

# CO-sensing properties of undoped and doped tin oxide thin films prepared by electron beam evaporation

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## Abstract

Undoped thin films of tin oxide and those doped with indium oxide and nickel oxides were deposited by electron beam evaporation. The effects of the film thickness and preparation conditions (films prepared with or without the presence of oxygen environment during deposition) on the optical and carbon monoxide sensing properties of the films were studied. The films were characterized using X-ray diffraction and X-ray photoelectron spectroscopy and optical spectroscopy techniques. All the films were found to be amorphous. It was found that the sensitivity of the films to CO increased with the thickness and the porosity of the films. It was found that their selectivity to CO gas relative to CO<sub>2</sub> and SO<sub>2</sub> gases could be improved upon doping the films with indium (or nickel) oxide.

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*Keywords:* Thin film; CO sensor; SnO<sub>2</sub>; Semiconductor sensor

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