

Abstract Submitted
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Ellipsometric studies of GaAs_{1-x}Bi_x (0.00 ≤ x ≤ 0.13) alloys S.G. CHOI, National Renewable Energy Laboratory, D.E. ASPNES, North Carolina State University, A.J. PTAK, R. FRANCE, A.G. NORMAN, D.H. LEVI, National Renewable Energy Laboratory — A series of GaAs_{1-x}Bi_x (0.00 ≤ x ≤ 0.13) alloy thin films has been grown by molecular beam epitaxy on GaAs(001). Structural properties were characterized by high-resolution x-ray diffraction and cross-sectional transmission electron microscopy. Above-bandgap optical properties were determined by spectroscopic ellipsometry at room temperature. In order to minimize artifacts from surface overlayers in the measured spectra, *in-situ* wet chemical etching procedures were employed. Major optical structures observed are associated with the E_1 , $E_1 + \Delta_1$, E' , and E_2 interband-transition critical-points (CPs). An additional broad optical structure was also found at around 2 eV for high Bi-concentration samples ($x \geq 0.04$). The CP parameters and their composition-dependences were obtained from the spectral analysis done in reciprocal-space. This abstract is subject to government rights.

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