

Abstract Submitted
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Electronic properties of dilute Bismide alloys¹ RAJEEV KINI, DENIS KARAIKAIJ, RYAN FRANCE, AARON PTAK, ANGELO MASCARENHAS, National Renewable Energy Laboratory, 1617 Cole Boulevard, Golden, Colorado 80401, USA, TOM TIEDJE, AMPEL, Department of Physics and Astronomy, University of British Columbia, Vancouver, British Columbia, Canada V6T 1Z4 — The alloying of GaAs with small amounts of N or Bi results in a large reduction of the fundamental band gap, leading to the so called “giant band gap bowing”. GaAs_{1-x}N_x has been the subject of intense investigation in recent years; however the lower mobility of the dilute nitride alloys limits its use for device applications. Bi incorporation is predicted to mainly perturb the valence band and does not significantly affect the electron mobility, thus promising better device performance. We report photoluminescence (PL) measurements of GaAs_{1-x}Bi_x epilayers grown by MBE, carried out at different temperatures (4 - 300K), with above-band gap and selective excitation. Time-resolved PL measurements were also carried out to study the carrier lifetimes of the Bi-related states in these samples.

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