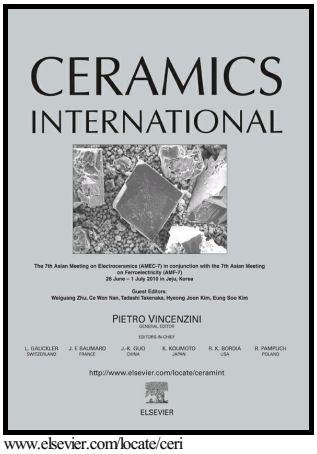

www.elsevier.com/locate/ceri

Transparent Gas Senor and Photodetector Based on Al Doped ZnO Nanowires Synthesized on Glass Substrate

Cheng-Liang Hsu, Duo-Xi Hsu, Ting-Jen Hsueh, Sheng-Po Chang, Shoou-Jinn Chang

PII: S0272-8842(17)30049-4
DOI: http://dx.doi.org/10.1016/j.ceramint.2017.01.035
Reference: CERI14497

To appear in: *Ceramics International*

Received date: 10 November 2016
Revised date: 8 January 2017
Accepted date: 8 January 2017

Cite this article as: Cheng-Liang Hsu, Duo-Xi Hsu, Ting-Jen Hsueh, Sheng-Po Chang and Shoou-Jinn Chang, Transparent Gas Senor and Photodetector Based on Al Doped ZnO Nanowires Synthesized on Glass Substrate, *Ceramics International,* http://dx.doi.org/10.1016/j.ceramint.2017.01.035

Transparent Gas Senor and Photodetector Based on Al Doped ZnO Nanowires Synthesized on Glass Substrate

Cheng-Liang Hsu,*[a] Duo-Xi Hsu,[a] Ting-Jen Hsueh,*[b] Sheng-Po Chang,[c] Shoou-Jinn Chang[c]

[a] *Department of Electrical Engineering, National University of Tainan, Tainan 700, Taiwan, ROC.*

[b] *National Nano Device Laboratories, Tainan 741, Taiwan, ROC.*

[c] Institute of Microelectronics & Department of Electrical Engineering Center for Micro/Nano Science and Technology Advanced Optoelectronic Technology Center National Cheng Kung University, Tainan 701, Taiwan.

clhsu@mail.nutn.edu.tw (C. L. Hsu)

0905005@ndl.narl.org.tw (T. J. Hsueh)

*corresponding author **tel. numbers**: +886-6-2606123 # 7785

*corresponding author **fax. numbers:** +886-6-2602305

Abstract

In this work high density, well-aligned Al doped ZnO (AZO) nanowires are hydrothermally synthesized on glass substrate at 99°C. The Al content is ~1.57 atomic %. The PL spectrum shows that Al impurities caused an increase in the number of oxygen vacancies. The spectral response results show that the maximum responsivity and quantum efficiencies η of AZO NWs are 3.61 A/W and 84.9%, at an incident