



Optica Applicata 2005(Vol.35), No.3, pp. 529-525

Photoreflectance spectroscopy of thick GaN layers grown by hydride vapour phase epitaxy technique

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Keywords

GaN, photoreflectance, photoluminescence, electric field

Abstract

The room temperature photoreflectance (PR) spectroscopy was used to investigate thick GaN epitaxial layers. The GaN layers were grown by hydride vapour phase epitaxy (HVPE) technique and compared to thin GaN layer grown by metalorganic vapour phase epitaxy (MOVPE) technique on AlN buffer layer. We observed energy red shift of the PR resonance for HVPE GaN layers compared with MOVPE GaN layer. This blue shift is due to reduction of the strain in HVPE layer. In addition, weak PR features related to Franz-Keldysh oscillations (FKO) have been observed. The electric field determined from the FKO period is 28 and 71 kV/cm for MOVPE and HVPE layers, respectively.



157.2 kB

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