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Study on IZTO and ITO Films Deposited on PI Substrate by Pulsed DC Magnetron Sputtering System

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The Indium Zinc Tin Oxide (IZTO) and Indium Tin Oxide (ITO) thin films are grown on PI substrate at different substrate temperature by pulsed DC magnetron sputtering with a sintered ceramic target of IZTO (In2O3 70 wt.%, ZnO 15 wt.%, SnO2 15 wt.%) and ITO (In2O3 90wt.%, SnO2 10wt.%). The structural, electrical, and optical properties are investigated. The IZTO thin films deposited at low temperature showed relatively low electrical resistivity compared to ITO thin films deposited at low temperature. As a result, we could prepare the IZTO thin films with the resistivity as low as 5.6 x 10-4 (Ω·cm). Both of the films deposited on PI substrate showed an average transmittance over 80% in visible range (400～800nm). Overall, IZTO thin film is a promising candidate as an alternative TCO material to ITO in flexible and OLED devices.

Keywords: pulsed DC magnetron sputtering, IZTO, PI substrate