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Photoluminescence spectroscopy for the evaluation of band potential roughness of InGaN active layers

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Keywords

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Abstract

Photoluminescence spectroscopy in combination with Monte Carlo simulation of exciton hopping is demonstrated to be a valuable tool for quantitative analysis of the band potential profile in active layers for InGaN-based light emitters. Recently proposed double-scaled potential profile model is used to reveal the scale of potential fluctuations in the individual In-rich regions as well as the dispersion of the average exciton localization energy in these regions. The influence of the different potential fluctuation scales on the stimulated emission threshold and luminescence decay time of highly excited InGaN active layers is studied.



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