

¹⁷³Au α decay (12.2 ms) 1999Po09,1996Pa01,1983Sc24

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 209,1 (2026)	1-Oct-2025

Parent: ¹⁷³Au: E=214 23; J ^{π} =(11/2⁻); T_{1/2}=12.2 ms I; Q(α)=6836 5; % α decay \approx 92

¹⁷³Au-E,J ^{π} : from the Adopted Levels of ¹⁷³Au in ENSDF (update).

¹⁷³Au-T_{1/2}: from α (t) 2012Th13. Others: 14 ms I (2001Ko44, 2004GoZZ), 12 ms +3-2 (1999Po09), 15 ms 2 (1996Pa01), 59 ms +45-18 (1983Sc24).

¹⁷³Au-Q(α): from 2021Wa16.

¹⁷³Au-% α decay: 92 I3 in 1999Po09. Note that the reported % α branch in 1999Po09 exceeds 100 within the uncertainty.

1999Po09: produced ¹⁷⁷Tl grandparent using ¹⁰²Pd(⁷⁸Kr,p2n) reaction at 370 MeV; fragment mass analyzer, recoils implanted into double-sided Si strip detector; measured E α , E(p), p- α and α - α correlations, T_{1/2}, % α , %p.

1996Pa01: sources from heavy-ion fusion-evaporation reactions; recoil mass separator, double-sided Si strip detector (FWHM \leq 20 keV); measured E α , parent and daughter T_{1/2} and % α (¹⁶⁹Ir).

1983Sc24: sources from ⁹²Mo bombardments of rubidium-molybdenum targets (velocity-filter, evaporation-residue separation); measured E α , I α (position-sensitive Si surface-barrier detectors).

2012Th13: ¹⁷³Au nuclei were produced via fusion-evaporation reactions by bombarding a 0.5 mg/cm² ⁹²Mo target of 97% isotopic enrichment with a beam of ⁸⁴Sr¹⁶⁺ ions provided by the K130 cyclotron of the Accelerator Laboratory of the University of Jyväskylä with E=392 MeV for about 140 hours and E=400 MeV for about 145 hours with an average beam intensity of 150 enA. Prompt γ rays were detected by 34 HPGe detectors at the target position; recoiling residues were separated using the RITU He-filled magnetic separator and implanted into a 300- μ m-thick DSSD in the GREAT spectrometer at the focal plane; delayed γ rays were detected by Ge detectors in the GREAT spectrometer. Measured E α , I α , E γ , I γ , recoil- α -correlation, $\alpha\gamma$ -delayed coin, α -tagged $\gamma\gamma$ -coin, α (t). Deduced isomers, Q α , α -decay branching ratios, T_{1/2}, reduced widths, hindrance factors and mass excesses.

Other: 2001Ko44.

¹⁶⁹Ir Levels

E(level)	J ^{π}	T _{1/2}	Comments
153 24	(11/2 ⁻)	0.280 s I	E(level): based on E α =6737 4 from 214 23 parent level and Q(α)=6836 5. J ^{π} ,T _{1/2} : from Adopted Levels.

α radiations

E α	E(level)	I α [‡]	HF [†]	Comments
6737 4	153	100	\approx 1.5	E α : weighted average of 6739 15 (2012Th13), 6742 5 (2004GoZZ), 6732 4 (1999Po09), 6749 9 (1996Pa01), and 6720 20 (1983Sc24). Other E α : 6740 (2001Ko44; probably superseded by 2004GoZZ). Correlated with 6119 α from ¹⁶⁹ Ir (2004GoZZ).

[†] The nuclear radius parameter r₀(¹⁶⁹Ir)=1.5529 80 is deduced from interpolation (or unweighted average) of radius parameters of the adjacent even-even nuclides: ¹⁶⁸Os=1.5578 40 ¹⁷⁰Pt=1.548 12 in 2020Si16.

[‡] For absolute intensity per 100 decays, multiply by \approx 0.92.