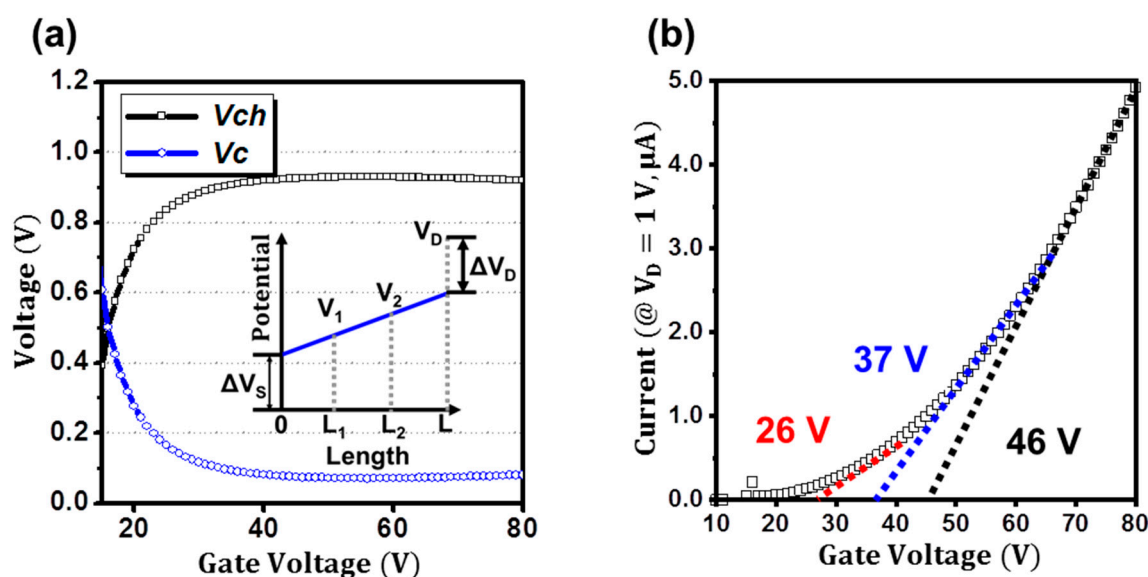


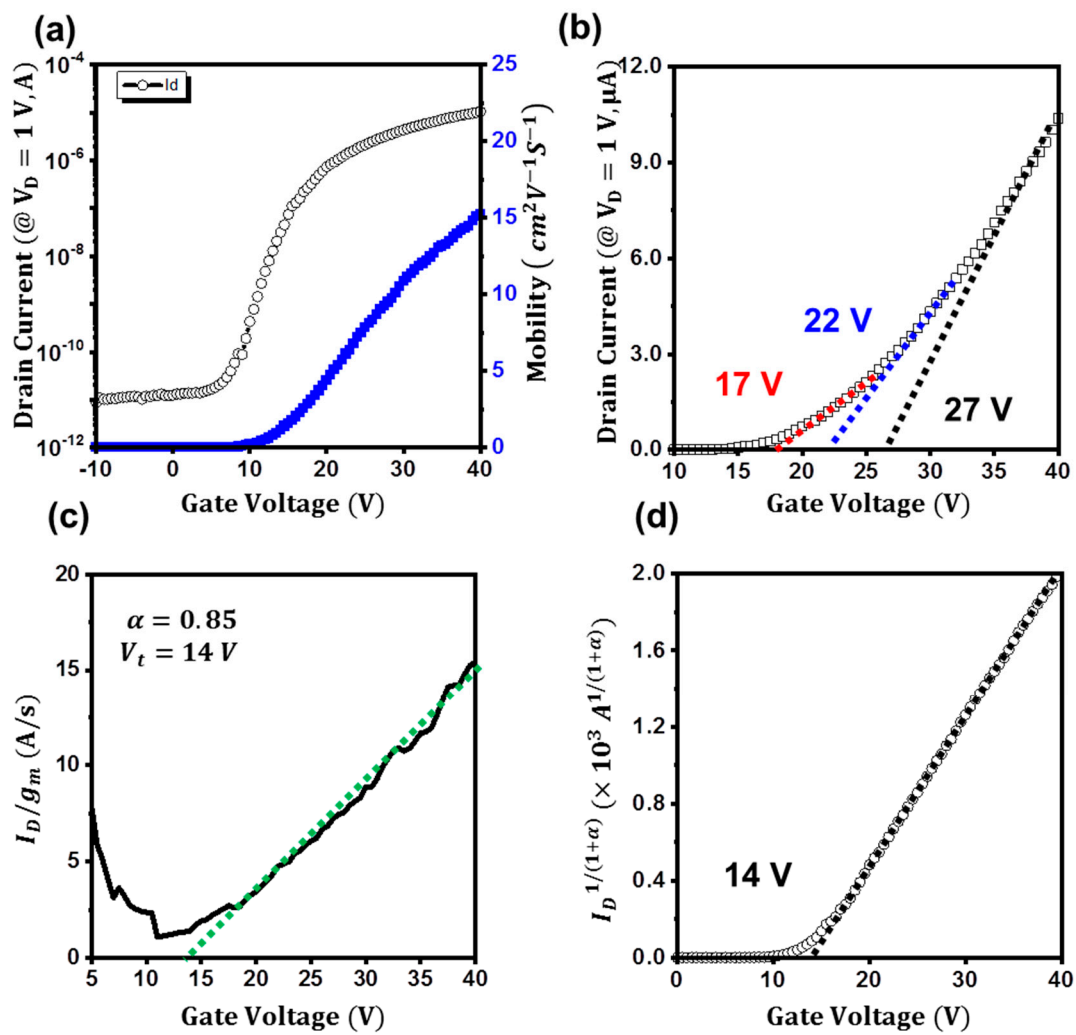
# Threshold-Voltage Extraction Methods for Atomically Deposited Disordered ZnO Thin-Film Transistors

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**Figure S1.** (a) Potential distribution of the ZnO TFTs with a four-point probe configuration. Inset: Schematic illustration of the four-point probe method. (b) The threshold voltage extraction using the intrinsic current-voltage characteristics with the gate bias range of 40 (red), 60 (blue), and 80 V (black).



**Figure S2.** (a) Transfer characteristics ( $I_{ds}$  vs.  $V_{gs}$ ) of the IGZO TFTs. (b) The threshold voltage extraction of the IGZO FET with the gate bias range of 25 (red), 30 (blue), and 40 V (black). (c) The modified plot of  $I_{ds}/g_m$  for the IGZO TFTs. (d) The modified threshold voltage extraction of the IGZO TFTs.