

ZnO-based Nanowires for hybrid low-voltage LED

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Abstract

Nanowires (NW) based light emitting diodes (LEDs) have drawn large interest due to many advantages compared to thin film devices. Marked improved performances are expected from nanostructured active layers for light emission. Nanowires can act as direct waveguides and favor light extraction without use of lens and reflectors. Moreover, the use of wires avoids the presence of grain boundaries and then the emission efficiency is boosted by the absence of non-radiative recombinations at the joint defects. Electrochemical deposition technique, an original low-temperature growth method from solution, was used for the preparation of highly efficient ZnO-NW based LEDs [1]. Electrodeposition has proven to be interesting for the epitaxial growth of ZnO on several p-type SC and in particular p-GaN.