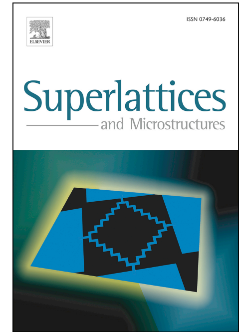
Accepted Manuscript



Influence of in doping in GaN barriers on luminescence properties of InGaN/GaN multiple quantum well LEDs

Xiaowei Wang, Jing Yang, Degang Zhao, Desheng Jiang, Zongshun Liu, Wei Liu, Feng Liang, Shuangtao Liu, Yao Xing, Wenjie Wang, Mo Li

PII: S0749-6036(17)32433-3

DOI: 10.1016/j.spmi.2017.11.038

Reference: YSPMI 5373

To appear in: *Superlattices and Microstructures*

Received Date: 8 October 2017

Accepted Date: 20 November 2017

Please cite this article as: X. Wang, J. Yang, D. Zhao, D. Jiang, Z. Liu, W. Liu, F. Liang, S. Liu, Y. Xing, W. Wang, M. Li, Influence of in doping in GaN barriers on luminescence properties of InGaN/GaN multiple quantum well LEDs, *Superlattices and Microstructures* (2018), doi: 10.1016/j.spmi.2017.11.038.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Influence of In doping in GaN barriers on luminescence properties of InGaN / GaN multiple quantum well LEDs

Xiaowei Wang[a,b], Jing Yang[a,*], Degang Zhao[a,c,*], Desheng Jiang[a], Zongshun Liu[a], Wei Liu[a], Feng Liang [a], Shuangtao Liu[a], Yao Xing[a], Wenjie Wang[d], and Mo Li[d]

[a] State Key Laboratory of Integrated Optoelectronics, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, 100083, China
[b] College of Materials Science and Opto-Electronic Technology, University of Chinese Academy of Sciences，Beijing, 100049, China
[c] School of Electronic, Electrical and Communication Engineering, University of Chinese Academy of Sciences，Beijing, 100049, China
[d] Microsystem & Terahertz Research Center, Chinese Academy of Engineering Physics, Chengdu，610200, China

* Corresponding author.
Jing Yang
telephone number: 18101200355
E-mail address: yangjing333@semi.ac.cn
Degang Zhao
telephone number: 13621346276
E-mail address: dgzhao@red.semi.ac.cn

ABSTRACT

Room-temperature photoluminescence (RT PL) spectra of InGaN/GaN multiple quantum well (MQW) structures grown by metalorganic chemical vapor deposition (MOCVD) was investigated. It is found that with increasing In content in GaN barriers, the FWHM and emission intensity decreases, and the emission wavelength is first red shift and then blue shift. The shrinkage of FWHM and emission wavelength blue shift can be attributed to the reduction of piezoelectric field, and the lower height of potential barrier will make carrier confinement weaker and ground state level lower, which resulting in emission intensity decreasing and wavelength red shift. In addition, doping the barrier with In will induce more inhomogeneous and deeper localized states in InGaN QWs, which also contribute to a red shift of PL emission wavelength.

Key words: InGaN/GaN MQWs, In doping, barrier layer, localization states

ACCEPTED MANUSCRIPT

Download English Version:

https://daneshyari.com/en/article/7939052

Download Persian Version:

https://daneshyari.com/article/7939052

Daneshyari.com