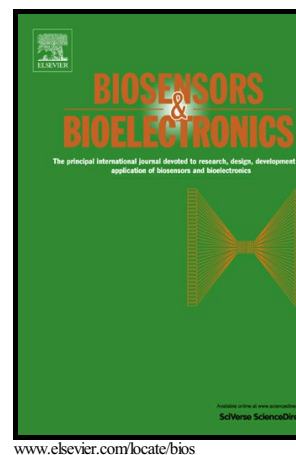


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PII: S0956-5663(15)30375-4
DOI: <http://dx.doi.org/10.1016/j.bios.2015.08.050>
Reference: BIOS7946

To appear in: *Biosensors and Bioelectronics*

Received date: 17 June 2015
Revised date: 13 August 2015
Accepted date: 21 August 2015

Cite this article as: Chen-Hsiang Sang, Shu-Jen Chou, F.M. Pan and Jeng-Tzong Sheu, Fluorescence enhancement and multiple protein detection in ZnO nanostructure microfluidic devices, *Biosensors and Bioelectronics* <http://dx.doi.org/10.1016/j.bios.2015.08.050>

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Fluorescence enhancement and multiple protein detection in ZnO nanostructure microfluidic devices

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Abstract

In this study, different morphological ZnO nanostructures, those of sharp nanowires (NWs), rod NWs, and hexahedral-punchon nanostructures, were grown in microfluidic channels on the same glass substrate. Characterizations of correspondent biomolecule binding properties were simulated and demonstrated. The surface was modified using 3-amineopropyl-triethoxysilane (3-APTES) and biotin-N-hydroxysuccinimide ester (NHS-biotin). Different concentrations (4.17 pM to 41.7 nM) of dye-conjugated streptavidin were simultaneously infused through the second microfluidic channels, which lie 90 degrees from the first microfluidic channels. The florescent intensity at the crossover areas showed good agreement with simulations, with sharp ZnO NWs

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