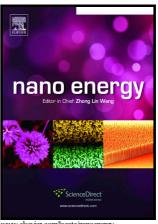
## Author's Accepted Manuscript

Piezoelectric effect on compensation of the quantum-confined Stark effect in InGaN/GaN multiple quantum wells based green light-emitting diodes

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## **ACCEPTED MANUSCRIPT**

Piezoelectric effect on compensation of the quantum-confined

Stark effect in InGaN/GaN multiple quantum wells based green

light-emitting diodes

Sheng-Chieh Tsai<sup>a,b</sup>, Cheng-Hsueh Lu<sup>b</sup>, Chuan-Pu Liu<sup>a\*</sup>

<sup>a</sup>Department of Materials Science and Engineering, National Cheng Kung University,

Tainan 70101, Taiwan

<sup>b</sup>Research Center, Genesis Photonics Incorporation, Tainan 74144, Taiwan

\*Corresponding author. Tel.: 886 6 2757575x62943; fax: 886-6-2346290.

cpliu@mail.ncku.edu.tw

Abstract

InGaN based light emitting diodes (LEDs) suffer from the adverse influence of band tilt due to the piezoelectric field induced quantum-confined Stark effect (QCSE). We demonstrate incremental recovering of QCSE induced band tilt along with its impact on the performance of III-nitride-based green LEDs (at 532.5 nm) by applying external stress. The external tensile stress determined by peak shift in Raman spectroscopy ranges from 0 to 0.95 GPa as the wafer curvature increases from 0 to 2.32 m<sup>-1</sup>. Compared to the pristine LEDs wafer, the PL emission peak undergoes an increase in intensity of 61%, blue shift of 11.5 nm and peak narrowing of 5.5 nm through bending the wafer to the maximum curvature of 2.94 m<sup>-1</sup>. These results all

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