

International Conference on

LASERS, OPTICS AND PHOTONICS

July 25-26, 2018 | Osaka, Japan

Extended Short Wave Infrared Photodetectors

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Extended short wave infrared (eSWIR) photodetectors are used in night vision applications which detect reflected night glow and black body radiation. They also detect atmospheric gases which have high absorption coefficient between 2.5 and 3 μm wavelengths. Type II superlattice (T2SL) epi-structures grown on GaSb and InP substrates, with flexible cut-off wavelength ranging between 2 to 3 μm , and a homogenous InPSb layer, lattice matched to a GaSb substrate, with a photoluminescence peak at 2.9 μm , are candidate technologies for eSWIR detectors. In this study

we fabricated and characterized photodetectors based on three different technologies: T2SL InAs/AlSb, T2SL InGaAs/GaAsSb and InPSb. The epi-grown layers were characterized using photoluminescence (PL) and high resolution XRD (HRXRD) tools and the photodetectors performances were measured and compared using semiconductor device parameter analyzer, Fourier transform infrared (FTIR) and Black Body tools.

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