^{99}Tc(^{3}He,d) 1980Pe12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 172, 1 (2021)	31-Jan-2021

$J^{\pi}(^{99}\text{Tc g.s.})=9/2^{+}$.

1980Pe12: E=33.4 MeV ^{3}He beam was produced from the University of Colorado AVF cyclotron. Target was pure radioactive metal of ^{99}Tc evaporated onto a thin carbon foil. Reaction products were momentum-analyzed with a beam swinger spectrometer (FWHM=35 keV) and detected with a position sensitive helical-cathode proportional counter and a stopping scintillator behind it. Measured $\sigma(\theta)$. Deduced levels, L-transfers, spectroscopic factors from DWBA analysis. Absolute cross sections accurate to ≈20%.

All data are from 1980Pe12.

^{100}Ru Levels

E(level)[†]	L[&]	$(2J_f+1)C^2S$[&b]	E(level)[†]	L[&]	$(2J_f+1)C^2S$[&b]	E(level)[†]	L[&]	$(2J_f+1)C^2S$[&b]
0	4	0.77	1362 *10*	2	0.016	2750 *20*	4,(2)	3.0,(1.8)
540 *10*	2	0.13	1741 *20*	(4)[a]	0.086	3060[@] *20*	4	3.13
1130 *10*	(4)[a]	0.088	1870[‡] *20*	(4)	0.20	3240 *20*	4	3.74
1227 *10*	0	0.009	2077[#] *20*	4	0.38			

[†] Spectra calibrated with respect to well known contaminants in the ^{99}Tc target and peaks from ^{63}Cu, ^{65}Cu contributed by ^{62}Ni and ^{64}Ni present as impurities. Uncertainties are 10 keV for low excitations and 20 keV for high energy excitations.

[‡] Doublet.

[#] Corresponds to 6^{+} state in the Adopted Levels.

[@] Corresponds to 8^{+} state in the Adopted Levels.

[&] From comparison of experimental and DWBA calculations of $\sigma(\theta)$ distributions (1980Pe12).

[a] Assignment by 1980Pe12 considered tentative (by evaluators).

[b] $(2J_f+1)C^2S$ values where J_f=final spin. $(2J_f+1)C^2S=(d\sigma/d\Omega)\exp(2J+1)\times 2J_i+1)/((d\sigma/d\Omega)\text{DWBA})\times 4.42)$. J_i=spin of the target, J=spin of the transferred nucleon. Assumed J=5/2 for L(p)=2 and 9/2 for L(p)=4.