

## Effect of IGZO Photocuring on IGZO Thin Film Transistor Performance

조재완, 채희남, 김성진<sup>1</sup>, 조성민<sup>†</sup>

성균관대학교; <sup>1</sup>삼성디스플레이

(sungmcho@skku.edu<sup>†</sup>)

Roll-to-roll(R2R) process can be an alternative to the existing technology of producing large-sized flexible organic light-emitting-diodes (OLEDs) because it has advantages of reducing the size of equipment and costs. Indium-gallium-zinc-oxide (IGZO) can be used in fabricating a thin film transistor (TFT) for a display backplane. Curing to IGZO such as rapid thermal annealing (RTA) is needed to improve conduction behavior and carrier density. RTA is not appropriate to the IGZO TFT fabricated by R2R process as temperature is high and plastic substrate can be damaged. We investigated the effect of photocuring on IGZO and IGZO TFT performance. IGZO was deposited by sputtering. Photocuring conditions were separated by the energy carried on the IGZO, the voltage of equipment and the frequency of photocuring shots. X-ray diffraction (XRD) and atomic force microscopy (AFM) were used to investigate the property of photocured IGZO. TFT was fabricated by photolithography on a wafer substrate. Photocured and RTA cured IGZO TFTs were compared by carrier mobility, on-off ratio and subthreshold swing. Photocuring can be applied to the flexible display backplane produced by R2R process.