콤비네이숀 마그네트론 스퍼터링법에 의한 IGZO 투명전도막의 제조

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Fabrication of IGZO Transparent Conducting thin Films by The Use of Combinational Magnetron Sputtering

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Abstract : The transparent conducting oxides(TCOs) are widely used as electrodes for most flat panel display devices(FPDs), electrodes in solar cells and organic light emitting diodes(OLED). Among them, indium oxide materials are mostly used due to its high electrical conductivity and a high transmittance in the visible spectrum. The present study reports on a study of the electrical and optical properties of IGZO thin films prepared on glass and PET substrates by the combinational magnetron sputtering. We use the targets of IZO and Ga2O3 for the deposition process. In some case the deposition process is coupled with the End-Hall ion-beam treatment onto the substrates before the sputtering. In addition we control the deposition rate to optimize the film quality and to minimize the surface roughness. Then we investigate the effects of the Ar gas pressure and RF power during the sputtering process upon the electrical, optical and morphological properties of thin films. The properties of prepared IGZO thin films have been analyzed by using the XRD, AFM, α-step, 4-point probe, and UV spectrophotometer.

Key Words : IGZO, TCO, Sputtering