Supporting Information

1-Dimensional Fiber-based Field-Effect Transistors made by Low-temperature Photochemically Activated Sol-Gel Metal-Oxide Materials for Electronic Textiles

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Electrical characterization of InO_x F-FETa

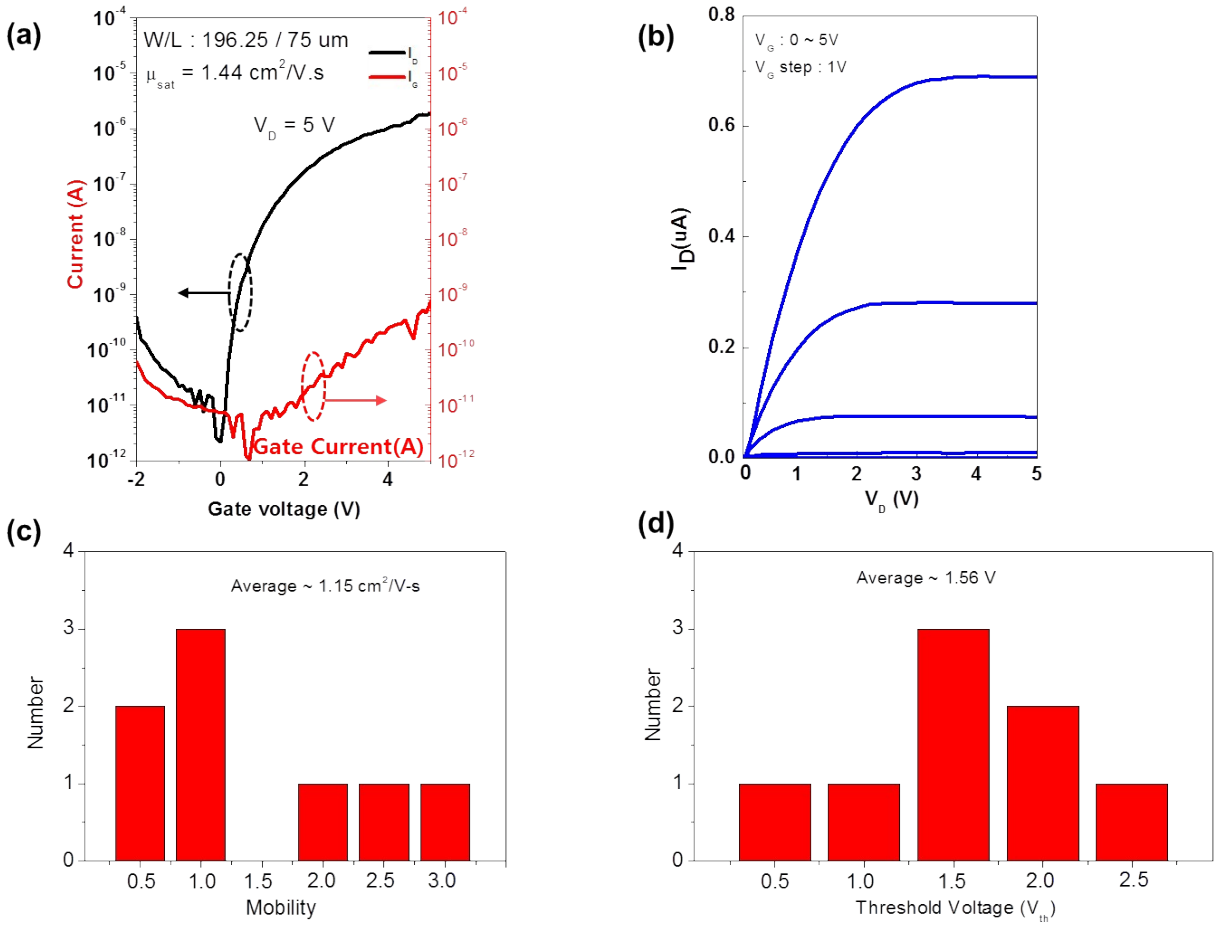

Figure S1. Electrical characteristics of IGZO F-FETs. Transfer characteristics of (a) and (b) Output characteristics of IGZO F-FETs. Distribution of (c) mobility and (d) threshold volatges of 8 devices

Electrical characterization of planar-type InO_x thin-film transistors

Materials and methods

For planar-type devices, we fabricated spin-cast InO_x thin-film transistors (TFTs) on a 50 μm-thick polyimide (PI) substrate. On the PI substrate, Cr/Au (5 nm/50 nm) gate electrode and AlO_x gate dielectric layers were deposited sequentially For active layer formation, InO_x film was formed by spin coating and photochemical activation in N_2 atmosphere for 2h using high-density ultraviolet (UV) treatment system and indium-zinc oxide source/drain electrodes were deposited by using RF- magnetron sputtering. The channel width and length of the TFT were 100 μm and 50 μm, respectively.

Electical performances

The fabricated InO_x TFTs on a planar PI substrate showed an average field-effect mobility of 2.84 cm^2/V-s. Also, the planar-type device exhibited n-type behavior and clean pinch-off, as shown in Figure S1.

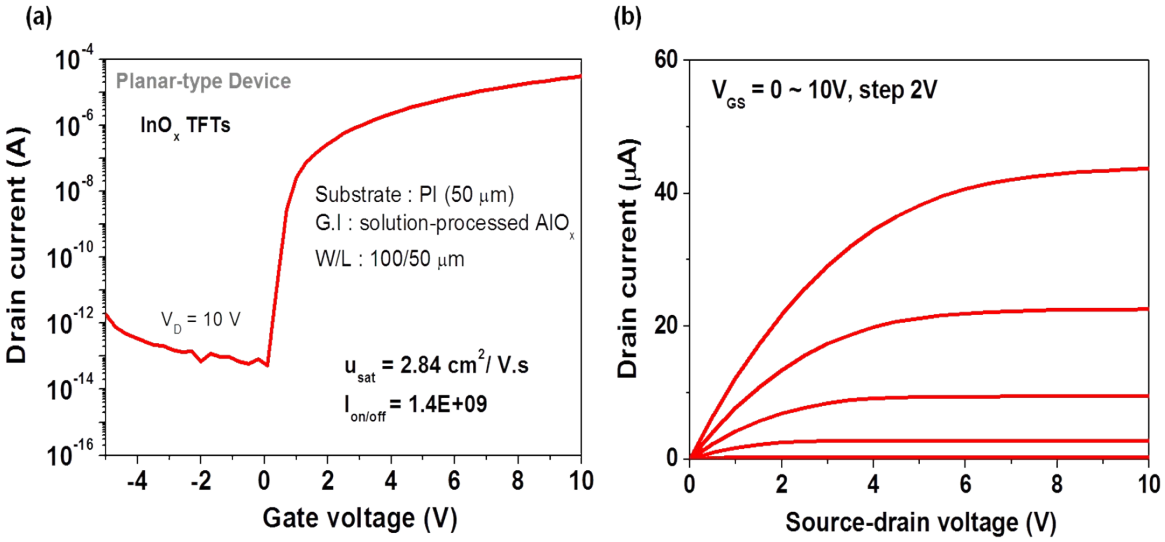

Figure S2. (a) Transfer and (b) output characteristics of InO_x TFTs fabricated on planar PI substrate.

The electrical measurement set-up for fiber-based F-FETs

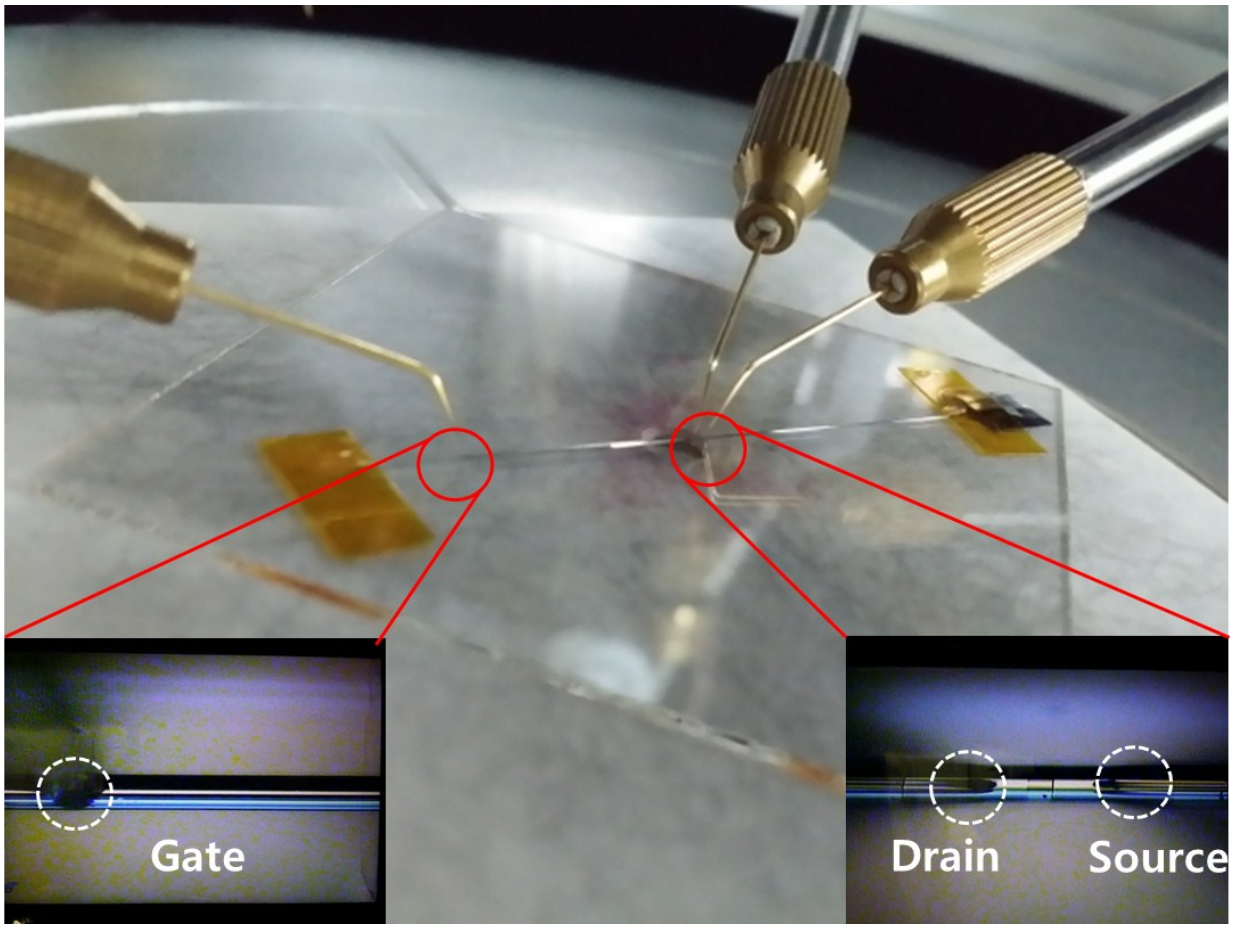

Figure S3. The electrical measurement set-up and probing for fiber-based F-FETs