

Supplemental Figures

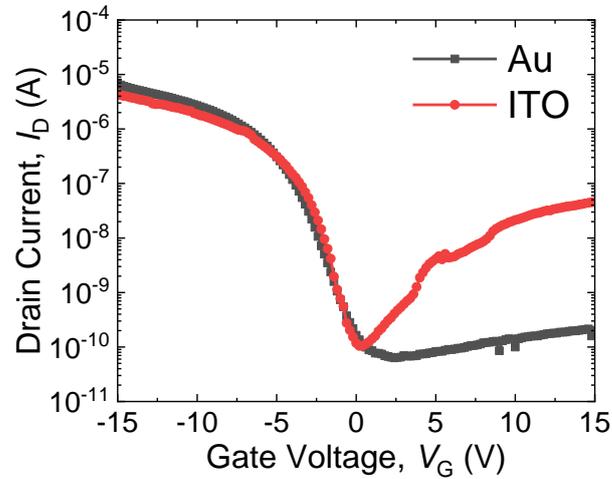


Figure 1. Transfer curves of SnO TFTs with Au and ITO S/D electrodes. SnO TFTs with ITO S/D electrodes exhibit enhanced electron conduction compared to devices with Au S/D electrodes. The low work function and negligible interface reaction between ITO and SnO enabled strong electron conduction.

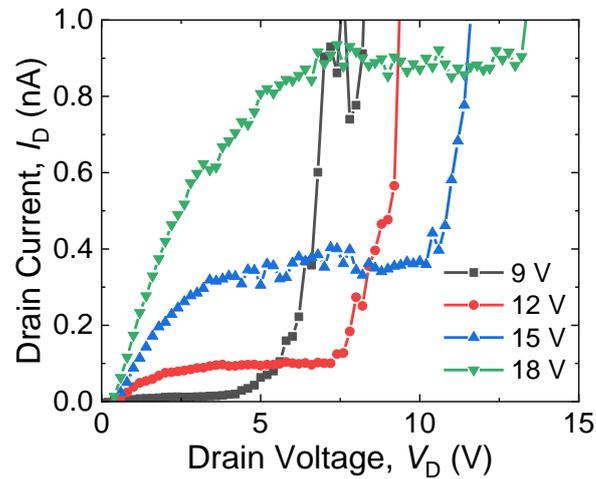


Figure 2. Output curves of SnO TFTs with ITO S/D electrodes at V_G of 9 ~ 18 V. The ambipolar device exhibits normal-to-abnormal transitioning output curves. Coexisting electron and hole channels illustrated in Figure 3 are responsible for the transitioning output curves.

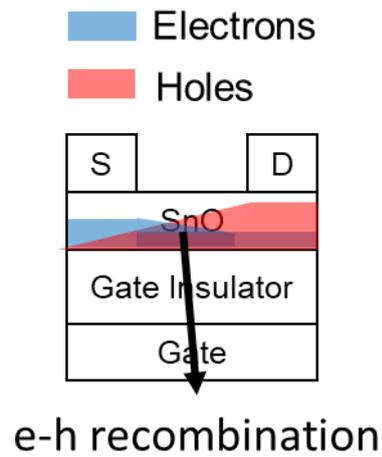


Figure 3. Schematic diagram of e-h recombination in ambipolar TFTs at $V_G, V_D > 0$ V. When large V_D is applied at $V_G > 0$ V, Positive V_{GS} -induced electron channel and negative V_{GD} -induced hole channel coexist in the SnO channel.

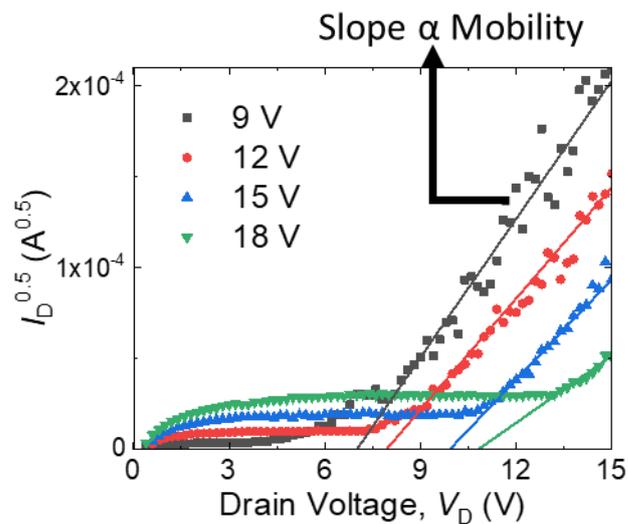


Figure 4. New mobility extraction method using the slope of the $\sqrt{I_D} - V_D$ curves. This method enables mobility extraction under e-h recombination conditions, demonstrating that mobility decreases when e-h recombination occurs.