^{46}Ti(d,p) 1980Wa05,1974Ch41,1966Ra05

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 108, 923 (2007)	20-Feb-2007

1966Ra05: E=7 MeV. θ=0°−172.5°, 7.5° steps.
1974Ch41: E=10 MeV. θ=5°−175°, 24 angles.
1980Wa05: E=7 and 10 MeV. θ=5°−175°, 7.5° steps. Also included Hauser-Feshbach analysis.
1966Ra05, 1974Ch41, and 1980Wa05 all measured $\sigma(\theta)$ (spectrometer,emulsion) and employed DWBA analysis.
2006FaZZ: E=14 MeV. Enriched ^{46}Ti target still containing 28% ^{48}Ti. Observed simultaneously excitation energies around 2.3 MeV In ^{47}Ti and 1.6 MeV In ^{49}Ti. Deduced Sn(^{47}Ti)=8880.58 keV *30* In good agreement with 8880.29 keV *29* (2003Au03).
Others: see 1977Ha45 (also includes a comparison of ground-state Q values).
Except for the absolute cross sections, the data from the three groups are in very good agreement. See 1977Ha45 for a comparison of the data from 1974Ch41 and 1966Ra05. The absolute cross sections of 1980Wa05 are consistently lower than those of 1974Ch41 although in agreement with 1966Ra05; 1980Wa05 suggest that this difference may result from the methods of obtaining the cross sections.

^{47}Ti Levels

L(β),S(D) From 10-MeV data of 1980Wa05, C^2S'(157)=2.402; $\sigma(\theta)$ has shape intermediate between direct and compound-nucleus. $\sigma(\theta)$ non-stripping in character (1974Ch41,1966Ra05).
L(H),S(I) L=(0) and C^2S'=0.011 for doublet. E(level)=4200 keV *16* from 1966Ra05.

E(level)[†]	Jπ[‡]	L[#]	C²S′[#]	E(level)[†]	Jπ[‡]	L[#]	C²S′[#]	E(level)[†]	Jπ[‡]	L[#]	C²S′[#]
0.0				3203 *10*	7/2−	3	0.089	4132? *16*			
157 *8*	7/2−	3	3.84	3224 *16*	(7/2−)	(3)	(0.19)	4164			
1254 *10*	3/2−[@&]	(1)	(0.008)	3250 *10*	7/2−	3[e]	0.17	4180			
1442 *10*				3276 *10*	3/2−	1	0.13	4217 *16*			
1545 *10*	3/2−	1	2.10	3316?				4243 *16*			
1788 *10*	1/2−	1	0.47	3341?				4264 *16*			
1816 *10*		2[a]	0.36[a]	3369 *16*				4277[f]			
2102? *12*				3393 *16*				4281[f]			
2157[b] *10*	1/2−	1[c]	0.068	3429 *16*				4303 *16*			
2252 *10*	5/2+[@]	2	0.012	3482 *16*		(1)[e]	(0.014)	4336 *16*		2	0.075
2292 *10*	7/2−	(3)	(0.048)	3516 *16*		0	0.0062	4359 *16*			
2344				3545 *16*	1/2−	1	0.18	4380 *16*		2	0.15
2361 *10*		0	0.086	3579 *16*		(1)	(0.018)	4391? *16*			
2402[d] *12*				3619 *16*				4466 *16*			
2418[d] *12*				3654				4492 *16*			
2517 *12*				3676 *16*	3/2−	1	0.47	4518 *16*			
2543 *10*	3/2−	1	0.28	3701 *16*				4541 *16*			
2575 *16*		0	0.036	3724 *16*				4553 *16*			
2596 *16*				3776 *16*				4588 *16*		4	0.36
2616 *10*	7/2−	3	1.08	3823 *16*	7/2−	3[e]	0.20	4605 *16*			
2669[b] *10*				3838 *16*				4637 *16*	1/2−	1	0.11
2695				3889				4670 *16*			
2753[b] *10*				3913 *16*	3/2−	1	0.72	4686 *16*		2	0.19
2789[b] *10*	3/2−	1	0.20	3961 *16*				4743 *16*			
2836[b] *10*	5/2−	3[c]	0.70	4018? *16*				4793 *16*			
2868				4040 *16*				4811 *16*			
3032 *10*				4071?				4829 *16*		[g]	
3054 *16*				4095 *16*	1/2−	1	0.085	4847 *16*		[g]	
3175 *10*	5/2−	3[c]	0.077	4112 *16*				4876 *16*		[g]	

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^{46}Ti(d,p) 1980Wa05,1974Ch41,1966Ra05 (continued)

^{47}Ti Levels (continued)

E(level)[†]	Jπ[‡]	L[#]	C²S′[#]
4898 *16*		[g]	
4924 *16*	1/2⁻	1	0.084
4957 *16*		0	0.069
4982 *16*		2	0.20
5013 *16*		1	0.13
5043 *16*			
5070 *16*			
5102 *16*			
5125 *16*			
5148 *16*			
5195 *16*			
5265 *16*		0	0.022
5301 *16*			
5313 *16*		1	0.28
5355 *16*		1	0.090
5407 *16*		0	0.024
5433 *16*		1	0.032
5451?			
5478 *16*			
5497?			
5518?			
5540 *16*		1	0.25
5580 *16*			
5615 *16*		1	0.081
5635 *16*			
5670 *16*			
5702 *16*			
5728			
5755 *16*			
5774 *16*		[g]	
5810 *16*		1	0.21
5836 *16*			
5854?			
5872 *16*			
5888?			
5904?			
5919?			
5937 *16*			
5953?			
5976 *16*		0	0.014
5991?			
6013[f]			
6039[f]		2	0.055
6067		(1)	0.022
6095			
6129			
6158		0	0.010
6169		0	0.031
6195			
6209			
6234			
6265			
6304[h]			
6333		1	0.057
6364			
6387			

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^{46}Ti(d,p) 1980Wa05,1974Ch41,1966Ra05 (continued)

^{47}Ti Levels (continued)

E(level)[†]	L[#]	C^{2}S′[#]	Comments
6402			
6430	0	0.017	
6449			
6474			
6494	0	0.006	
6514			
6538			
6554			
6565			
6585			Additional information 1.
6607	(0)	(0.004)	
6624			
6645			
6662			
6673			
6692			
6709			
6727			
6749			
6771	(0)	(0.0079)	
6787			
6823			
6838			
6854			
6882			
6903			
6917			
6936			
6957			
6980			
7002			
7018			
7038			
7067			
7076			
7095			
7123			
7141			
7166	2	0.052	
7187	2	0.025	
7205			
7225			

[†] From 1966Ra05 except for energies with ΔE(level)=10 which are from 1980Wa05 and energies with no uncertainty which are from 1974Ch41. States below 6.04 MeV which have been observed by only one group of authors have been marked as questionable by the evaluator unless confirmed by other work.

[‡] From empirical J-dependence of L=1 and L=3 angular distributions (1974Ch41), except as noted. All states above 5 MeV populated by L=1 transitions were assumed by the authors to be $1/2^-$ for calculating C^{2}S′.

[#] From 1974Ch41, except as noted. All levels for which no L value is given, except as noted, have $\sigma(\theta)$ which exhibit a non-stripping character according to one or more of the three groups of authors.

[@] Assumed for DWBA analysis.

[&] 1980Wa05 suggest this state may be a doublet with $J^\pi=9/2^-$, excited by a compound-nuclear mechanism, and $J^\pi=3/2^-$ or $1/2^-$, excited by a direct process. The direct component is more prominent at 10 MeV and the difference between the direct component

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^{46}Ti(d,p) 1980Wa05,1974Ch41,1966Ra05 (continued)

^{47}Ti Levels (continued)

and σ(exp) is not accounted for by assuming a compound-nucleus component with with J$^{\pi}$=3/2^{-},1/2^{-} but is by assuming a 9/2^{-} component.

[a] L=3 DWBA curve fits better, but L=2 was chosen by 1974Ch41 to agree with (p,d) results. $\sigma(\theta)$ has shape intermediate between direct and compound-nucleus (1980Wa05).

[b] Possible doublet (1980Wa05).

[c] $\sigma(\theta)$ has shape intermediate between direct and compound-nucleus (1980Wa05).

[d] 1980Wa05 observed a state At 2410 keV *10* which May correspond to the 2402 or 2418 states.

[e] $\sigma(\theta)$ non-stripping in character (1966Ra05).

[f] 1966Ra05 observed states at 4281 *16* and 6024 keV *16*, respectively.

[g] Obscured by contaminant.

[h] 1974Ch41 only report the energy for this state.