

# A SIMPLE FABRICATION METHOD OF RANDOMLY ORIENTED POLYCRYSTALLINE ZINC OXIDE NANOWIRES AND THEIR APPLICATION TO GAS SENSING

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## TÓM TẮT:

Randomly oriented polycrystalline ZnO nanowires with a mean diameter of 100–150 nm have been successfully synthesized on SiO<sub>2</sub>/Si substrates through the thermal oxidation of sputtered Zn nanowires in dry air at 400 °C. Structural characterization by x-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM) revealed that each ZnO nanowire consisted of a chain of ZnO nanocrystallites. From gas sensing measurements for CO, H<sub>2</sub> and NO gases, the polycrystalline ZnO nanowires showed a highly sensitive and fast response to both reducing and oxidizing gases in dry air at relatively low concentrations and operating temperatures, indicating potential applications of polycrystalline ZnO nanowires as sensing materials for gas sensors.