

$^{30}\text{Si}(\text{d},\text{n})$ **1976Uz01,1965Cu03**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh		NDS 184, 29 (2022)	24-Jun-2022

1976Uz01 (also **1976Uz02**): E=7 MeV deuterons. 95.5% $^{30}\text{SiO}_2$ target; six liquid scintillators. Reaction products detected in time of flight spectrometer with FWHM=90 and 20 keV for neutrons to g.s. and to 7.90 MeV, respectively. Measured $\sigma(\theta)$, $\theta_{\text{lab}}=0^\circ$ to 80° . Deduced levels, L-transfers and spectroscopic factors. About 30 levels in ^{31}P populated as shown in spectral Fig. 1 in **1976Uz01**.

1965Cu03 (also **1965Da08**): 5.5 MeV deuterons from the University of Alberta Van de Graaff accelerator. High resolution neutron time of flight spectrometer, FWHM=120 keV at 6 MeV. Measured E(n) and angular distributions at 15° intervals from 0° to 75° , at 120° and 150° . 25 levels reported.

 ^{31}P Levels

E(level) [†]	L [†]	(2J+1)C ² S [†]	Comments
0	0	1.05	S _p =0.79 (1976Uz01,1976Uz02) for $2s_{1/2}$. Also L=0 in 1965Cu03 .
1268 10	2	2.24	E(level): other: 1280 14 (1965Cu03). S _p =0.84 (1976Uz01,1976Uz02) for $1d_{3/2}$.
2226 10	2	0.22	E(level): other: 2230 10 (1965Cu03). S _p =0.06 (1976Uz01) for $1d_{3/2}$.
3125 8	0	0.02	E(level): other: 3100 12, also L=0 (1965Cu03). S _p =0.02 (1976Uz01) for $2s_{1/2}$.
3280 [‡] 12			E(level): other: 3300 (1976Uz01 , Fig. 1).
3410@ 20			
3490 [‡] 13			E(level): other: 3510 (1976Uz01 , Fig. 1).
4170@ 12			
4240 [‡] 12			E(level): other: 4260 (1976Uz01 , Fig. 1).
4421 4	3	2.09	E(level): other: 4430 10 (1965Cu03). S _p =0.39 for $1f_{7/2}$ (1976Uz01,1976Uz02).
4610@ 15			
4780 [‡] 10			E(level): other: 4780 (1976Uz01 , Fig. 1).
5006 4	1	0.61	E(level): other: 5010 10 (1965Cu03). L: also from 1965Da08 . S _p =0.23 for $2p_{3/2}$ (1976Uz01,1976Uz02).
5120@ 10			
5248 4	0	0.04	E(level): other: 5250 10, L=0 (1965Cu03). S _p =0.03 (1976Uz01) for $2s_{1/2}$.
5340# 10			
5530 [‡] 10			E(level): other: 5560 (1976Uz01 , Fig. 1).
5660 [‡] 10			E(level): other: 5670 (1976Uz01 , Fig. 1).
5770@ 10			
5890 [‡] 10			E(level): other: 5890 (1976Uz01 , Fig. 1).
6050 [‡] 10			E(level): other: 6050 (1976Uz01 , Fig. 1).
6180?@ 23			E(level): possible doublet indicated in 1965Cu03 . Evaluator considers this level as uncertain since there seems no peak in this region in spectral Fig. 1 of 1976Uz01 .
6240 [‡] 10			E(level): other: 6230 (1976Uz01 , Fig. 1).
6376 4	2	0.49	E(level): other: 6380 10 (1965Cu03) with L=2 in 1965Da08 . S _p =0.37 for $1d_{3/2}$ (1976Uz01,1976Uz02).
6494& 4	1	0.12	E(level): mixed with a level in ^{29}P $2p_{3/2}$ orbital (1976Uz01). Probably corresponds to 6460 10 in 1965Cu03 with L=1 in 1965Da08 .
6600 4	3+1	0.21,0.03	E(level): doublet, 6590+6610 in Fig. 1 of 1976Uz01 . Other: 6610 10 (1965Cu03) with L=1 in 1965Da08 .

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$^{30}\text{Si}(\text{d},\text{n})$ **1976Uz01,1965Cu03 (continued)** ^{31}P Levels (continued)

<u>E(level)[†]</u>	<u>L[†]</u>	<u>(2J+1)C²S[†]</u>	<u>Comments</u>
6905 ^{&} 4	1	0.08	(2J+1)C ² S: 1f _{5/2} orbital for L=3; 2p _{3/2} for L=1 (1976Uz01).
7080 [#] 10			E(level): doublet, 6910+6920 in Fig. 1 of 1976Uz01 . 2p _{3/2} orbital (1976Uz01).
7139 4	0	0.07	E(level): other: 7150 10 (1965Cu03) with L=0 in 1965Da08 .
7213 ^{&} 5	1	0.03	S _p =0.11 for 2s _{1/2} (1976Uz01,1976Uz02).
7470 [#] 10			2p _{3/2} orbital (1976Uz01).
7720 [#] 10			
7780 [#] 10			
7901 ^{&} 4	1		2p _{1/2} orbital (1976Uz01).
8050 ^{&} 4	1	0.04	2p _{3/2} orbital (1976Uz01).
8251 ^{&} 4	1	0.04	2p _{3/2} orbital (1976Uz01).
8350 [#] 10			
8460 [#] 10			
8564 ^{&} 7	1	0.06	2p _{3/2} orbital (1976Uz01).

[†] From **1976Uz01**, unless otherwise stated.

[‡] From **1965Cu03**.

[#] Level reported only in **1976Uz01**, as shown in the spectral in Fig. 1, with uncertainty of 10 keV estimated by the evaluators based on data for other levels in the same spectrum with similar statistics.

@ Level reported only in **1965Cu03**.

& Level reported only by **1976Uz01**.