Characterization of plasma treated ITO surface to improve the performance of OLEDs

장선기, 채희엽*, 손선영, 정동근
성균관대학교
(hchae@skku.edu*)

Indium tin oxide(ITO) are widely used in a variety of electronic and optoelectronic fields, such as liquid crystal displays, solar cells, photodiodes, and antistatic coatings, due to ITO have a high transmittance in the visible range and a high conductivity simultaneously. The optical, electrical, and chemical properties of the ITO are important for enhancing performance of OLED devices. However the OLED device usually exhibits poor performance without surface modifications of the ITO. Many surface treatments of the ITO have been employed to improve the device performance. We worked ITO surface treatment using oxygen/argon plasma. ITO treatment was proceeded by controlling appropriate technical parameters, such as different RF power, chamber pressure and exposure time. Oxygen/argon plasma treatment of ITO surface changed sheet resistance and optical transmission, turn on voltage, efficiency, brightness, roughness, as a result performance of OLED devices was improved.