

Accepted Manuscript

Fabrication and photoluminescence performance of porous gallium nitride luminescent materials using different 1-ethyl-3-methylimidazolium-based ionic liquids

Fei Hou, Miao-Rong Zhang, Qing-Mei Jiang, Zu-Gang Wang, Jing-Hui Yan, Ge-Bo Pan

PII: S0167-577X(18)30594-9
DOI: <https://doi.org/10.1016/j.matlet.2018.04.007>
Reference: MLBLUE 24174

To appear in: *Materials Letters*

Received Date: 13 September 2017
Revised Date: 13 March 2018
Accepted Date: 2 April 2018

Please cite this article as: F. Hou, M-R. Zhang, Q-M. Jiang, Z-G. Wang, J-H. Yan, G-B. Pan, Fabrication and photoluminescence performance of porous gallium nitride luminescent materials using different 1-ethyl-3-methylimidazolium-based ionic liquids, *Materials Letters* (2018), doi: <https://doi.org/10.1016/j.matlet.2018.04.007>

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.



Fabrication and photoluminescence performance of porous gallium nitride luminescent materials using different 1-ethyl-3-methylimidazolium-based ionic liquids

Fei Hou^{a,b}, Miao-Rong Zhang^b, Qing-Mei Jiang^b, Zu-Gang Wang^b, Jing-Hui Yan^{a*} and Ge-Bo Pan^{b*}

^a College of Chemistry and Environmental Engineering, Changchun University of Science and Technology, 130022 Changchun, P. R. China. E-mail: yjh@cust.edu.cn

^b Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, 215123 Suzhou, P. R. China. E-mail: gbpan2008@sinano.ac.cn

Abstract

Porous gallium nitride (GaN) luminescent materials were fabricated by photoelectrochemical etching using three different 1-ethyl-3-methylimidazolium ([EMIM])-based ionic liquids as the etchants. The as-etched porous GaN presents honeycomb shape, deep gully with some holes in the surroundings, and overlapping hole structure, which are significantly different from the planar GaN. Moreover, photoluminescence (PL) spectra indicates that the porous GaN has more excellent PL performance than the planar GaN. In general, reducing the etching time to 1 minute, the PL intensity of porous GaN etched by [EMIM][OTF] is 9.27 times than that of the planar one. These results suggest that porous GaN etched by ionic liquid can be an outstanding substrate in the field of the luminescent material.

Keywords: Porous materials; Photoelectrochemical etching; Ionic liquid; Luminescence

Download English Version:

<https://daneshyari.com/en/article/8013114>

Download Persian Version:

<https://daneshyari.com/article/8013114>

[Daneshyari.com](https://daneshyari.com)