^{144}Sm(^{49}Ti,3nγ) 2007Wi11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, [1] and Jun Chen[2]	NDS 169, 1 (2020)	15-Oct-2020

2007Wi11: E=222 MeV ^{49}Ti beam was produced from the K=130−MeV cyclotron at the Accelerator Laboratory of the University of Jyvaskyla. Target was 92.4% enriched ^{144}Sm with a thickness of 500 μg/cm^2. Measured Eγ, Iγ, $\gamma\gamma$ using JUROGAM Ge detector array containing 43 EUROGAM type escape suppressed Ge detectors in conjunction with gas-filled recoil separator RITU. The recoils were implanted in two double-sided Si strip detectors DSSDs which comprised part of GREAT spectrometer and were used to measure α particles from the decay of the implanted nuclei. Recoil-decay tagging technique used in which α decays were time and position correlated with recoils and subsequent prompt γ rays from the recoils. Deduced levels, J, π, band structure. Systematics of neighboring Po isotopes.

^{190}Po Levels

E(level)[†]	J$^\pi$[‡]
0.0[#]	0$^+$
234.1[#] *9*	(2$^+$)
532.4[#] *9*	(4$^+$)
901.8[#] *9*	(6$^+$)
1338.7[#] *9*	(8$^+$)
1837.2[#] *11*	(10$^+$)
2402.2?[#] *15*	(12$^+$)
3040.2?[#] *18*	(14$^+$)

[†] From Eγ data.
[‡] Proposed by 2007Wi11 based on systematics.
[#] Band(A): g.s. band.

γ(^{190}Po)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
[x]217.2 *15*						
234.1 *9*	100 *10*	234.1	(2$^+$)	0.0	0$^+$	
298.3 *1*	62 *8*	532.4	(4$^+$)	234.1	(2$^+$)	
[x]305.4 *3*						
369.4 *2*	40 *12*	901.8	(6$^+$)	532.4	(4$^+$)	
[x]402.0 *10*						
436.9 *2*	30 *7*	1338.7	(8$^+$)	901.8	(6$^+$)	
[x]479						E$_\gamma$: from spectral Fig. 2 of 2007Wi11.
498.5 *6*		1837.2	(10$^+$)	1338.7	(8$^+$)	
[x]552.0 *10*						
565.0[#] *10*		2402.2?	(12$^+$)	1837.2	(10$^+$)	
638.0[#] *10*		3040.2?	(14$^+$)	2402.2?	(12$^+$)	

[†] The γ rays are from recoil-decay tagging method. Weak 484γ and 554γ proposed in earlier studies were not confirmed in this work, instead the gamma rays are: 499 and 565, respectively. Values given here are from e-mail received from one of the authors (R. Page) on January 22, 2008.
[‡] From e-mail reply of January 22, 2008 from R. Page (one of the authors of 2007Wi11 paper).
[#] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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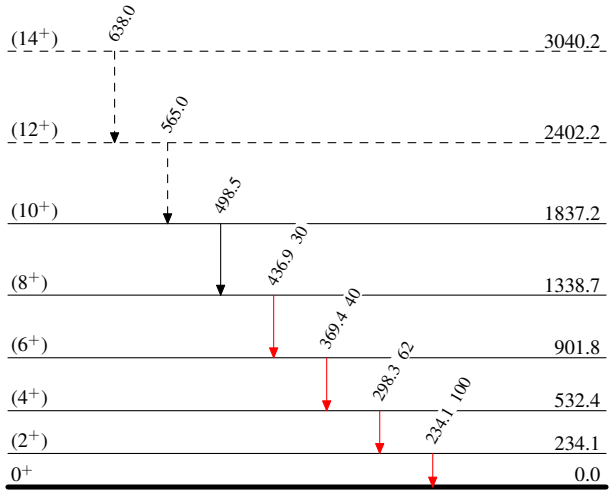
Level Scheme

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)



$^{190}_{84}Po_{106}$

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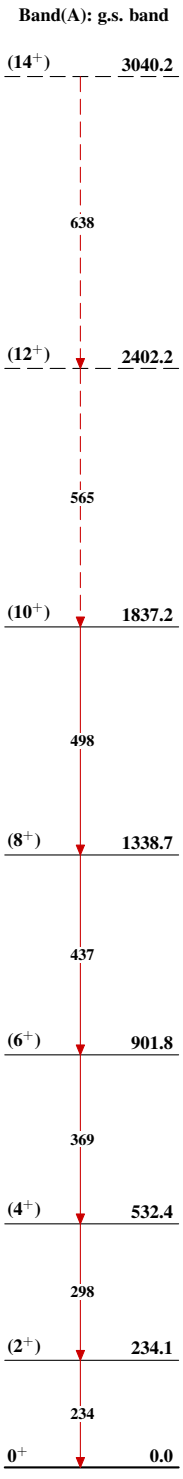

$^{190}_{84}Po_{106}$