TRANSPARENT CONDUCTIVE OXIDES ARE SEMI CONDUCTIVE MATERIALS WITH A LOW ABSORPTION OF LIGHT. THEY ARE USUALLY PREPARED AS A THIN FILM TECHNOLOGIES USED IN OPTO-ELECTRONIC DEVICES SUCH AS DISPLAYS, SENSORS AND SOLAR CELL PHOTOVOLTAIC [1]. FOR EFFICIENT SOLAR CELL TRANSPARENT CONDUCTIVE OXIDES ARE NEEDED AS A FRONT SIDE ELECTRODE AND IN GENERAL MUST SHOW A GOOD TRADEOFF BETWEEN TRANSPARENCY AND CONDUCTIVITY ADDING DOPING ELEMENT AND METAL NANOPARTICLES [2]. IN-DOPED TIN OXIDE (SnO$_2$) THIN FILMS WERE DEPOSITED BY SOL-GEL DIP-COATING TECHNIQUE. INDEPENDENTLY, Ag NANOPARTICLES (NPs) WERE SYNTHETIZED USING A TYPICAL METHOD OF CHEMICAL REDUCTION. 

By ellipsometry measures, the In and Ag NPs doped thin films shown a thickness in the range of 100-250 nanometers which present high transparency above 80% obtained by UV-Vis transmittance and it decreases as Ag NPs concentration is increased. On the other hand, the X-Ray photoelectron spectroscopy show the presence of Sn$^{4+}$ necessary for the formation of SnO$_2$ onto the substrate with little presence of impurities such as salts precursors and ambient carbon. The scanning electron microscope revealed the morphology surface not homogeneous and the presence of the dopants (clusters) on it due to the annealing treatment. The powders obtained from precursor solutions of the films were analyzed by Micro-raman spectroscopy, surface vibrational modes (400-600 cm$^{-1}$) were observed in all the spectra which are related to nanostructured SnO$_2$. X-Ray diffraction pattern of powder showed characteristics peaks of the material obtained.

**Keywords:** thin films, silver nanoparticles, indium

**References:**
