

Optical properties of indium tin oxide nanometer layers

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Among the available transparent conducting oxides (TCOs), Indium-tin-oxide (ITO), an n-type semiconductor, is a promising candidate for use in various optoelectronic devices [1-3]. In this study ITO nanometer thin layers have been prepared by electron beam evaporation method on cleaned glass substrate at room temperature. Subsequently, the layers were annealed at 400°C, for 1 h in air atmosphere. The characterization of the layers has been carried out by X-ray diffraction (XRD). The optical reflectance and transmittance spectra of the layers have been recorded in the wavelength range 250-2500 nm. XRD results of the layers showed crystalline phase after heat treatment and confirming the amorphous nature of layers before heat treatment. Spectrometry measurements of the layers showed a high optical transparency greater than 80% in the visible region. Also some optical properties, such as absorbance and band gap energy are introduced. The optical band gap, absorption coefficient and refractive index have been evaluated using available theories.

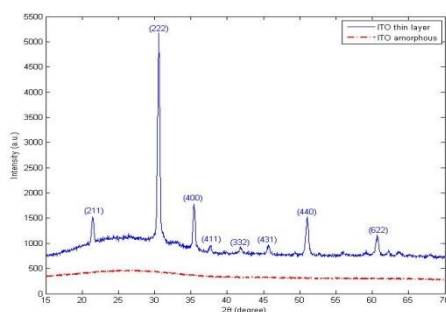


Fig.1. XRD spectra of the ITO thin. layers.nanoparticle thin film.

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