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Tungston Doped ZnO Thin film Prepared by Spray Pyrolysis for enhanced Hydrogen Sensing

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Abstract : Spray pyrolysis technique has been used for the manufacture of W doped Zinc oxide (ZnO) thin films. The influence of concentration of W on ZnO thin film on the structural, optical and photoluminescence properties of the films have been investigated. XRD patterns reveal the growth of preferentially oriented (002) c-axis ZnO with hexagonal wurtzite structure. The PL peak shifts towards lower wavelength and the blue shift in the PL peak confirms the possibility for quantum confinement effect. Hydrogen sensing measurements indicated that W doped ZnO on glass substrate showed better response. The sensor response of 5 % W doped ZnO thin film exhibit highest response of 152 towards 500 ppm H₂ gas at the operating temperature of 200 °C.

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