

^{113}Tc IT decay (0.526 μs) 2010Br15,2012Ka36

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	20-Jul-2015

Parent: ^{113}Tc : $E=114.4$ 5; $J^\pi=(5/2^-)$; $T_{1/2}=0.526$ μs +16-15; %IT decay=100.0

2010Br15: ^{238}U beam accelerated in the GSI LINAC to 11.4 MeV/nucleon and then to 750 MeV/nucleon in the GSI SIS18 synchrotron, typical intensity of 10^9 pps for a 1-s beam spill with a repetition period of 10-15 s. Target of 1.0 g/cm 2 ^9Be . Fully stripped fission fragments separated in the GSI FRagment Separator (FRS) and identified by means of time-of-flight and energy-loss techniques. Two scintillation detectors for time-of-flight, an eight-anode ionization chamber (MUSIC) for energy-loss and the RISING γ -ray array of 15 cluster Ge detectors for detecting γ -rays. Measured E_γ , I_γ , $T_{1/2}$ for an isomeric state.

2012Ka36: ^{238}U beam at $E=345$ MeV/nucleon provided by the RIBF accelerator complex at RIKEN facility. Fission fragments were separated and analyzed by BigRIPS separator, transported to focal plane of ZeroDegree spectrometer and finally implanted in an aluminum stopper. Particle identification was achieved by ΔE -tof- $B\rho$ method. Delayed gamma rays from microsecond isomers were detected by three clover-type HPGe detectors. Measured E_γ , I_γ , $\gamma\gamma$ -coin, isomer half-life. Comparison with previous studies.

 ^{113}Tc Levels

E(level)	J^π [†]	$T_{1/2}$	Comments
0	(5/2 ⁺)		Configuration= $\pi 5/2[422]$, oblate minimum from PES calculations (2010Br15).
114.4 5	(5/2 ⁻)	0.526 μs +16-15	PES calculations by 2010Br15 show a deep triaxial minimum at $\beta_2=0.29$, $\beta_4=-0.02$, $\gamma=29.8^\circ$. Number of implanted fragments= 6.7×10^5 (2012Ka36). $T_{1/2}$: from $\gamma(t)$ (2012Ka36). Other: 0.50 μs 10 (2010Br15).

[†] From 2010Br15 based on model calculations.

 $\gamma(^{113}\text{Tc})$

In 2010Br15, no γ rays in coincidence with 114 γ were seen.

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	a^\dagger	Comments
114.4 5	114.4	(5/2 ⁻)	0	(5/2 ⁺)	[E1]	0.091	E_γ : from 2012Ka36. Other: 114 1 (2010Br15).

[†] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

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Decay Scheme

%IT=100.0

