

Abstract Submitted
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Optical Properties of $\text{GaN}_x\text{As}_{1-x}$ Thin Films Grown on Si Substrates by r. f. Sputtering¹ J.G. MENDOZA-ALVAREZ, O. ZELAYA-ANGEL, A. CRUZ-OREA, Physics Dept. Cinvestav-IPN, J.S. ARIAS-CERON, CICATA-IPN. U. Legaria, J.A. CARDONA-BEDOYA, Depto. Fisica. U. del Tolima — $\text{GaN}_x\text{As}_{1-x}$ ternary alloys in the GaN-rich side, are expected theoretically to have band-gap energies in the full range of the visible spectrum for just a small change in the nitrogen concentration in the range of about 70-85%. Using the r. f. sputtering and the laser ablation film deposition techniques, we have reported the growth of ternary GaNAs layers with band-gap energies in the range between 1.4 to 2.6 eV. In this work we report the growth of GaNAs thin films on Si substrates using the r. f. sputtering technique at high substrate temperatures; the r. f. power was varied in order to control the nitrogen incorporation in the films. The low temperature photoluminescence (PL) and the photoacoustic (PA) spectroscopies were used to characterize the optical properties of the series of $\text{GaN}_x\text{As}_{1-x}$ As films grown with different stoichiometries. We discuss the origin of the transitions observed in the PL spectra and the shoulders around 2.5 eV observed in the PA spectra.

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