

Properties of Zn_xSnO_2 Nanorods Synthesized by Hydrothermal Method

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ZnO and SnO₂, well-known wide direct band-gap semiconductors, have been considered as the most promising functional materials due to their highly sensitive gas sensing and excellent optical properties. ZnO/SnO₂ epitaxial heterostructure exhibited unique luminescence properties in contrast with individual tetrapod ZnO and SnO₂ nanostructures. Polycrystalline SnO₂-based samples $Zn_xSn_{1-x}O_2$ ($x=0, 0.01, 0.03, 0.05$) were prepared by solid state reaction and eco-friendly hydrothermal techniques. Scanning electron microscopy equipped with electron dispersive x-ray spectra confirms the formation of near stoichiometric $Zn_xSn_{1-x}O_2$ nanorods of diameter ~ 10 nm. X-ray diffraction analysis revealed the rutile structure, except for $x=0.07$, which may have a small part of Zn₂SnO₄ as a secondary phase.

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