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Abstract

In this work, we report the synthesis and characterization of antimony doped tin oxide thin films for their possible application as transparent conducting oxides. Thin films of antimony doped tin oxide were deposited by aerosol assisted chemical vapor deposition. Surface morphology and microstructure were studied by field emission scanning electron microscopy. X-ray diffraction results indicate the presence of two tin oxide phases in some samples (from thickness of 30-120 nm) and only the cassiterite phase in samples with thicknesses greater than of 140 nm. Optical properties of the samples were analyzed by total transmittance spectra. Resistivity of the films was obtained by the sheet resistance method. Electrical properties and conductivity type of samples were determined by Hall effect method. The results show low resistivity in antimony doped tin oxide materials decreasing up to six orders of magnitude compared to pure tin oxide, and obtaining resistivity in the order of magnitude of $10^{-4}\ \Omega \cdot cm$. Thermal treatment was performed on