 7.
618.5	13 4	2344+x	21/2 <sup>-</sup>	1726+x	17/2 <sup>-</sup>	E2		$\alpha(\text{K})\text{exp}=0.007$ 3
623.1	7 2	2303+x	23/2 <sup>-</sup>	1680+x	19/2 <sup>-</sup>	(E2 )		Mult.: $A_2=0.4$ 3, $A_4=-0.2$ 4.
632.1	13 4	1726+x	17/2 <sup>-</sup>	1094+x	13/2 <sup>-</sup>	E2		Mult.: $A_2=0.03$ 11, $A_4=0.12$ 15.
634.2	23 6	930.3	9/2 <sup>+</sup>	296.0	7/2 <sup>+</sup>	(M1,E2)		$\alpha(\text{K})\text{exp}=0.0043$ 9; $\alpha(\text{L})\text{exp}=0.0008$ 2
646.7	6 2	2128.9		1482.2	13/2 <sup>+</sup>			Mult.: $A_2=-0.40$ 7, $A_4=-0.28$ 11.
654.5	22 6	1676.3	(13/2) <sup>+</sup>	1021.8	9/2 <sup>+</sup>	(E2)		$\alpha(\text{K})\text{exp}=0.0045$ 10; $\alpha(\text{L})\text{exp}=0.0006$ 2
								Mult.: $A_2=0.14$ 4, $A_4=-0.08$ 5.
								$\alpha(\text{K})\text{exp}=0.0050$ 12
								Mult.: $A_2=0.19$ 5, $A_4=-0.06$ 7.
								$\alpha(\text{K})\text{exp}=0.0046$ 11
								Mult.: $A_2=0.21$ 3, $A_4=-0.08$ 4.
								$\alpha(\text{K})\text{exp}=0.006$ 2; $\alpha(\text{L})\text{exp}=0.0009$ 2
								Mult.: $A_2=0.12$ 5, $A_4=-0.06$ 8.
								$\alpha(\text{K})\text{exp}=0.007$ 2
								Mult.: $A_2=0.01$ 2, $A_4=-0.07$ 3.
								$\alpha(\text{K})\text{exp}=0.0034$ 11; $\alpha(\text{L})\text{exp}=0.0008$ 2
								Mult.: $A_2=0.26$ 9, $A_4=-0.18$ 13.
								Mult.: $A_2=0.46$ 4, $A_4=-0.52$ 12.
								$\alpha(\text{K})\text{exp}=0.0047$ 15
								Mult.: $A_2=0.16$ 4, $A_4=-0.20$ 5.
								$\alpha(\text{L})\text{exp}=0.0007$ 2
								Mult.: $A_2=0.17$ 11, $A_4=0.11$ 16.
								$\alpha(\text{K})\text{exp}=0.0030$ 12
								Mult.: $A_2=-0.0$ 4, $A_4=0.3$ 5.
								$\alpha(\text{L})\text{exp}=0.0008$ 2
								Mult.: $A_2=0.14$ 6, $A_4=-0.10$ 8.

Continued on next page (footnotes at end of table)

$^{116}\text{Sn}(^3\text{He},2n\gamma)$  **1986Lo14** (continued) $\gamma(^{117}\text{Te})$  (continued)

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	$\delta$	Comments
655.6	27 7	930.3	9/2 <sup>+</sup>	274.6	5/2 <sup>+</sup>	(E2)		Mult.: $A_2=0.23$ 4, $A_4=-0.11$ 5. $\alpha(\text{K})\text{exp}=0.0029$ 9
660.4	13 4	1482.2	13/2 <sup>+</sup>	821.8	9/2 <sup>+</sup>	(E2)		Mult.: $A_2=0.14$ 9, $A_4=-0.08$ 13.
664.3	8 3	2344+x	21/2 <sup>-</sup>	1680+x	19/2 <sup>-</sup>	M1+E2	-5 +2-6	$\alpha(\text{K})\text{exp}=0.0038$ 14 Mult.: $A_2=-0.20$ 7, $A_4=0.19$ 10.
670.8	126 11	967+x	15/2 <sup>-</sup>	296.0	7/2 <sup>+</sup>	E2		$\alpha(\text{K})\text{exp}=0.0037$ 7 Mult.: $A_2=0.20$ 6, $A_4=-0.22$ 9.
713.3	31 8	1680+x	19/2 <sup>-</sup>	967+x	15/2 <sup>-</sup>	E2		$\alpha(\text{K})\text{exp}=0.003$ 8 Mult.: $A_2=0.26$ 1, $A_4=-0.02$ 8.
720.8	69 11	1094+x	13/2 <sup>-</sup>	373+x	(9/2) <sup>-</sup>			Mult.: $A_2=0.1$ 5, $A_4=0.8$ 6.
747.2	61 11	1021.8	9/2 <sup>+</sup>	274.6	5/2 <sup>+</sup>	E2		Mult.: $A_2=0.20$ 3, $A_4=-0.08$ 4.
759.6	11 3	1726+x	17/2 <sup>-</sup>	967+x	15/2 <sup>-</sup>	M1+E2	-0.21 7	Mult.: $A_2=-0.43$ 3, $A_4=0.01$ 4.
798.3	51 10	1094+x	13/2 <sup>-</sup>	296+x	11/2 <sup>-</sup>	M1+E2	0.51 +14-9	$\alpha(\text{K})\text{exp}=0.003$ 6 Mult.: $A_2=0.30$ 3, $A_4=0.04$ 4.

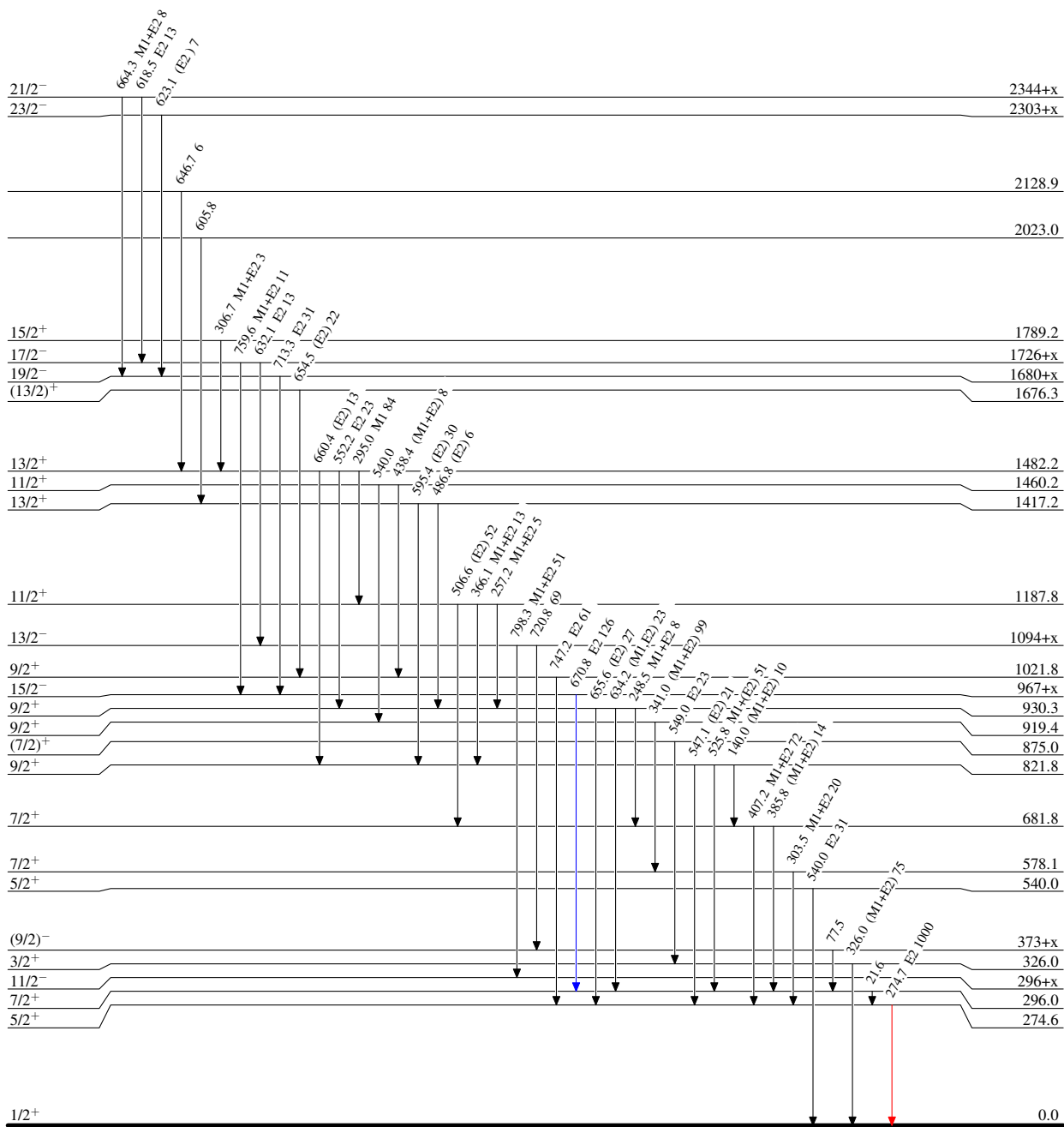
$^{116}\text{Sn}(^3\text{He},2n\gamma)$  1986Lo14

Level Scheme

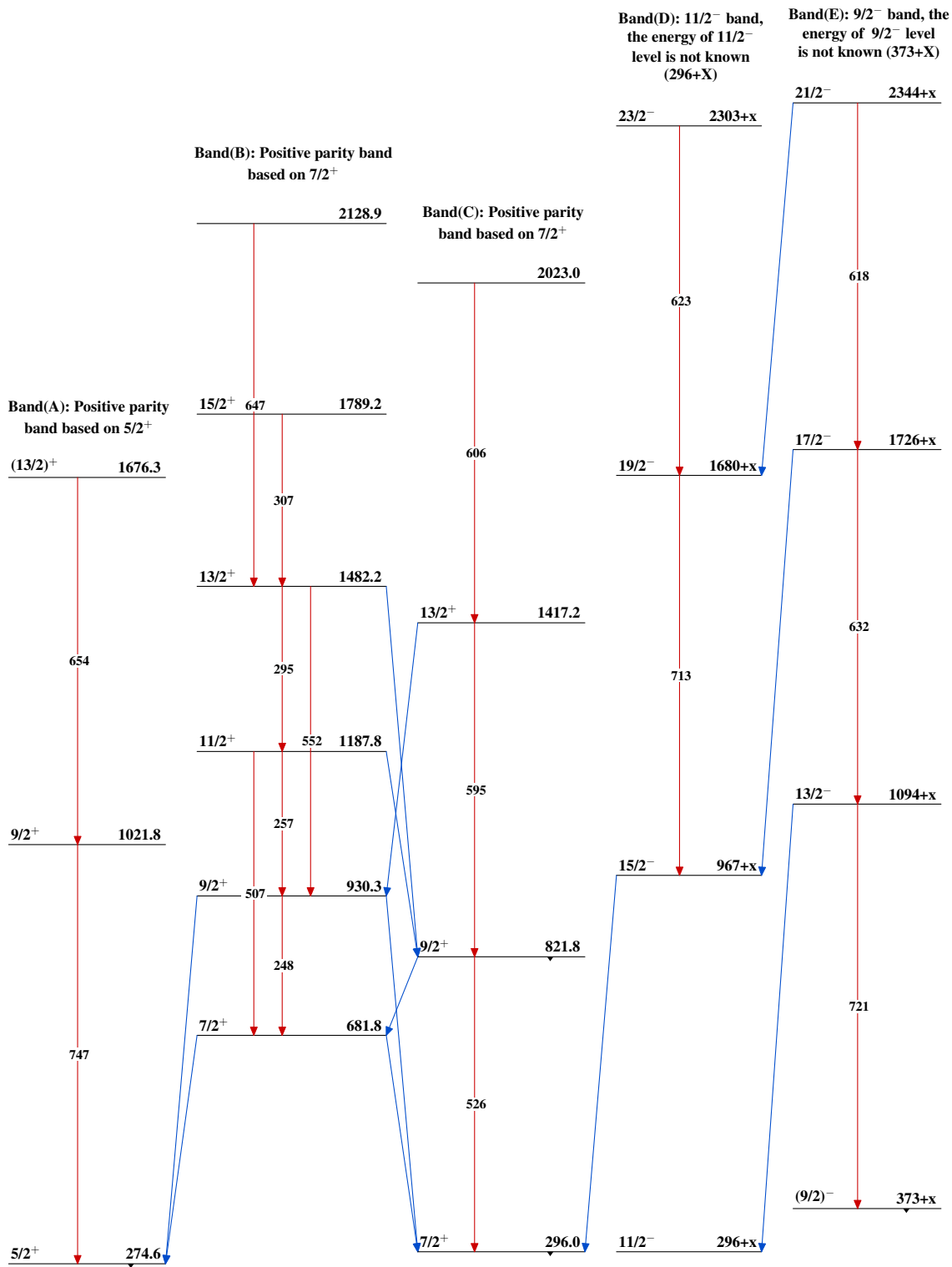
Intensities: Relative  $I_\gamma$

Legend

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



$^{117}_{52}\text{Te}_{65}$

$^{116}\text{Sn}(^3\text{He},2n\gamma)$  1986Lo14 $^{117}_{52}\text{Te}_{65}$