^{102}Mo β^- decay 1980De06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 1745 (2009)	31-Dec-2008

Parent: ^{102}Mo: E=0; $J^\pi=0^+$; $T_{1/2}$=11.3 min *2*; Q(β^-)=1008 *22*; %β^- decay=100.0
Assignment: chemical and mass separation of fission fragments from ^{235}U(n,F) and U(γ,F).
Measured: $T_{1/2}$, Eγ, Iγ, $\gamma\gamma$-coin.
Other: 1976Ki11.

^{102}Tc Levels

E(level)	J^π[†]	Comments
0	1^+	
211.66? *3*	$(0^+,2^+)$	E(level): the order of the 211.7 and 148.2 γ's is not well established. If the order is interchanged, there would be a level at 148.19 *3* rather than at 211.66 *3*. The position at 211.66 keV is favored from the absence of some γ-transitions (see 1980De06) and the observation of a 213 level in ^{104}Ru(d,α).
223.83 *4*	(1)	
266.63 *6*	$(0^+,2^+)$	
359.86 *4*	1^+	

[†] From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(648 *22*)	359.86	4.8 *7*	4.81 *9*	av Eβ=213.3 *89*
(784 *22*)	223.83	1.1 *2*	5.74 *10*	av Eβ=266.5 *92*
(1008 *22*)	0	94.1 *6*	4.21 *4*	av Eβ=357.9 *97* E(decay): Eβ=1200 *300* (1954Wi32). Iβ^-: based on absolute Iγ. E(decay): from 1954Wi32.

[†] The intensities of the β-branches were calculated from I(γ+ce)-imbalances at each level, with M1 internal conversion taken into account. M1 was chosen for nuclear structure reasons and and also looking to intensity balances. However as the multipolarities have not been measured experimentally no absolute intensities are given.
[‡] Absolute intensity per 100 decays.

$\gamma(^{102}Tc)$

Iγ normalization: Absolute γ-intensities were deduced from fission yield measurements in U(γ,F) and ^{235}U(n,F). From these experiments a value I(γ+ce)(211.66γ)=4.0 *5* per 100 decays was deduced.

Eγ	Iγ[#]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[†]	α[@]	Comments
42.85 *8*	0.65 *15*	266.63	$(0^+,2^+)$	223.83	(1)	[M1]	3.17	
93.24 *5*	2.7 *3*	359.86	1^+	266.63	$(0^+,2^+)$	[M1]	0.340	
136.02 *5*	6.1 *3*	359.86	1^+	223.83	(1)	[M1]	0.119	
148.19[‡] *3*	99 *5*	359.86	1^+	211.66?	$(0^+,2^+)$	[M1]	0.095	Sequence of 211γ and 148γ in decay scheme may be reversed.
211.66[‡] *3*	100	211.66?	$(0^+,2^+)$	0	1^+	[M1]	0.0365	Sequence of 211γ and 148γ in decay scheme may be reversed.

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^{102}Mo β^- decay 1980De06 (continued)

$\gamma(^{102}Tc)$ (continued)

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]
223.83 *4*	38 *2*	223.83	(1)	0	1^+	[M1]	0.0315
266.6 *4*	2.2 *2*	266.63	$(0^+,2^+)$	0	1^+		
359.9 *3*	7 *2*	359.86	1^+	0	1^+		

[†] The assumption of M1 multipolarity for all γ-rays is extensively discussed by 1980De06.
[‡] The sequence of these γ-rays may be reversed.
[#] For absolute intensity per 100 decays, multiply by 0.038 *5*.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Decay Scheme

Intensities: Relative I_γ