

$^{28}\text{Si}(\mu^-, \nu 2n\gamma)$  2007Me18

| Type            | Author                        | History | Citation         | Literature Cutoff Date |
|-----------------|-------------------------------|---------|------------------|------------------------|
| Full Evaluation | M. S. Basunia and A. M. Hurst |         | NDS 134,1 (2016) | 1-Feb-2016             |

The  $\mu^-$  beam obtained from decay of  $\pi^-$  beam at 90 MeV/c. Measured  $\gamma$ -ray yields using two HPGe detectors.

-----  
Muonic Lyman (or K) series for Silicon

| $\mu$ x-ray           | Energy     | Intensity (in % per capture) |
|-----------------------|------------|------------------------------|
| 2p-1s                 | 400.177 a) | 80.3 8                       |
| 3p-1s                 | 476.80 5   | 7.40 20                      |
| 4p-1s                 | 503.58 10  | 4.27 20                      |
| 5p-1s                 | 515.97 10  | 3.83 20                      |
| 6p-1s                 | 522.74 10  | 2.29 10                      |
| (7p to $\infty$ p)-1s |            | 1.87 20                      |

a): 400.177-keV x ray used for calibration

-----  
 $^{26}\text{Al}$  Levels

| E(level) <sup>†</sup> | J $\pi$ <sup>†</sup> | Comments  |
|-----------------------|----------------------|---|
| 0.0                   | 5 <sup>+</sup>       | Percent=1.0 3.<br>S: Estimated from (d, $\alpha$ ) reaction.<br>Known cascading=2.8%. |
| 228.30                | 0 <sup>+</sup>       | Known cascading=1.9% 4.<br>This level decays by $\beta^+$ .                           |
| 416.85                | 3 <sup>+</sup>       | Percent=0.75 25.<br>Known cascading=0.15% 15.   |
| 1057.74               | 1 <sup>+</sup>       | Percent=0.65 22.  |
| 1759.03               | 2 <sup>+</sup>       | Percent=0.15 15.  |
| 1850.62               | 1 <sup>+</sup>       | Percent=1.2 4.  |
| 2068.86               | (4 <sup>+</sup> )    | Percent=0.4 LT.   |
| 2069.47               | (2 <sup>+</sup> )    | Percent=0.5 LT.   |
| 2071.64               | 1 <sup>+</sup>       | Percent=0.16 8.   |

<sup>†</sup> From Adopted Levels.

 $\gamma(^{26}\text{Al})$ 

| $E_\gamma$ <sup>†</sup> | $I_\gamma$ <sup>‡</sup> | $E_i$ (level) | J $\pi_i$         | $E_f$   | J $\pi_f$      | Comments |
|-------------------------|-------------------------|---------------|-------------------|---------|----------------|----------|
| 416.85                  | 0.9 2                   | 416.85        | 3 <sup>+</sup>    | 0.0     | 5 <sup>+</sup> |          |
| 829.49                  | 0.65 22                 | 1057.74       | 1 <sup>+</sup>    | 228.30  | 0 <sup>+</sup> |          |
| 1011.71                 | <0.26                   | 2069.47       | (2 <sup>+</sup> ) | 1057.74 | 1 <sup>+</sup> |          |
| 1342.15                 | 0.15 15                 | 1759.03       | 2 <sup>+</sup>    | 416.85  | 3 <sup>+</sup> |          |
| 1622.26                 | 1.2 4                   | 1850.62       | 1 <sup>+</sup>    | 228.30  | 0 <sup>+</sup> |          |
| 1651.95                 | <0.26                   | 2068.86       | (4 <sup>+</sup> ) | 416.85  | 3 <sup>+</sup> |          |
| 1652.56                 | <0.38                   | 2069.47       | (2 <sup>+</sup> ) | 416.85  | 3 <sup>+</sup> |          |
| 1843.26                 | 0.14 7                  | 2071.64       | 1 <sup>+</sup>    | 228.30  | 0 <sup>+</sup> |          |
| 2068.77                 | <0.13                   | 2068.86       | (4 <sup>+</sup> ) | 0.0     | 5 <sup>+</sup> |          |

$I_\gamma$ : mixed with 1622.86 keV transition in  $^{28}\text{Al}$ .

<sup>†</sup> From Adopted Gammas.

<sup>‡</sup> Percent yield per muon capture.

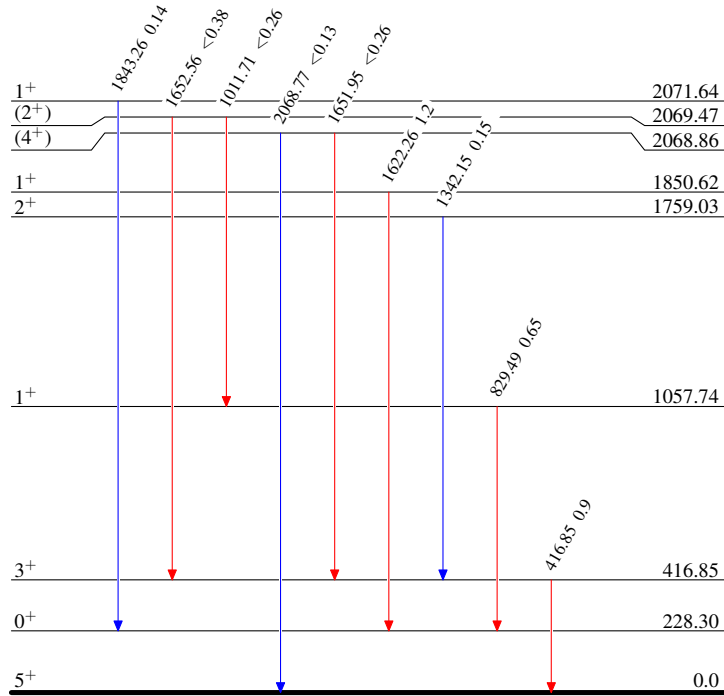
${}^{28}\text{Si}(\mu^{-}, \nu 2n\gamma)$  2007Me18

## Level Scheme

Intensities: Percent  $\gamma$ -ray yield/muon capture

## Legend

- $\longrightarrow$   $I_{\gamma} < 2\% \times I_{\gamma}^{\text{max}}$
- $\longrightarrow$   $I_{\gamma} < 10\% \times I_{\gamma}^{\text{max}}$
- $\longrightarrow$   $I_{\gamma} > 10\% \times I_{\gamma}^{\text{max}}$

 ${}^{26}_{13}\text{Al}_{13}$