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Effect of intermediated platinum film on the optoelectrical properties of ITO/metal/ITO films

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Transparent and conducting ITO/Pt/ITO multilayered films were deposited with RF and DC magnetron sputtering without intentional substrate heating on the polycarbonate substrates. In order to consider the effect of the thickness of the Pt intermediated layer on the microstructure and optoelectrical properties of films, thickness of the intermediated Pt film was varied from 5 to 20 nm. In XRD measurements, Both ITO and IMI films did not show any characteristic indium oxide diffraction peak. Only Pt (111) diffraction peak was obtained in XRD spectra. Thus it can be concluded that the Pt intermediated films in IMI films did not affect on the crystallinity of the ITO films. However, optoelectrical properties were very dependent on the presence and thickness of the Pt intermediated layer. The ITO (50 nm)/Pt (5 nm)/ITO (45 nm) multilayer films have the lowest resistivity and the highest optical transmittance.

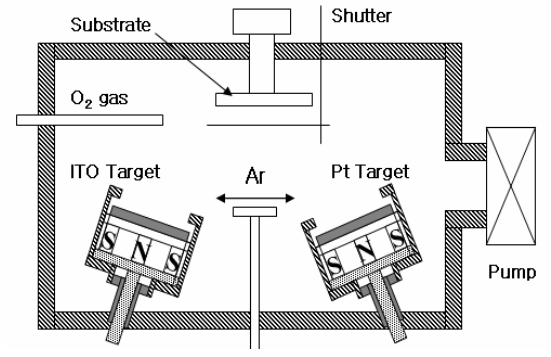

Fig. 1. A schematic diagram of magnetron sputter system

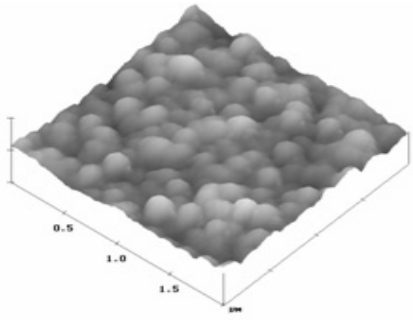

Fig. 2. Surface morphology of the ITO (500 nm) /Pt (200 nm) /ITO (300 nm) film (AFM).