A Route to Au-Catalyzed Growth of the Semiconducting In_2O_3 Nanowires

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Abstract- We report the synthesis and characterization of indium (III) oxide nanowires grown by thermal evaporation on silicon substrates with the presence of Au catalysts in the temperature range of 720 to 920°C. The growth processes involved in the formation of the nanowires are the vapor-liquid-solid mechanism where the former is responsible for growth when Au catalyst is used. Based on the fact that a small Au nanoparticle attached to one end of some nanowires, a growth model of the In_2O_3 nanowires is proposed. The structures and morphologies were characterized by scanning electron microscopy (SEM) and X-ray diffraction (XRD).

Keywords: Thermal evaporation, In_2O_3 nanowires.

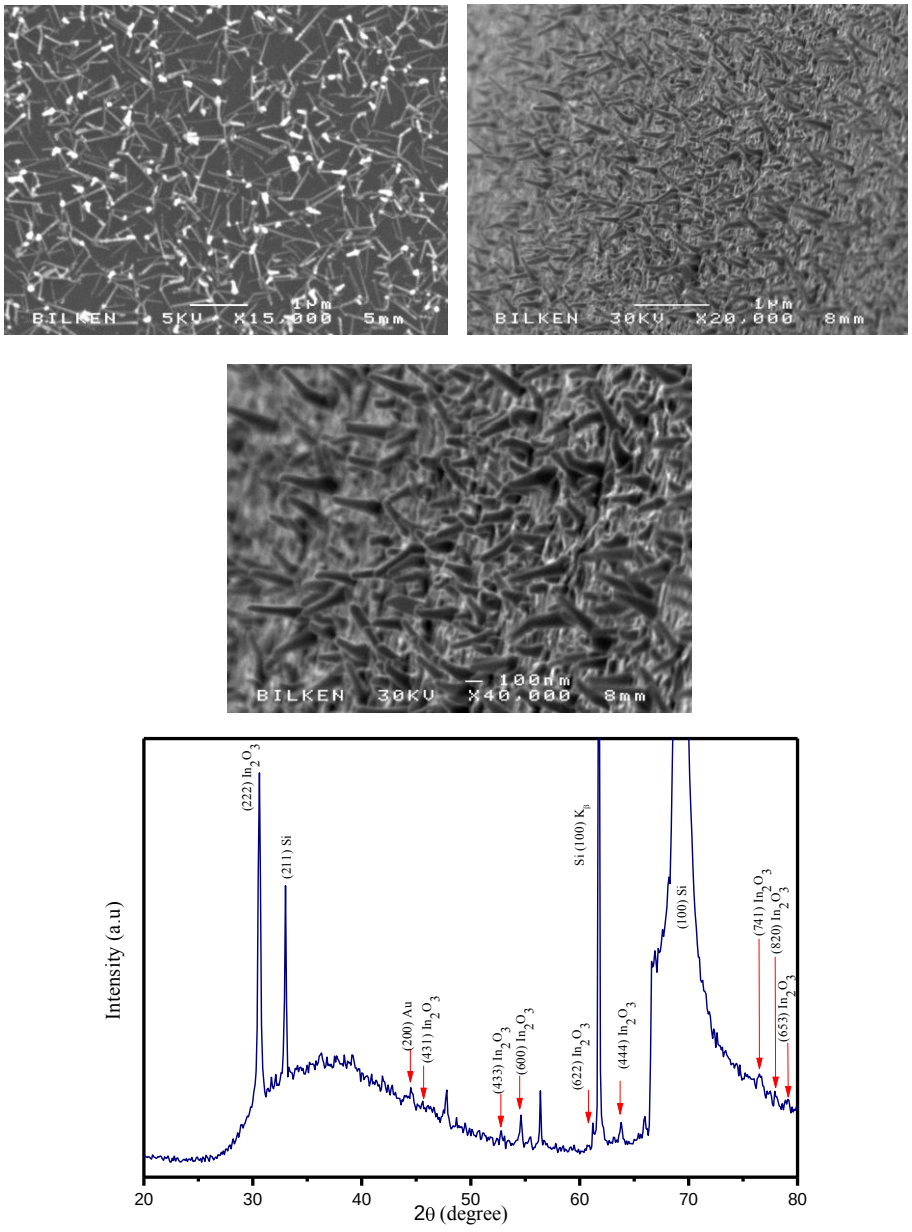


Fig. SEM images and XRD spectra of In_2O_3 nanowires.