

$^{28}\text{Si}(\mu^-, \gamma \text{pn} \gamma)$  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 at TRIUMF facility.

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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 |            |                             |

 $^{26}\text{Mg}$  Levels

| <u>E(level)<sup>†</sup></u> | <u>J<math>\pi</math><sup>†</sup></u> |
|-----------------------------|--------------------------------------|
| 0.0                         | 0 <sup>+</sup>                       |
| 1808.73                     | 2 <sup>+</sup>                       |
| 2938.34                     | 2 <sup>+</sup>                       |
| 3588.56                     | 0 <sup>+</sup>                       |
| 3941.55                     | 3 <sup>+</sup>                       |
| 4318.88                     | 4 <sup>+</sup>                       |
| 4332.57                     | 2 <sup>+</sup>                       |

<sup>†</sup> From Adopted Levels.

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

| <u>E<math>\gamma</math><sup>†</sup></u> | <u>I<math>\gamma</math><sup>‡</sup></u> | <u>E<math>_i</math>(level)</u> | <u>J<math>^\pi_i</math></u> | <u>E<math>_f</math></u> | <u>J<math>^\pi_f</math></u> | Comments                                                                                            |
|-----------------------------------------|-----------------------------------------|--------------------------------|-----------------------------|-------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------|
| 1003.25 4                               | 0.25 5                                  | 3941.55                        | 3 <sup>+</sup>              | 2938.34                 | 2 <sup>+</sup>              |                                                                                                     |
| 1129.61 4                               | 2.11 14                                 | 2938.34                        | 2 <sup>+</sup>              | 1808.73                 | 2 <sup>+</sup>              |                                                                                                     |
| 1779.74 8                               | <2.0                                    | 3588.56                        | 0 <sup>+</sup>              | 1808.73                 | 2 <sup>+</sup>              | I $\gamma$ : masked by 1778.97 $\gamma$ from $^{28}\text{Si}$ , mostly from $^{28}\text{Al}$ decay. |
| 1808.68 4                               | 7.9 8                                   | 1808.73                        | 2 <sup>+</sup>              | 0.0                     | 0 <sup>+</sup>              |                                                                                                     |
| 2132.71 4                               | 0.14 7                                  | 3941.55                        | 3 <sup>+</sup>              | 1808.73                 | 2 <sup>+</sup>              |                                                                                                     |
| 2510.01 5                               | 0.49 24                                 | 4318.88                        | 4 <sup>+</sup>              | 1808.73                 | 2 <sup>+</sup>              |                                                                                                     |
| 2523.69 6                               | <0.13                                   | 4332.57                        | 2 <sup>+</sup>              | 1808.73                 | 2 <sup>+</sup>              |                                                                                                     |
| 2938.15 5                               | 0.52 23                                 | 2938.34                        | 2 <sup>+</sup>              | 0.0                     | 0 <sup>+</sup>              |                                                                                                     |

<sup>†</sup> From Adopted Gammas.

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

$^{28}\text{Si}(\mu^-, \nu\text{pn}\gamma)$  2007Me18Level SchemeIntensities: Percent  $\gamma$ -ray yield/muon capture

## Legend

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

