

## Development Status of Type II Superlattice Infrared Detector in JAXA

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(Received December 11, 2013; accepted March 24, 2014)

**Key words:** InAs/GaSb Type II superlattice infrared detectors, mid-wave infrared

We present the development status of a Type II superlattice (T2SL) infrared detector for future space applications in JAXA. InAs/GaSb T2SL is the only known infrared material that has a theoretically predicted higher performance than HgCdTe. We first fabricated a single-pixel detector with a cutoff wavelength of 6  $\mu\text{m}$ . The detector is a pin photodiode with a superlattice consisting of 9 InAs monolayers (MLs) and 7 GaSb MLs. The dark current density of the detector is  $1.8 \times 10^{-4}$  A/cm<sup>2</sup> at a bias voltage of  $-100$  mV. We also present the results of an optical evaluation of the detector. The cutoff wavelength is 5.5  $\mu\text{m}$  at 30 K. The responsivity is  $0.3 \pm 0.05$  A/W at 4.5  $\mu\text{m}$ . We also show the development of an array detector with a cutoff wavelength of 6  $\mu\text{m}$ . However, further improvements are required for developing array detectors with longer cutoff wavelengths.

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