

## Electrical and Optical Properties of In-Ga-Zn-O Thin Films for TFTs

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**Abstract :** In-Ga-Zn-O (IGZO) has drawn much attention as a compatible material for transparent thin film transistors (TFT) channel layer due to its high mobility and optical transparency at low processing temperatures. In this work, we investigated the effect of oxygen ambient on structural, electrical and optical properties of amorphous In-Ga-Zn-O (IGZO) thin films by using pulsed laser deposition (PLD). The films were deposited at various oxygen pressures and the structural, electrical and optical properties were investigated. X-ray diffraction (XRD) analysis showed that amorphous IGZO films were grown at all oxygen pressures. The surface morphology and optical properties with various oxygen pressures were studied by field emission scanning electron microscopy (FE-SEM) and UV-VIS spectroscopy, respectively. The grain boundary was observed more apparently and the calculated optical band gap became larger as oxygen pressure increased. To examine the electrical properties, Hall-effect measurements were carried out. The films showed high mobility.

**Key Words :** IGZO, TFT, PLD.