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Micro Structural Properties of Tin Doped Indium Oxide Thin Films

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Abstract : Tin doped Indium Oxide (ITO) thin films with different concentration of tin oxide (5%, 10%,70%) were prepared on glass substrate using dip coating sol gel method. The films were single phase with bixbyte structure. Micro structural parameters were determined from the XRD data. The crystallite size decreased with increase of tin concentration. From EDXA spectrum SnO_2 content were presented in the films with different percentage. Surface roughness increased from 0.20 nm to 1.25 nm as the tin concentration decreases. The films showed 85% transmission and transport properties of ITO were studied and these values are reported. The room temperature PL spectra of the samples formed at different concentration of SnO_2. From Raman spectrum the vibration mode appeared at 144,175 and 584 cm^{-1} in the ITO spectrum. These properties are suitable as transparent electrode for DSSC and sensors application.
Keywords : SnO_2 doped Indium oxide, thin films, sol gel, Transport properties, PL spectrum.

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