

# THE RELIABILITY OF AMORPHOUS-InGaZnO THIN FILM TRANSISTOR INFLUENCE BY SELF-HEATING STRESS AT HIGH TEMPERATURE UNDER COMPRESSIVE STRAIN

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Key Words: Flexible a-IGZO TFT, Mechanical bending stress, Abnormal hump

Flexible thin-film transistors (TFTs) play an important role in flexible technology applications, including wearable devices and high-resolution foldable displays and as curved displays. A reliability test was performed in this work, including mechanism and electrical stress at high temperature. An abnormal hump can be found in flexible a-InGaZnO<sub>4</sub> TFTs after a self-heating stress at 90°C under compressive bending. COMSOL simulation confirmed that the etching stop layer absorbs more mechanism stress than the gate insulator. Accordingly, during the reliability stress, holes induced by the impact ionization tend to inject into the defect in the etching stop layer near the source side rather than the gate insulator, which is induced by compressive bending. Single side C-V measurement and forward/reverse-operation mode are utilized to analyze the hole trapping distribution.

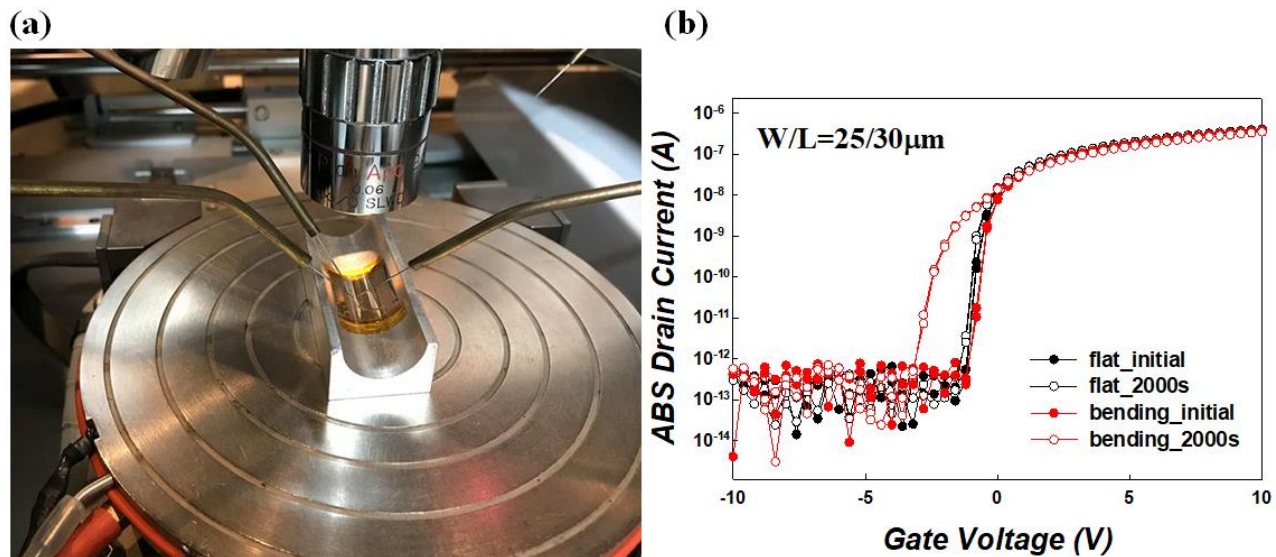


Figure 1 – (a) Photo of flexible a-IGZO TFT under measurement. (b)  $I_D$ - $V_G$  transfer characteristics with  $V_D=0.1V$  for devices undergoing width-axis compression bending.