

SIRKELI, Vadim, YILMAZOGLU, Oktay et al. Effect of p -NiO Interlayer on Internal Quantum Efficiency of p -GaN/ n -ZnO Light-Emitting Devices . In: Journal of Nanoelectronics and Optoelectronics. 2015, Vol. 9, Nr 6, pp. 811-818. ISSN 1555-130X.

We report on numerical investigations of p -GaN/ n -ZnO light-emitting devices with p -NiO interlayer, and on LED design optimization which includes bandgap engineering, thickness and doping of constituent layers. The current–voltage dependences of investigated LEDs show a threshold voltage of 3.1 V and 5.4 V for the LED devices without and with presence of p -NiO interlayer, respectively. It is found that p -NiO layer act as electron blocking layer, that lead to the enhance of charge carriers confinement in active region, and to the increasing of internal quantum efficiency (IQE) of LED device up to 0.5%, that in four times higher in compare with that for original p -GaN/ n -ZnO LED device.