

Electrospun Zinc Oxide Nanowires as Highly Sensitive Piezoelectric Transduction Elements for Nano-Scale Devices

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Abstract : In this paper, we report optimized procedure for synthesizing highly oriented, horizontally aligned, Zinc oxide (ZnO) nanowires targeted towards developing highly sensitive piezoelectric transduction elements. The synthesis was carried out using Electrospinning technique, a facile, robust, low cost technique for producing nanowires. The as-synthesized ZnO nanowires were characterized by X-ray powder diffraction (XRD), Field Emission scanning electron microscopy (FESEM) and Energy-dispersive X-ray spectroscopy (EDX). The Piezoelectric behavior of these nanowires was characterized using Piezoelectric Force microscopy (PFM). A very high d_{33} coefficient of 23.1 pm/V obtained through the PFM measurements is an indicative of its potential application towards developing miniaturized piezoelectric transduction elements for nanoscale devices.

Keywords : electrospinning, piezoelectric, technique, zinc oxide

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