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FABRICATION AND CHARACTERIZATION OF LIGHT EMITTING DIODE BASED ON n-ZnO NANORODS GROWN VIA A LOW-TEMPERATURE METHOD ON p-GaN

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ABSTRACT- In this work, we report the fabrication of a near-ultraviolet (UV) light emitting (LED) device based on the growth of n-ZnO nanorod (NRs) arrays on the p-GaN layer/sapphire substrate heterostructure using the low-cost hydrothermal technique. Morphological, structural and optical properties of the as-fabricated sample are described. The room temperature current-voltage (I–V) measurements of the fabricated LED device confirmed a rectifying diode behaviour. The device presents near UV color under reverse bias. The luminescence properties of were investigated from both sides of the fabricated LED device at room temperature by electroluminescence (EL). EL spectrum of color emitting LED composed of intense peaks centered at 369 nm, 394 nm and a broad band around green emission. EL emission for the device has seen with the naked eye under normal light.

Keywords: ZnO, nanorods, GaN, light emitting diode.