Near Ultra-Violet Electroluminescence from a ZnO Nanorods/p-GaN Heterojunction Light Emitting Diode

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The heterostructure of the n-ZnO nanorod (NRs) arrays grown on the p-GaN layer was formed using low-cost hydrothermal technique in order to fabricate a light emitting diode (LED) device. Morphological, structural and optical properties of as-prepared sample are described. The LED exhibited room temperature current-voltage (I–V) characteristics confirming a rectifying diode behaviour. The device presents near ultra-violet (UV) color under reverse bias. The electroluminescence (EL) spectrum of color emitting LED composed of intense peaks centered at 378 nm and 367 nm. The electroluminescence mechanism of the heterojunction LED was discussed in terms of band diagram.