InGaN/GaN ultraviolet LED with a graphene/AZO transparent current spreading layer - DTU Orbit (18/10/2019)

**InGaN/GaN ultraviolet LED with a graphene/AZO transparent current spreading layer**

We report an approach of using an interlayer of single layer graphene (SLG) for electroluminescence (EL) enhancement of an InGaN/GaN-based near-ultraviolet (NUV) light-emitting diode (LED) with an aluminum-doped zinc oxide (AZO)-based current spreading layer (CSL). AZO-based CSLs with and without a SLG interlayer were fabricated on the NUV LED epi-wafers. The current-voltage (I-V) characteristic and the EL intensity were measured and compared. We find that the LED without the SLG interlayer can possess a 40% larger series resistance. Furthermore, a 95% EL enhancement was achieved by the employment of the SLG interlayer.

**General information**
Publication status: Published
Organisations: Department of Photonics Engineering, Diode Lasers and LED Systems, Department of Micro- and Nanotechnology, Optofluidics, Department of Energy Conversion and Storage, Electrochemical Materials and Interfaces, Nanoprobes, Center for Intelligent Drug Delivery and Sensing Using Microcontainers and Nanomechanics, DTU Danchip, Chinese Academy of Sciences
Corresponding author: Ou, H.
Pages: 1818-1826
Publication date: 2018
Peer-reviewed: Yes

**Publication information**
Journal: Optical Materials Express
Volume: 8
Issue number: 7
ISSN (Print): 2159-3930
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2018): CiteScore 2.76 SJR 0.886 SNIP 1.018
Web of Science (2018): Impact factor 2.673
Web of Science (2018): Indexed yes
Original language: English
Electronic versions:
ome_8_7_1818.pdf
DOIs:
10.1364/OME.8.001818

Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review