^{78}Se(^{3}He,α)   **2007ScZX,2008Sc03**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Sep-2020

E=26 MeV beam provided by Yale tandem accelerator. Enriched target. Particles detected with Enge spectrograph and gas-filled focal plane detector backed by a scintillator. Measured cross sections. FWHM=70 keV. Spectroscopic factors deduced from analysis of cross section data by DWBA calculations using PTOLEMY code.

The experiments were designed to determine occupation of valence neutron orbitals in the ground states of ^{76}Ge and ^{76}Se by precise measurements of cross sections through particle-transfer reactions. Cross sections were measured at angles where these are maximum.

Uncertainty in cross sections: statistical uncertainty of 1% for strong peaks; systematic uncertainties of 5% in absolute values and 3% in relative values.

All data listed here are from 2007ScZX.

^{77}Se Levels

E(level)[†]	J$^{\pi}$[†]	L[†]	C^{2}S[#]	Comments
0	1/2$^-$	1		dσ/dΩ=0.22 mb/sr.
178	9/2$^+$	4	7.17	dσ/dΩ=7.72 mb/sr.
250	5/2$^-$	3	2.32	dσ/dΩ=1.66 mb/sr.
436	5/2$^-$	3	0.226	dσ/dΩ=0.165 mb/sr.
522		3	1.01	dσ/dΩ=0.75 mb/sr.
				L: assignment from 2007ScZX, cross section value does not allow L=1. But this result is in disagreement with L(d,p)=1 in 2007ScZX and in other studies. It is possible that the level populated in (^{3}He,α) is different from that in the other studies, although, the evaluator considers this as a less likely possibility.
680				dσ/dΩ=0.31 mb/sr.
820				dσ/dΩ=0.20 mb/sr.
1012				dσ/dΩ=0.30 mb/sr.
1084				dσ/dΩ=0.175 mb/sr.
1231	(5/2$^-$)	3	0.86	dσ/dΩ=0.68 mb/sr.
1429				dσ/dΩ=0.168 mb/sr.
1525	7/2$^-$	3		dσ/dΩ=0.78 mb/sr.
x[‡]		3	0.256	
y[‡]		4	0.056	

[†] The authors take data primarily from 1997 Nuclear Data Sheets (1997Fa12) for A=77.

[‡] Analog state, not included in the Adopted Levels.

[#] From 2007ScZX, the optical-model parameters used for the calculations are listed by 2007ScZX.