

^{181}Tl α decay (1.40 ms) 2009An14

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

Parent: ^{181}Tl : $E=835.9$ 4; $J^\pi=(9/2^-)$; $T_{1/2}=1.40$ ms 3; $Q(\alpha)=6321$ 6; $\% \alpha$ decay=0.40 6

^{181}Tl - $T_{1/2}$: From 2009An14. Others: 1.4 ms 5 (1998To14), 2.7 ms 10 (1984ScZQ).

^{181}Tl - $Q\alpha$ from 2017Wa10; J^π from 2009An14.

^{181}Tl -E: From 2009An14.

^{181}Tl - $\% \alpha$ decay: From 2009An14.

2009An14: Source produced using the $^{144}\text{Sm}(^{40}\text{Ca},p2n)$ reaction at $E(^{40}\text{Ca})=177$ -229 MeV. Enriched 96.4% in ^{144}Sm target.

Detectors: velocity filter SHIP at GSL, position-sensitive silicon detector (PSDD) with $\Delta E \approx 25$ keV FWHM, a fourfold segmented clover Ge detector behind the PSDD. Measured: time correlated $E\alpha$, $I\alpha$, $T_{1/2}$, recoil- α - α (t), and recoil- α - γ (t) coin.

Others: 1984ScZQ.

 ^{177}Au Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]	Comments
0.0	1/2 ⁺	1.501 s 20	
26 17	(3/2 ⁺)		J^π : (5/2 ⁺) in 2009An14.
186 17	(11/2 ⁻)	1.193 s 13	
431 9	(9/2 ⁻)	≤ 15 ns	

[†] From $Q(\alpha)=6321$ keV 6 (2017Wa10), $E(\text{iso})=835.9$ keV 4 (2009An14) and $E\alpha$.

[‡] From Adopted Levels.

 α radiations

$E\alpha$ [‡]	E(level)	$I\alpha$ [‡] #	HF [†]
6578 7	431	96.0 7	1.51 24
6818 15	186	1.4 7	7.5×10^2 40
6974 15	26	2.6 7	1.38×10^3 44

[†] Using $r_0(^{177}\text{Au})=1.532$ 9, average of $r_0=1.54$ 3 in ^{176}Os and 1.523 4 in ^{178}Pt , deduced from HF=1.

[‡] From 2009An14.

For absolute intensity per 100 decays, multiply by 0.0040 6.

 $\gamma(^{177}\text{Au})$

E_γ	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	α [†]	Comments
241.5 3	59.9 5	431	(9/2 ⁻)	186	(11/2 ⁻)	[M1]	0.602	$\%I_\gamma=0.24$ 4 E_γ : From 2009An14. I_γ : from $I\alpha(6578\alpha)=96.0$ 7 and $\alpha(\text{tot})=0.602$ 8.

[†] Additional information 1.

[‡] For absolute intensity per 100 decays, multiply by 0.0040 6.

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Decay Scheme

Intensities: I_γ per 100 parent decays