

합성 RF power에 따른 AZO 박막의 특성변화

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The effect of RF power on the properties of AZO films

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Abstract : In this study, transparent and conductive Al-doped zinc oxide (AZO) films were prepared on Corning glass and silicon wafer substrate by RF magnetron sputtering method using an Al-doped ZnO target (Al: 2 wt.%) at room temperature as the thickness of 150 nm. We investigated the effects of the RF power between 100 W and 350 W in steps of 50 W on structural, electrical and optical properties of AZO films. Also, we studied the effects of the working pressure (3, 4 and 5 mtorr) on that condition. The thickness and cross-sectional images of films were observed by field emission scanning electron microscopy (FE-SEM) and all of the films were kept to be constant to 150 ± 10 nm on Corning glass and silicon wafer. A grain size was calculated from X-ray diffraction (XRD) on using the Scherrer' equation and their electrical properties investigated hall effect electronic transport measurement system. Moreover, we measured transmittance of AZO films by UV/VIS spectrometer.

Key Words: Al-doped ZnO film, RF magnetron sputtering, TCO.