

Adopted Levels

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 121, 561 (2014)	31-Mar-2014

S(n)=10550 90; S(p)=2070 50; Q( $\alpha$ )=8069 6 [2012Wa38](#)

[2010He25](#):  $^{210}\text{Th}$  was produced from  $^{150}\text{Sm}(^{64}\text{Ni},4n)$  reaction, E=294 MeV; 95.6% enriched target of  $^{147}\text{SmF}_3$  (thickness – 327-546  $\mu\text{g}/\text{cm}^2$ ) Evaporation residues were velocity filtered by SHIP and implanted into a 16-strip positron-sensitive silicon detector (PSSD), six silicon box detectors were mounted in an open box geometry upstream from the PSSD to measure the energy of  $\alpha$  particles which escaped from the PSSD in the backward direction.  $^{210}\text{Th}$  was identified based on the observation of energy, position, and time correlated  $\alpha$ -decay chains. A clover Ge detector was also used for  $\alpha$ - $\gamma$  or  $\alpha$ (x ray) coincidence measurements with  $\Delta T_{1/2}(\alpha-\gamma) \leq 5 \mu\text{s}$ . Measured half-life, production cross section.

[1995Uu01](#):  $^{210}\text{Th}$  activity was produced from  $^{181}\text{Ta}(^{35}\text{Cl},6n)$  reaction, E=191, 199 MeV, and was separated using a gas-filled magnetic recoil separator.  $^{210}\text{Th}$  was identified on the basis of correlated alpha-decay from the daughter and granddaughter nuclei  $^{206}\text{Ra}$  and  $^{202}\text{Rn}$ , respectively.

[1995Le41](#):  $^{210}\text{Th}$  activity was produced from  $^{181}\text{Ta}(^{35}\text{Cl},6n)$  reaction, E=193 MeV, and was separated using a gas-filled recoil separator.  $^{210}\text{Th}$  was identified on the basis of correlated alpha-decay from the daughter nucleus  $^{206}\text{Ra}$ . Others: [2002No01](#), [1995Le15](#), [1987Po06](#).

 $^{210}\text{Th}$  Levels

E(level)	$J^\pi$	$T_{1/2}$	Comments
0.0	$0^+$	16 ms 4	$\% \varepsilon + \% \beta^+ = ?$ $T_{1/2}$ : From <a href="#">2010He25</a> . Others: 9 ms +17–4 ( <a href="#">1995Uu01</a> ), 10 ms +50–5 ( <a href="#">1995Le41</a> ). $\varepsilon + \beta^+$ decay has not been observed. Theoretical estimate $\% \varepsilon + \% \beta^+ \approx 1$ ( <a href="#">1997Mo25</a> ). Production $\sigma = 1.59 \text{ nb } I_3$ for 165 events ( <a href="#">2010He25</a> ). Reduced $\alpha$ width $\delta_\alpha^2 = 55 \text{ keV } I_3$ ( <a href="#">2010He25</a> ).