

<sup>9</sup>Be(<sup>49</sup>V,X $\gamma$ ) 2021Ya33

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 179, 1 (2022)	30-Nov-2021

**2021Ya33:** E=84 MeV/nucleon <sup>49</sup>V secondary beam was produced by fragmentation of  $\approx$ 160 MeV/nucleon <sup>58</sup>Ni primary beam from the K500/K1200 cyclotrons on a 802 mg/cm<sup>2</sup> <sup>9</sup>Be production target at NSCL. Fragments were identified and separated with the A1900 fragment separator. Reaction target was 188 mg/cm<sup>2</sup> <sup>9</sup>Be.  $\gamma$  rays were detected with the GRETINA tracking array of 9 detector modules with each consisting of 4 HPGe crystals; reaction products were identified with the S800 spectrograph according to time-of-flight and energy loss. Measured E $\gamma$ , I $\gamma$ , particle- $\gamma$ -coin,  $\gamma\gamma$ -coin, cross sections. Deduced levels, J,  $\pi$ . Comparisons with shell model calculations.

<sup>48</sup>Ti Levels

Total inclusive cross section=74 mb  $\sigma$ . The exclusive cross section for each level is listed under comments.

E(level) <sup>†</sup>	J $\pi$ <sup>‡</sup>	Comments
0.0	0 <sup>+</sup>	$\sigma$ =18 mb 3.
983.0 10	2 <sup>+</sup>	$\sigma$ =4 mb 2.
2294.8 12	4 <sup>+</sup>	$\sigma$ =13 mb 2.
2420.0 14	2 <sup>+</sup>	$\sigma$ =3.2 mb 4.
3223.1 14	3 <sup>+</sup>	$\sigma$ =1.2 mb 3.
3238.8 16	4 <sup>+</sup>	$\sigma$ =2.8 mb 4.
3331.8 15	6 <sup>+</sup>	$\sigma$ =8.3 mb 9.
3357.9 13	3 <sup>-</sup>	$\sigma$ =4.6 mb 6.
3506.8 15	6 <sup>+</sup>	$\sigma$ =7.2 mb 7.
3780.9 16	3 <sup>-</sup> ,4 <sup>-</sup>	$\sigma$ =2.5 mb 3.
3851.5 13	3 <sup>-</sup>	$\sigma$ =4.2 mb 6.
4044.8 16	5 <sup>(-)</sup>	$\sigma$ =3.4 mb 4.
4562.8 18	8 <sup>(+)</sup>	$\sigma$ =1.4 mb 4.

<sup>†</sup> From a least-squares fit to  $\gamma$ -ray energies, assuming  $\Delta E_\gamma=1$  keV.

<sup>‡</sup> From Adopted Levels. The same values without brackets are quoted in 2021Ya33.

$\gamma$ (<sup>48</sup>Ti)

E $\gamma$ <sup>†</sup>	I $\gamma$ <sup>‡</sup>	E <sub>i</sub> (level)	J $\pi$ <sub>i</sub>	E <sub>f</sub>	J $\pi$ <sub>f</sub>	E $\gamma$ <sup>†</sup>	I $\gamma$ <sup>‡</sup>	E <sub>i</sub> (level)	J $\pi$ <sub>i</sub>	E <sub>f</sub>	J $\pi$ <sub>f</sub>
175	11.1 3	3506.8	6 <sup>+</sup>	3331.8	6 <sup>+</sup>	1312	65.8 17	2294.8	4 <sup>+</sup>	983.0	2 <sup>+</sup>
423	5.0 4	3780.9	3 <sup>-</sup> ,4 <sup>-</sup>	3357.9	3 <sup>-</sup>	1437	6.2 6	2420.0	2 <sup>+</sup>	983.0	2 <sup>+</sup>
944	5.5 6	3238.8	4 <sup>+</sup>	2294.8	4 <sup>+</sup>	1557	3.7 8	3851.5	3 <sup>-</sup>	2294.8	4 <sup>+</sup>
983	100.0 23	983.0	2 <sup>+</sup>	0.0	0 <sup>+</sup>	1750	6.6 5	4044.8	5 <sup>(-)</sup>	2294.8	4 <sup>+</sup>
1037	19.1 7	3331.8	6 <sup>+</sup>	2294.8	4 <sup>+</sup>	2240 <sup>#</sup>	2.4 5	3223.1	3 <sup>+</sup>	983.0	2 <sup>+</sup>
1063	1.3 3	3357.9	3 <sup>-</sup>	2294.8	4 <sup>+</sup>	2375	12.8 7	3357.9	3 <sup>-</sup>	983.0	2 <sup>+</sup>
1212	3.2 4	3506.8	6 <sup>+</sup>	2294.8	4 <sup>+</sup>	2868	4.7 6	3851.5	3 <sup>-</sup>	983.0	2 <sup>+</sup>
1231 <sup>#</sup>	2.7 7	4562.8	8 <sup>(+)</sup>	3331.8	6 <sup>+</sup>						

<sup>†</sup> From 2021Ya33.

<sup>‡</sup> Not available in 2021Ya33; quoted values are from an email reply of the first author R. Yajzey to the evaluator (J. Chen) on December, 9, 2021.

<sup>#</sup> Placement of transition in the level scheme is uncertain.

$^9\text{Be}(^{49}\text{V}, X\gamma)$  2021Ya33

Legend

## Level Scheme

Intensities: Relative  $I_\gamma$ 

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

