

Author's Accepted Manuscript

Strong microcavity effects in hybrid quantum dot/
blue organic light-emitting diodes using Ag based
electrode

Jung Hyuk Im, Kyung-Tae Kang, Jong Sun Choi,
Kwan Hyun Cho



PII: S0022-2313(17)31626-5
DOI: <https://doi.org/10.1016/j.jlumin.2018.07.011>
Reference: LUMIN15758

To appear in: *Journal of Luminescence*

Received date: 20 September 2017
Revised date: 20 June 2018
Accepted date: 5 July 2018

Cite this article as: Jung Hyuk Im, Kyung-Tae Kang, Jong Sun Choi and Kwan Hyun Cho, Strong microcavity effects in hybrid quantum dot/ blue organic light-emitting diodes using Ag based electrode, *Journal of Luminescence*, <https://doi.org/10.1016/j.jlumin.2018.07.011>

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 galley proof before it is published in its final citable 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.

Strong microcavity effects in hybrid quantum dot/ blue organic light-emitting diodes using Ag based electrode

Jung Hyuk Im¹, Kyung-Tae Kang¹, Jong Sun Choi², Kwan Hyun Cho^{1,*}

¹Korea Institute of Industrial Technology, 143 Hanggaui-ro, Sangnok-gu, Ansan-si,
Gyeonggi-do, Republic of Korea

²Electronic and Electrical Engineering, Hongik University, Seoul, Republic of Korea

*Corresponding author. Phone: +82-31-8040-6428/ Fax: +82-31-8040-6430/ E-mail: khcho@kitech.re.kr

Abstract

We investigated the color conversion characteristics of a quantum dot/organic light-emitting diode (QD/OLED) by altering blue emission using the microcavity effect. Compared to the ITO-based OLED, the WO₃/Ag/WO₃ (WAW)-based OLED has a narrow shape of resonance and high cavity enhancement factor. As a result, the peak emission intensity wavelength remarkably shifts as the thickness of the WO₃ layer increases and the WAW-based OLED with inner WO₃ thickness of 120 nm shows an additional emission peak at 420 nm due to the second resonance. As the thickness of the WO₃ layer increases, the color coordinates of the hybrid QD/OLED with the ITO anode are nearly unchanged. However, hybrid WAW-based devices exhibit distinct color coordinates, such as nearly blue light, nearly green light and nearly white light with color coordinates of (0.31, 0.37).

Keywords

OLED, quantum dot (QD), microcavity, WO₃/Ag/WO₃, color conversion

Download English Version:

<https://daneshyari.com/en/article/7839777>

Download Persian Version:

<https://daneshyari.com/article/7839777>

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