Supporting Information

Fully Solution-Processed and Foldable Metal-Oxide Thin-Film Transistor

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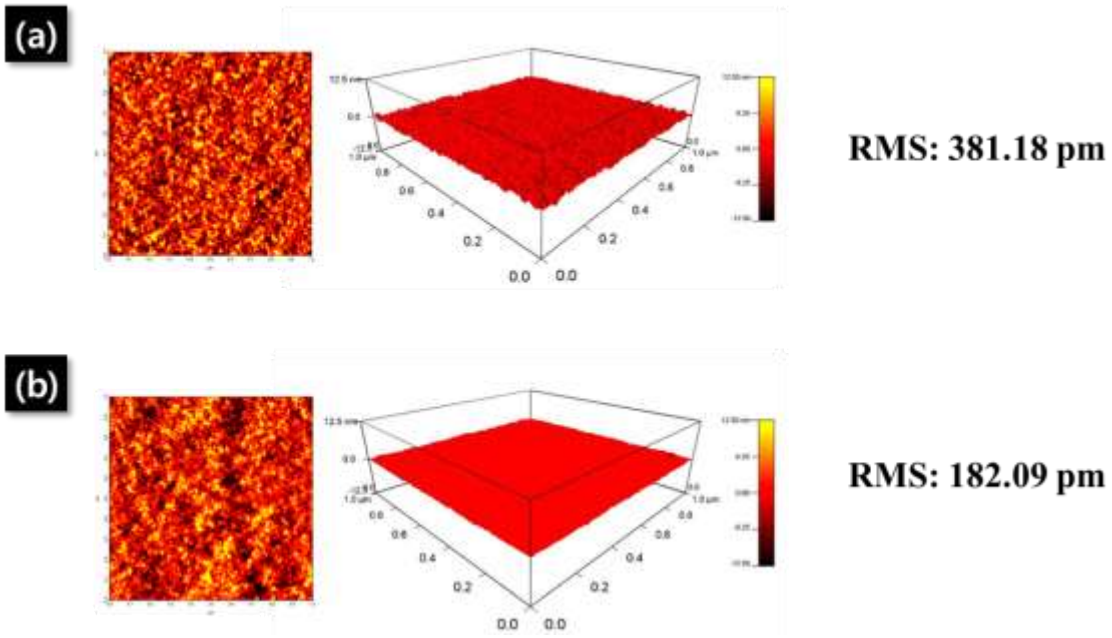

Figure S1. Root mean square (rms) average roughnesses of (a) PI and (b) YO_x/PI film surfaces in an area 1 × 1 μm.

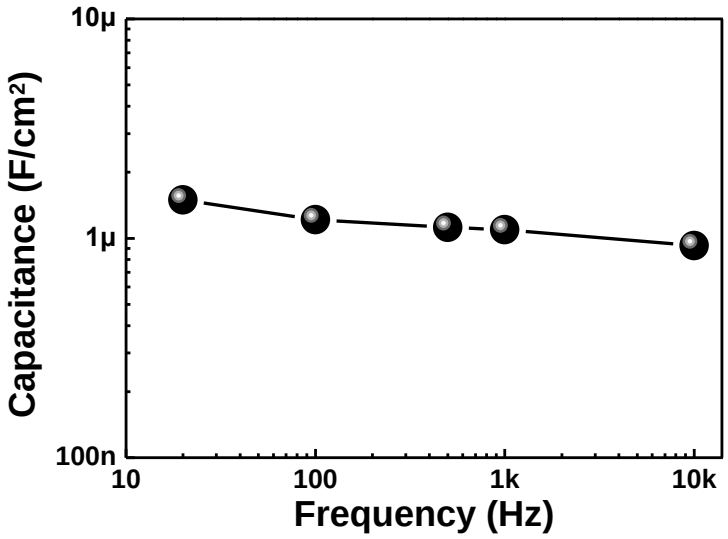

Figure S2. Specific capacitance *versus* frequency curve of the IL–PVP gate insulator layer with a thickness of 1.2 μm in a frequency range from 20 Hz to 10 kHz.

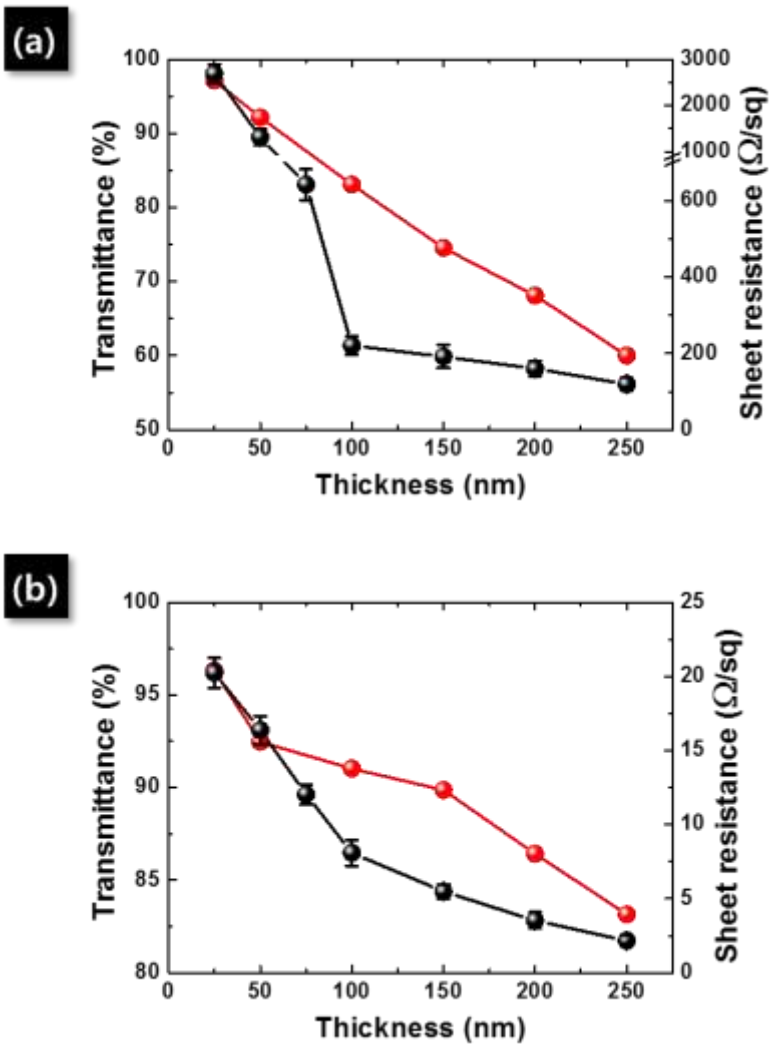

Figure S3. Transmittance *versus* sheet resistance of (a) SWCNT films and (b) Ag NW films as a function of thickness.

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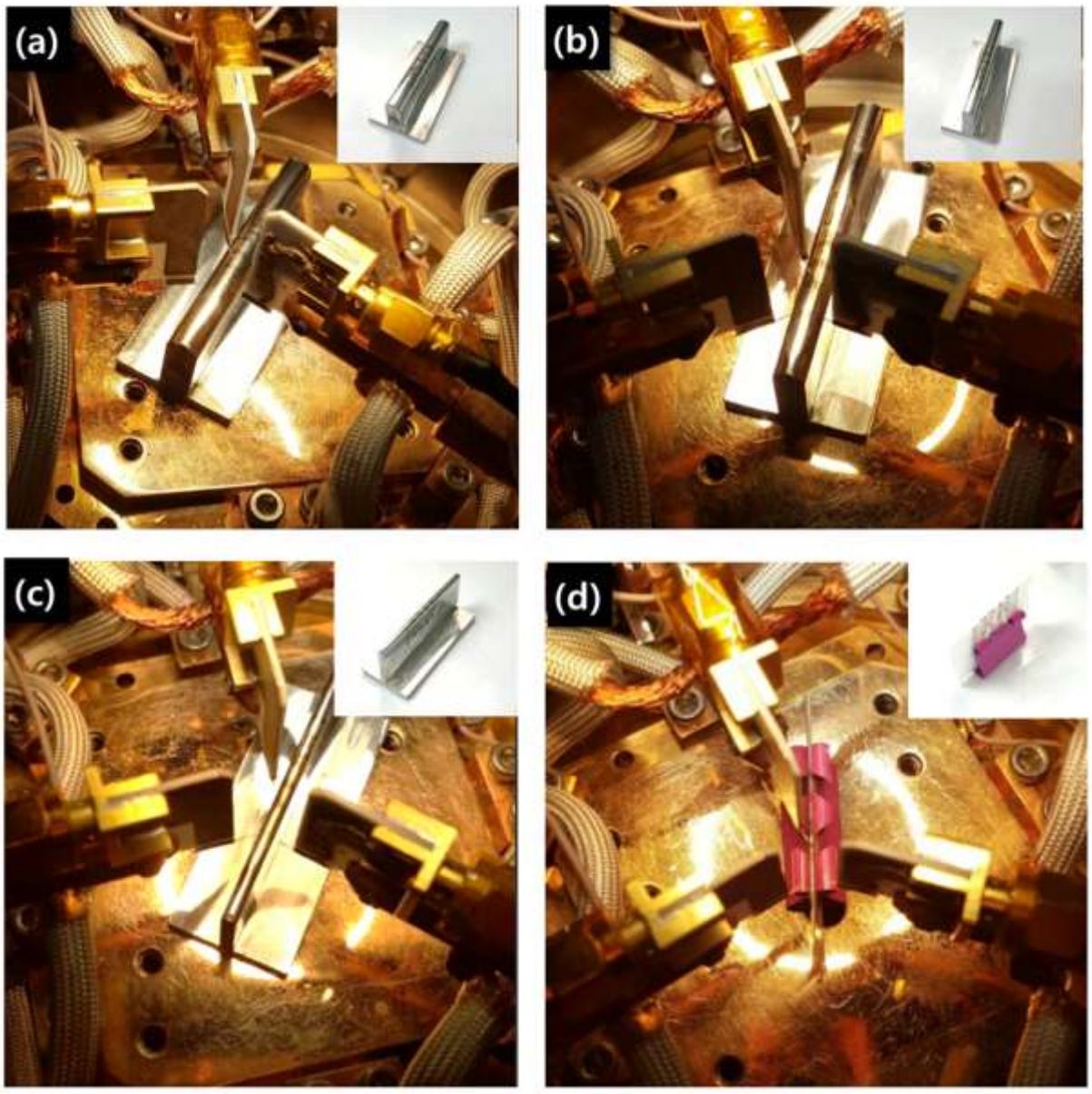

Figure S4. Photographs of the folded TFTs. (a) 3 mm, (b) 2 mm, (c) 1 mm, and (d) folded TFT devices and contact images of each TFT devices.

Equation S1.

Mechanical deformation strain with the fully solution-processed foldable TFT was calculated by using the following equation[1]: [S1]

$$\varepsilon = \frac{h_{sub} + h_{film}}{2r} \qquad [S1]$$

Where, ε, h_{sub}, h_{sub}, and r are the applied strain, the substrate thickness, film thickness and radius of bending shape, respectively. We used weighing paper with a thickness of 0.04 mm as a folding substrate of the TFT. The thickness of the PI substrate, the YO_x interlayer, the In_2O_3 active layer, the IL–PVP gate insulator layer, the SWCNT source and drain electrodes, and the Ag NW gate electrode are 20 μm, 30 nm, 7 nm, 1.2 μm, 100 nm, and 100 nm, respectively. Therefore, the calculated strain value is 26.79%.

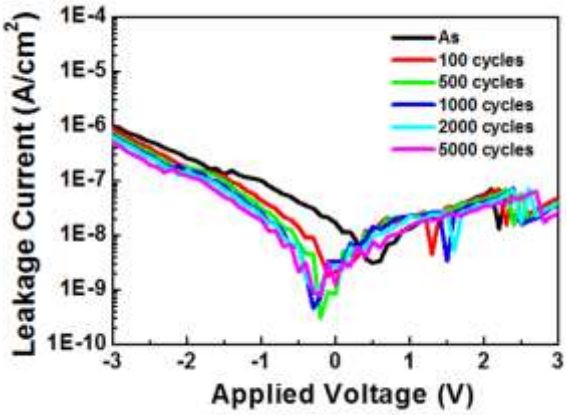

Figure S5. Leakage currents of MIM devices (Ag 100 nm / IL-PVP 1 μm / Al 100 nm on polyimide film) after 5,000 cycles of the folding test with 1 mm bending radius.

REFERENCE

1. G. P. Crawford, ed. Flexible Flat Panel Displays, John Wiley & Sons, Ltd, 2005, 1.