## $^{177}$Hg $\alpha$ decay 2009An20

| Type | Author | History Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | J. Tuli | ENSDF | 15-Aug-2015 |

Parent: $^{177}$Hg: E=0.0; $J^{\pi}$=(7/2$^-$); $T_{1/2}$=118 ms *8*; Q($\alpha$)=6736 *50*; %$\alpha$ decay=100 *5*

$^{177}$Hg-$J^{\pi}$,$T_{1/2}$: From 2009An20 Other parent $T_{1/2}$: 170 ms *50* (1979Ha10), 130 ms *5* (1991Se01), 114 ms *15* (1996Pa01), 127 ms *2* (2002Ro17), 128 ms *23* (2004GoZZ).

$^{177}$Hg-Q($\alpha$): From 2012WA38.

$^{177}$Hg-%$\alpha$ decay: Measured in 2009An20.

$^{177}$Hg obtained as daughter of $^{181}$Pb $\alpha$ decay which was produced in $^{144}$Sm($^{40}$Ca,3n) at beam energy of 196 MeV at GSI SHIP facility.

Measured: E$\alpha$, (recoil)$\alpha$, $\alpha\alpha$ correlations, half-lives, $\alpha$ decay branching ratios.

Detection system: Evaporation residues were detected with position- sensitive silicon detector with $\Delta$E≈25 keV FWHM. $\alpha$- energy calibration was performed using $\alpha$-lines from $^{176-182}$Hg and their daughters. Distinction between the reaction and production channels was performed with three TOF detectors.

Others: 1991Se01, 1996Pa01, 2002Ro17.

1975Ca39: sources from $^{142}$Nd($^{40}$Ca,5n) (E($^{40}$Ca)=220-240 MeV), helium-jet transport; targets enriched to 96% in $^{142}$Nd; measured E$\alpha$, I$\alpha$ (annular silicon detector).

1979Ha10: sources from spallation of Pb by 600-MeV protons, mass separation; measured E$\alpha$, I$\alpha$ (silicon surface-barrier detector, FWHM≈25), $\alpha\gamma$ coin (Ge(Li) $\gamma$ detector).

2004GoZZ: Mo($^{84}$Sr,xnyp), E=380-395 MeV; isotopically enriched ( 98%) targets; GAMMASPHERE array(101 Compton-suppressed Ge detectors); fragment mass analyzer with position-sensitive parallel-plate avalanche counter In focal plane; double-sided Si strip detector surrounded by 4 GAMMASPHERE-type Ge detectors and one LEPS; measured tof, E$\alpha$, I$\alpha$, $\alpha$(t), E$\gamma$, $\alpha$-$\gamma$ coin, $\gamma$-$\gamma$ coin, recoil-$\gamma$-coin; recoil-decay tagging technique.

### $^{173}$Pt Levels

| E(level) | $J^{\pi}$ | $T_{1/2}$ | Comments |
|---|---|---|---|
| 0.0 | (5/2$^-$) | 430 ms *40* | $T_{1/2}$: measured in 2009An20.<br>$J^{\pi}$: from adopted dataset for $^{173}$Pt in ENSDF database. |

### $\alpha$ radiations

| E$\alpha$ | E(level) | I$\alpha$[‡] | HF[†] | Comments |
|---|---|---|---|---|
| 6579 *4* | 0.0 | 100 | ≈2.1 | E$\alpha$: from 2009An20. Others: E 6580 *8* (1979Ha10), 6577 *9* (1996Pa01), 6580 *5* (2004GoZZ), 6570 *20* (1975Ca39).<br>correlated with 6225$\alpha$ from $^{173}$Pt, 5575$\alpha$ from $^{169}$Os and 5420$\alpha$ from $^{173}$Ir (2002Ro17); correlated with 6232$\alpha$, 6133$\alpha$, 6100$\alpha$ and 6067$\alpha$ from $^{173}$Pt (2004GoZZ). |

[†] If $r_0$=1.55 (based on $r_0$($^{172}$Pt)=1.55 *3* and $r_0$($^{174}$Pt)=1.545 *10* (1998Ak04)).

[‡] For absolute intensity per 100 decays, multiply by 1.00 *5*.