The Influence of Cross-Magnetron Effect on the Properties of Indium Tin Oxide Thin Films Deposited by Pulsed Dual Magnetron Discharges

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Magnetron-sputtered oxide films are widely used for industrial applications. Especially the coating of large substrate areas implies the requirement for reliable and lateral homogeneous film properties. However, the inhomogeneous distribution of the sputter rate as well as cross-corner and cross-magnetron effects may reduce the functional film performance. Therefore, we have investigated the electrical, optical and structural film properties of indium tin oxide (ITO) films in relation to the physical process properties. The films were deposited using a reactive AC dual magnetron discharge and In:Sn targets. For investigation of the influence of the plasma property distribution on film properties static deposition experiments were performed. Substrate temperature measurements have confirmed the inhomogeneous distribution of the plasma properties, resulting from the cross-magnetron effect.