

Abstract Submitted
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Optical and Electrical Characterization of Bulk-Grown Ternary $\text{In}_x\text{Ga}_{1-x}\text{As}$ ¹ YUNG KEE YEO, AUSTIN BERGSTROM, ROBERT HENGELHOLD, Air Force Institute of Technology, JEAN WEI, General Dynamics, SHEKHAR GUHA, LEONEL GONZALEZ, Air Force Research Laboratory, GEETA RAJAGOPALAN, United Semiconductor, LLC — Crystal growth technology breakthroughs have led to the growth of good quality melt-grown bulk $\text{In}_x\text{Ga}_{1-x}\text{As}$ crystals. These crystals are promising candidates for electro-optical applications in the infra red. The optical and electrical properties of bulk $\text{In}_x\text{Ga}_{1-x}\text{As}$ have been investigated as a function of temperature and indium mole fraction. Photoluminescence (PL) measurements show several band edge luminescence peaks including band-to-band, free-to-bound, and donor-acceptor pair peaks. Temperature dependent bandgaps were estimated from the PL results. The carrier concentrations and mobilities were determined by the Hall-effect measurements. The bandgaps estimated from the Hall-effect and optical transmission measurements were compared with those obtained from the PL results.

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