



ELECTRONIC MATERIALS TECHNOLOGY NEWS

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InSb QWIP Shows Promise

Preliminary results out of Northwestern University's Center for Quantum Devices (CQD) suggest a major breakthrough in carrier lifetimes has been achieved in infrared quantum well infrared photodetectors (QWIPs) for long wavelengths focal plane arrays fabricated from indium antimonide (InSb) materials. The arrays were produced by CQD graduate student Erick Michel, and the resulting lifetimes were measured at 200 nanoseconds at 80K. The work is a collaboration between the Center and Lockheed/Martin/Fairchild systems.

Under the direction of Professor Manijeh Razeghi (MLSB Room 4051, 2225 N. Campus Dr., Evanston, IL 60208; Tel: 847/491-7251, Fax: 847/467-1817), Michel has been growing InSb layers on semi-insulating gallium arsenide (SI GaAs) substrates. Epilayers with the lowest X-ray full width at half maximum (FWHM) (~50 arcsec for 10 micron thick sample), the highest mobility (~135,000 cm²/Vs at 77K) and lowest PL FWHM (~18 meV at 77K) have been obtained with excellent uniformity over the entire 3 inch wafer. High quality infrared imaging has also been obtained, and without the need for cryogenic cooling.