

# Author's Accepted Manuscript

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PII: S0921-4526(17)30428-3  
DOI: <http://dx.doi.org/10.1016/j.physb.2017.07.030>  
Reference: PHYSB310097

To appear in: *Physica B: Physics of Condensed Matter*

Received date: 21 April 2017  
Revised date: 15 July 2017  
Accepted date: 17 July 2017

Cite this article as: Benard S. Mwankemwa, Shadrach Akinkuade, Kelebogile Maabong, Jackie M. Nel and Mmantsae Diale, Effects of Surface Morphology on the Optical and Electrical properties of Schottky diodes of CBD deposited ZnO Nanostructures, *Physica B: Physics of Condensed Matter* <http://dx.doi.org/10.1016/j.physb.2017.07.030>

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## Effects of Surface Morphology on the Optical and Electrical properties of Schottky diodes of CBD deposited ZnO Nanostructures

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### Abstract.

We report on effect of surface morphology on the optical and electrical properties of chemical bath deposited Zinc oxide (ZnO) nanostructures. ZnO nanostructures were deposited on the seeded conducting indium doped tin oxide substrate positioned in three different directions in the growth solution. Field emission scanning electron microscopy was used to evaluate the morphological properties of the synthesized nanostructures and revealed that the positioning of the substrate in the growth solution affects the surface morphology of the nanostructures. The optical absorbance, photoluminescence and Raman spectroscopy of the resulting nanostructures are discussed. The electrical characterization of the Schottky diode such as barrier height, ideality factor, rectification ratios, reverse saturation current and series resistance were found to depend on the nanostructures morphology. In addition, current transport mechanism in the higher forward bias of the Schottky diode was studied and space charge limited current was found to be the dominant transport mechanism in all samples.

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