

Abstract Submitted
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Effects of quantum-well shape and polarization on simulations of InGaN/GaN multi-quantum-well light-emitting diodes¹ PATRICK MCBRIDE, QIMIN YAN, CHRIS VAN DE WALLE, University of California at Santa Barbara — We investigate the effects of different InGaN quantum well (QW) profiles in *c*-plane InGaN/GaN 3-QW blue light-emitting diodes (LEDs) by employing a semi-empirical drift-diffusion model. Our results show that changing the typically assumed square indium profile to one with a smoother interfacial transition leads to a significant modification of the band diagram, carrier overlap, and current-voltage characteristics. In previous works, an *ad hoc* reduction of the polarization field has often been used to generate simulated results that match experiment while the realistic indium profile is not taken into account. However, our results indicate that the indium profile plays an important role in determining the current vs. voltage characteristics of InGaN/GaN heterostructure LEDs.

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