Adopted Levels

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

Q(β^-)=12610 *SY*; S(n)=3620 *SY*; S(p)=14000 *SY*; Q(α)=−9610 *SY* 2012Wa38
Estimated uncertainties: ΔQ(β^-)=300, ΔS(n)=360, ΔS(p)=500, ΔQ(α)=420 (2012Wa38).
S(2n)=8830 *320*, S(2p)=30650 *590*, Q(β^-n)=6780 *310* (syst, 2012Wa38).
1997Be70 (also 1995CzZZ report): ^{116}Tc produced by Be(^{238}U,F), E=750 MeV/nucleon at GSI, identification by time-of-flight.
2008Be33: ^{116}Tc produced in ^{9}Be(136Xe,X),E=1 GeV/nucleon at GSI, measured production σ.
2011Ni01: ^{116}Tc produced in Be(^{238}U,F) reactions at E=345 MeV/nucleon produced by the cascade operation of the RBIF complex of accelerators at RIKEN. Target=550 mg/cm^2. Identification of ^{116}Tc made on the basis of magnetic rigidity, time-of-flight and energy loss. The separated nuclei were implanted in a nine-layer double-sided silicon-strip detector (DSSSD). Correlations were recorded between the heavy ions and β rays. The half-life of ^{116}Tc isotope was measured from the correlated ion-β decay curves and maximum likelihood analysis technique. In the analysis of the decay curve, β-detection efficiency, background rate, daughter and granddaughter (including those populated in delayed neutron decays) half-lives, and β-delayed neutron emission probabilities were considered. Comparison of measured half-lives with FRDM+QRPA and KTUY+GT2 calculations.
2013So17: ^{116}Tc isotope produced in ^{9}Be(^{238}U,X) reaction at 345 MeV/nucleon at RIBF-RIKEN facility. Fragments identified by Zero-degree spectrometer which analyzed events based on Bρ-tof-ΔE. Measured Eγ, Iγ, Eβ, (fragment)γ-coin, $\beta\gamma$-coin, $\gamma\gamma$-coin.
2015Lo04: ^{116}Tc nuclide produced at RIBF-RIKEN facility in ^{9}Be(^{238}U,F) reaction at E=345 MeV/nucleon with an average intensity of 6×10^{10} ions/s. Identification of ^{116}Tc was made by determining atomic Z and mass-to-charge ratio A/Q, where Q=charge state of the ions. The selectivity of ions was based on magnetic rigidity, time-of-flight and energy loss. The separated nuclei were implanted at a rate of 50 ions/s in a stack of eight double-sided silicon-strip detector (WAS3ABi), surrounded by EURICA array of 84 HPGe detectors. Correlations were recorded between the implanted ions and β rays. The half-life of ^{116}Tc isotope was measured from the correlated ion-β decay curves and maximum likelihood analysis technique as described in 2014Xu07. Comparison of measured half-lives with FRDM+QRPA, KTUY+GT2 and DF3+CQRPA theoretical calculations.
2013Fa05: theoretical calculation of $T_{1/2}$ and %β^-n.

^{116}Tc Levels

E(level)	$T_{1/2}$	Comments
0	57 ms *3*	%β^-=100; %β^-n=?; %β^-2n=? Theoretical $T_{1/2}$=44.0 ms, %β^-n=17.3, %β^-2n=0.07 (2003Mo09). E(level): it is assumed that the observed activity corresponds to the g.s. of ^{116}Tc. J$^\pi$: there may be two long-lived states according to 2013So17; a high-spin and low-spin with possible configuration= π5/2[422]⊗ν5/2[532] giving rise to J^π=0$^-$ or 5$^-$. 2012Au07 propose 2$^+$ from systematics. $T_{1/2}$: measured by 2015Lo04 from (implanted ions)β correlated curves in time and position using maximum likelihood method. Other: 56 ms *+15−10* (2011Ni01, from the analysis of the (ion)β-correlated decay curve). See 2015Lo04 for comparison of their experimental value with theoretical values.