

Enhancing Hot-electron Photodetection of a TiO₂/Au Schottky Junction by Employing a Hybrid Plasmonic Nanostructure: Supplementary Material

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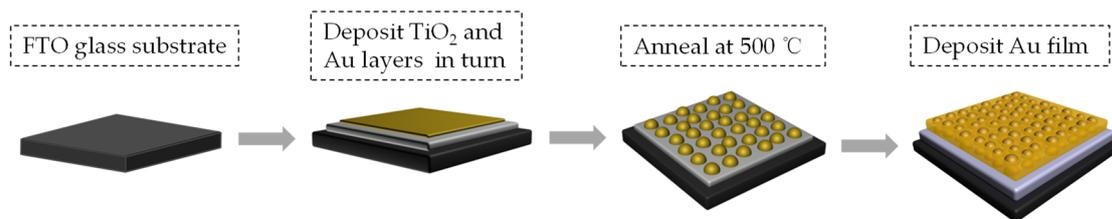


Figure S1. Scheme of the proposed HEPD device preparation in experiment.

Figure S1 shows the preparation scheme of the proposed HEPD device in experiment. During the fabrication, the wet-cleaned FTO glass substrates were first subjected to the surface plasma treatment for increasing the work function of FTO substrates. Then, TiO₂ and Au films were prepared by radio frequency (RF) and direct current (DC) magnetron sputtering, respectively. Then, the as-prepared multilayer samples were annealed in air at 500 °C for 3 hours. The annealing process could, simultaneously, transform the ultrathin Au film into a layer of Au NPs, and transform the amorphous TiO₂ film into its polycrystalline anatase film structure with a rough profile. After that, another thin Au film was deposited onto the annealed samples by DC magnetron sputtering, to complete the preparation of the HEPD device proposed in this paper.

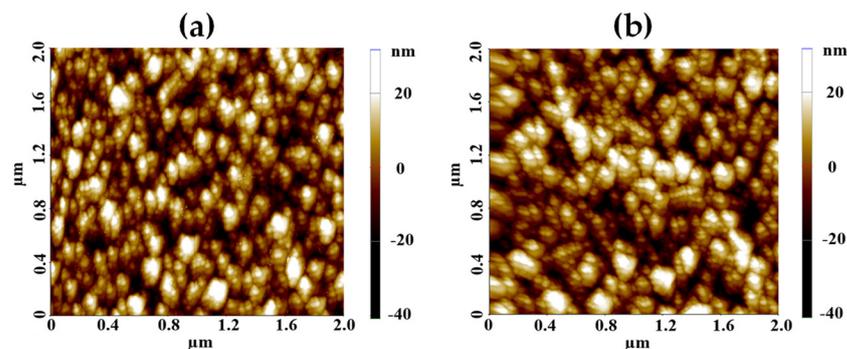


Figure S2. The top-view AFM images. (a) for the structure of FTO/TiO₂/Au NPs, (b) for the proposed structure of FTO/TiO₂/Au NPs/Au films.

Figure S2 shows the top-view AFM images of the sample FTO/TiO₂/Au NPs and the proposed HEPD respectively. It can be seen that their surface roughness is almost the same, showing obvious conformal characteristics.