

Thermal Stability of Passivated Oxygen Vacancy in Indium Gallium Zinc Oxide with Supercritical Fluid Cosolvent Oxidation, Post Annealing or Oxygen Plasma Treatment

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ABSTRACT

In this report, the thermal stability of oxygen vacancy in indium gallium zinc oxide (IGZO), which was passivated by supercritical fluid (SCF) cosolvent oxidation, post annealing or oxygen plasma treatment, has been investigated in detail. With X-ray photoelectron spectroscopy (XPS) analysis, it can be found out that the oxygen vacancy passivated by SCF treatment exhibits better thermal stability than other oxidation treatment. Besides, the IGZO treated with different treatment has been used as the channel material for thin thin-film transistor device. Similar with the XPS result, the device with SCF treatment shows excellent reliability and uniformity even within high temperature ambient.