

^{240}Cf α decay 2010Kh06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Shaofei Zhu	NDS 182, 2 (2022).	1-Apr-2022

Parent: ^{240}Cf : $E=0.0$; $T_{1/2}=40.3$ s 9; $Q(\alpha)=7711$ 4; $\% \alpha$ decay=98.5 2

^{240}Cf - $T_{1/2}$: from 2010AsZX; others: 0.9 min 2 (1995La09); 0.8 min +3-2 (1995La09) and 1.06 min 15 (1970Si19).

^{240}Cf - $Q(\alpha)$: from 2021Wa16.

^{240}Cf - $\% \alpha$ decay: from 2010Kh06 with $\% \text{SF}=1.5$ 2 and $\% \epsilon$ negligible.

2010Kh06: ^{240}Cf produced in reactions $^{206}\text{Pb}(^{36}\text{S},2n)$ $E=163.6, 172.6$ MeV and $^{207}\text{Pb}(^{36}\text{S},3n)$ $E=165.5, 170.3$ MeV using isotopically enriched PbS target with beams delivered by UNILAC at GSI. Evaporation residues (ERs) separated by the velocity filter SHIP and implanted on a position-sensitive 16 strip Si detector (stop detector). A Ge clover detector behind the Si detector for detecting x rays and/or γ -rays. Measured $E(\alpha)$, ER- α correlations, $T_{1/2}$, decay modes.

 ^{236}Cm Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	0^+	6.8 min 8	$T_{1/2}$: from 2010Kh06 based on $\alpha\alpha(t)$ measurement.
47.4 4	2^+		E(level): from 2010AsZX. J^π : from $K=0^+$ g.s. band.

 α radiations

$E\alpha$	E(level)	$I\alpha^{\dagger\#}$	HF^{\ddagger}	Comments
7535 4	47.4	31 2	1.51 11	$E\alpha$: from 2010AsZX.
7582 4	0.0	69 2	1.000	$E\alpha$: weighted average of 7590 10 (1970Si19), 7585 20 (2010Kh06) and 7581 4 (2010AsZX).

† Estimated from the systematics of hindrance factors $\text{HF}(2^+)/\text{HF}(0^+)=1.5$ 1. It is consistent with the peak height as shown in 2010AsZX.

‡ $r_0(^{236}\text{Cm})=1.5185$ 25 is calculated from $\text{HF}(7582\alpha)=1.0$ assuming $I\alpha(\text{to g.s.})=69\%$ 2 and $I\alpha(\text{to } 2^+)=31\%$ 2.

$\#$ For absolute intensity per 100 decays, multiply by 0.985 2.