

Supplementary Materials

Highly Transparent and Surface-Plasmon-Enhanced Visible-Photodetector Based on Zinc Oxide Thin-Film Transistors with Heterojunction Structure

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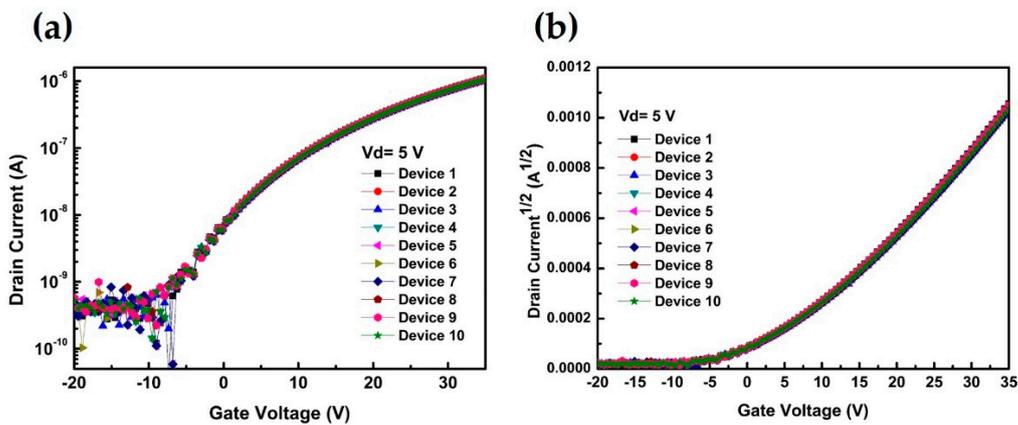


Figure S1. (a) Transfer characteristics of drain-source current versus gate voltage (I_{DS} - V_{GS}) of 10 devices of several semiconducting channel ZnO thin films deposited at a distance of 20 cm between the nozzle and substrate. (b) The square root of the drain current-gate voltage transfer characteristics curves of the 10 devices.

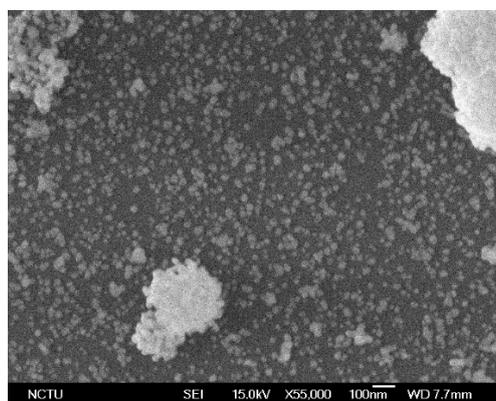


Figure S2. The scanning electron microscopy (SEM) image of the gold NPs under the ZnO thin-film. The scale bar in the SEM image is 100 nm.

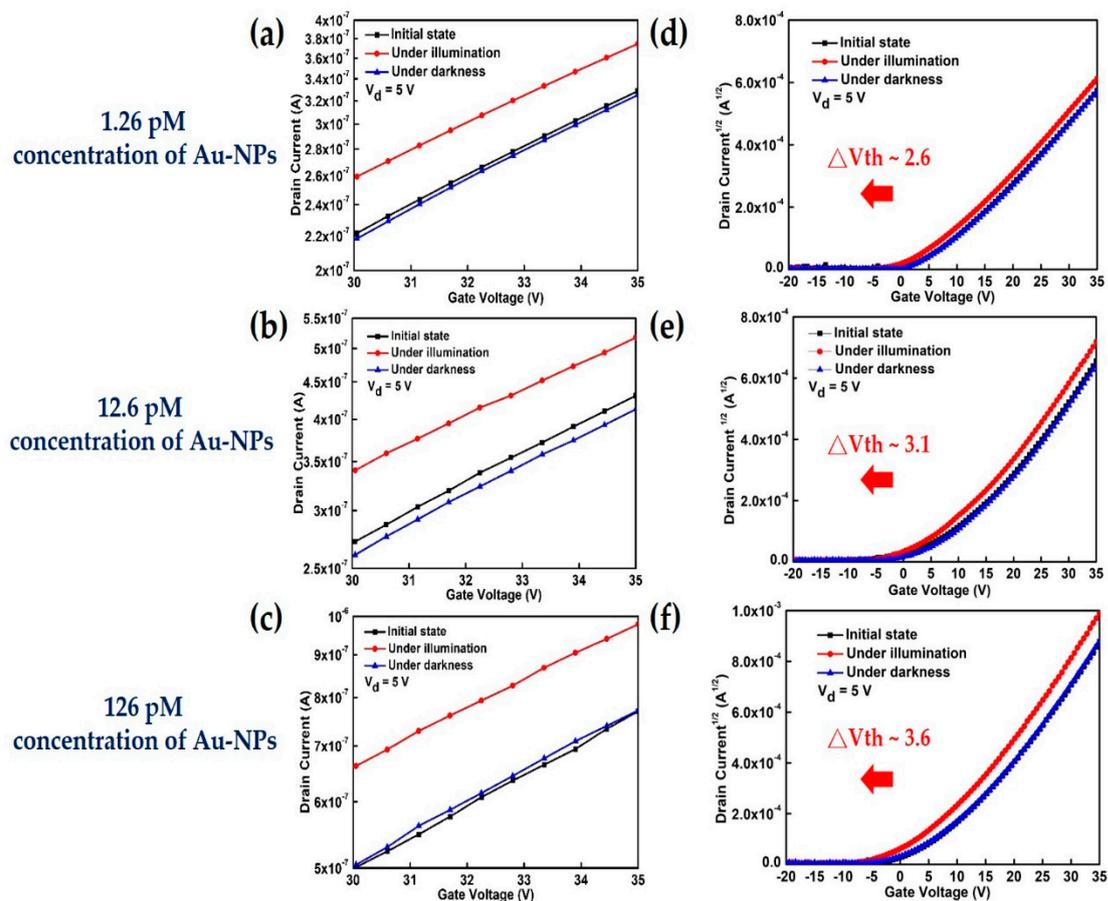


Figure S3. The typical transfer I_{DS} - V_{GS} characteristics of amplification intervals for the saturation region of the on-current between gate voltage operation of 30–35 volts, and the devices with AuNP concentration of (a) 1.26, (b) 12.6, and (c) 126 pM. The square root of the drain current-gate voltage transfer characteristics curves of the devices with initial state, under illumination and without illumination; the ΔV_{th} were 2.6, 3.1, and 3.6 volts which corresponded to the concentrations of (d) 1.26, (e) 12.6, and (f) 126 pM, respectively.

