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Effect of outgassing in polymer substrate for high performance conducting oxide thin films

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Recently, Roll-to-Roll (R2R) sputtering process have attracted much attention in deposition of Indium Tin Oxide (ITO) thin films on polymer substrates for flexible optoelectronics due to their high flexibility, low cost. We found that polymer substrate contained contaminative gases and moisture (H_2O) both on the surface and within hard coating layer, and the characteristics of ITO films are adversely affected by the contained gases. In this study, we report the importance of outgassing process in the deposition of ITO thin films on hard-coated Polyethylene Terephthalate (PET) by pilot-scale R2R sputtering. The optical and electrical properties of ITO films on PET films were improved by using an outgassing process. The outgassed ITO film shows a low sheet resistance to ~ 100 ohm/sq. and high optical transmittance to ~ 90 %.

Biography

Tae-Woon Kang has completed his Master course of Professional Graduate School of Flexible and Printable Electronics in 2016 from Chonbuk National University, South Korea. He currently works at Korea Research Institute of Chemical Technology.

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