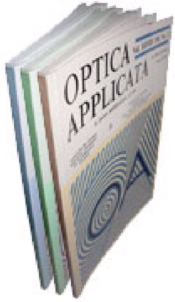

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Characterization of InGaN structures grown by epitaxial lateral overgrowth over *a*-plane GaN template

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Keywords

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Abstract

We report on the luminescence characterization of InGaN/GaN multiple quantum well (MQW) structures with average 15% In content in the well layers, grown on polar and non-polar sapphire substrates utilizing epitaxial lateral overgrowth (ELOG) technique. Significant modification of the emission properties of MQWs grown over non-polar ELOG structure in comparison with non-polar orientation was observed. It was attributed to the formation of In-rich quantum dot like structures in the vicinity of substrate related defects along stripes formed during ELOG procedure. The absence of the stimulated emission and the significant reduction of carrier lifetime, observed under strong excitation, indicate the high density of nonradiative centers in the In-rich quantum dot regions of non-polar ELOG MQWs.

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