

Characterizing Electrical Properties of ZnO Nanowires with Scanning Probe Microscopy

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ZnO nanowires have been widely studied due to their unique direct wide band gap of 3.37 eV making it attractive for electronics, optical detectors and light-emitting diodes application. In this work, we focus on ZnO nanowire-metal junction. N-type ZnO nanowires were growth vertically on a silver substrate (of ratio 1:1 of HTMA:Zinc nitrate) by hydrothermal process at the varied concentration. Characterization ZnO nanowires was conducted using conductive atomic force microscopy allowing measurement of I-V characteristic from an individual nanowire. The I-V characteristic reveals a resistive switching behavior, which is sensitive to acquisition time. Understanding the I-V characteristic could shade light on the origin of resistive switching behavior in ZnO nanowires and the nature of ZnO-silver junction. This type of understanding is crucial information for applications.

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