^{14}C(^{48}Ca,2pγ) 2006Zh42

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1849 (2013)	31-Dec-2012

Other: 2005Fr29.
Includes reaction: ^{238}U(^{48}Ca,Xγ).
Additional information 1.
Two experiments were carried out:
1. ^{238}U(^{48}Ca,Xγ) E=330 pulsed beam. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ using Gammasphere array with 101 Compton-suppressed HPGe detectors. Prompt and delayed (≈40 ns to ≈350 ns after the beam pulse) spectra recorded, the latter allowed for identification of isomers and β decay related events.
2. ^{14}C(^{48}Ca,2pγ) E=130 MeV. Enriched (90%) ^{14}C target. Reaction products were analyzed by Argonne Fragment Mass Analyzer (FMA). Parallel-grid avalanche counter (PGAC) was used to detect recoils and Gammasphere array with 100 Compton-suppressed HPGe detectors was used to detect γ rays. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$.

The level scheme is from combination of data from ^{238}U(^{48}Ca,Xγ) and ^{14}C(^{48}Ca,2pγ) reactions. Shell-model calculations.

^{60}Cr Levels

E(level)	J$^\pi$
0†	0$^+$
643.9† *2*	2$^+$
1460.7† *5*	4$^+$
1818.9 *11*	(3,4)
2446.0† *5*	6$^+$
2630.0 *11*	(5,6)
3477.4† *6*	(8$^+$)
4681.4?† *12*	(10$^+$)

† Band(A): g.s. band.

γ(^{60}Cr)

Additional information 2.

E$_\gamma$	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
643.9 *2*	100 *6*	643.9	2$^+$	0	0$^+$	Additional information 3. I$_\gamma$: 100 *5* in ^{238}U(^{48}Ca,Xγ).
811.1 *4*	41 *8*	2630.0	(5,6)	1818.9	(3,4)	
816.8 *4*	63 *10*	1460.7	4$^+$	643.9	2$^+$	Additional information 4. I$_\gamma$: 86 *15* in ^{238}U(^{48}Ca,Xγ).
985.3 *2*	49 *6*	2446.0	6$^+$	1460.7	4$^+$	I$_\gamma$: 42 *9* in ^{238}U(^{48}Ca,Xγ).
1031.4 *3*	43 *8*	3477.4	(8$^+$)	2446.0	6$^+$	Additional information 5. I$_\gamma$: 23 *14* in ^{238}U(^{48}Ca,Xγ).
1175.0 *10*	35 *10*	1818.9	(3,4)	643.9	2$^+$	
1204.0‡ *10*	23 *1*	4681.4?	(10$^+$)	3477.4	(8$^+$)	I$_\gamma$: 10 *5* in ^{238}U(^{48}Ca,Xγ).

† From ^{14}C(^{48}Ca,2pγ). Values from ^{238}U(^{48}Ca,Xγ) reaction are given under comments.
‡ Placement of transition in the level scheme is uncertain.

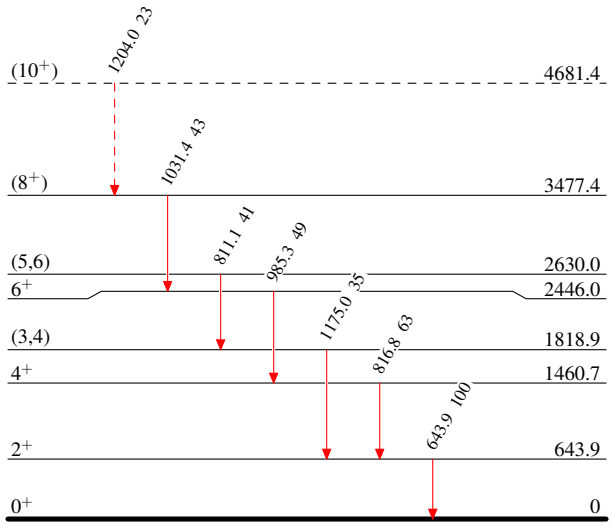
^{14}C(^{48}Ca,2pγ) 2006Zh42

Level Scheme

Intensities: Relative I_γ

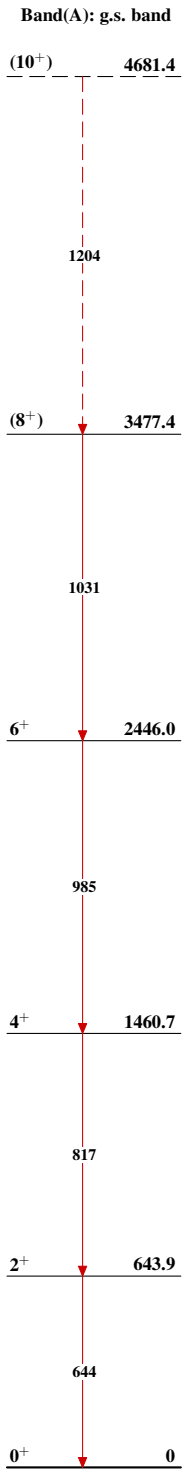
Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{60}_{24}Cr_{36}$

$^{14}C(^{48}Ca,2p\gamma)$ 2006Zh42



$^{60}_{24}Cr_{36}$