

## **Optimization of oxygen plasma process parameters for organic light emitting diode displays**

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### **Abstract**

Indium tin oxide (ITO) is the most commonly used hole injecting electrode for organic light emitting diodes. Post-deposition processes and cleaning methods affect the chemical composition and morphology of the ITO surface. The changes in chemical composition in turn affect the work-function of ITO surface. The common approaches to modify the surface properties of ITO are Aquaregia treatment, UV-ozone cleaning, CF<sub>x</sub> plasma treatment, and O<sub>2</sub> plasma treatment. The O<sub>2</sub> plasma treatment shifts the vacuum level of the ITO surface as a result of which the barrier height for the hole injection at the ITO/organic interface is reduced. While fabricating an OLED display panel, an important consideration is that the plasma treatment should not cause degradation of the inter insulator patterning. In this report we present the results of r. f. O<sub>2</sub> plasma treatment on ITO surface. The parameters like r. f. power, O<sub>2</sub> flow rate, process pressure, and process time have been optimized for the surface properties such as work-function, sheet resistance, contact angle etc. The degradation of the inter insulator patterning also has been studied with respect to different processing conditions of O<sub>2</sub> plasma treatment.