

Supporting Information

Self-powered gas sensor based on SiNWs/ITO photodiode

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Supplementary Figures

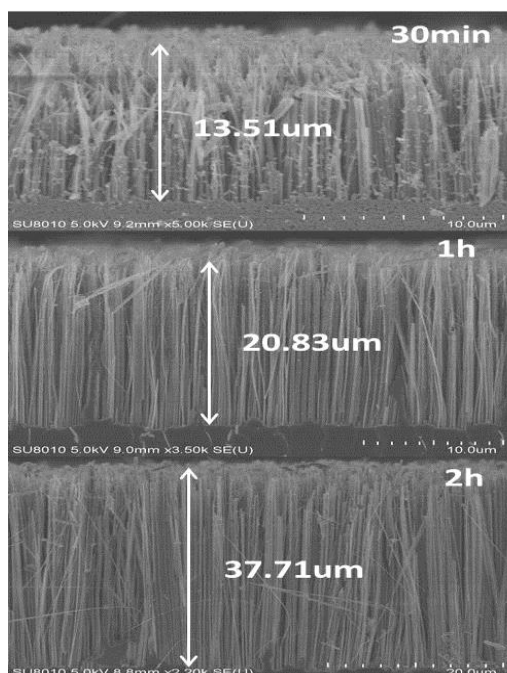


Figure. S1 The length of SiNWs etched by different time.

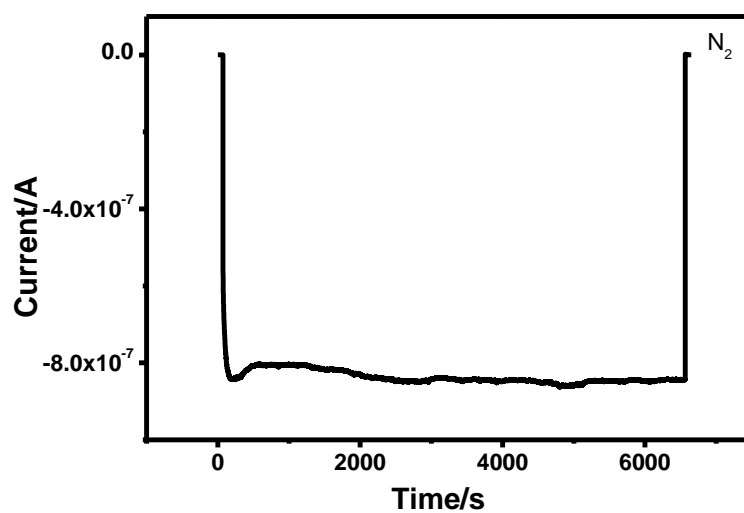


Figure. S2 The photocurrent of p-SiNWs/ ITO heterojunction under continuous illumination by LED.

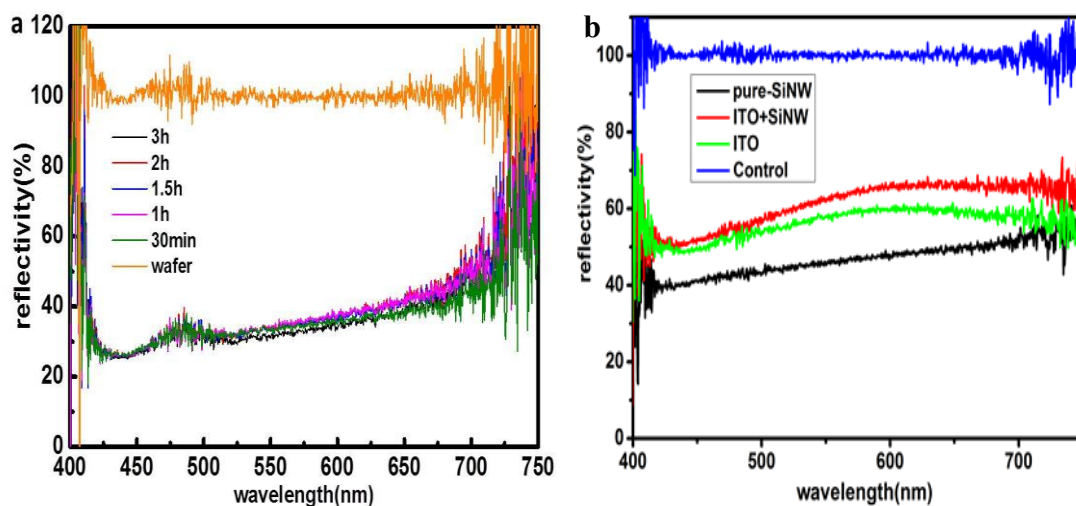


Figure. S3 (a) The reflectance of SiNWs etched with different time, (b) the comparison of reflectance between pure SiNWs and SiNWs/ITO device. The reflectance was measured with an integrating sphere.

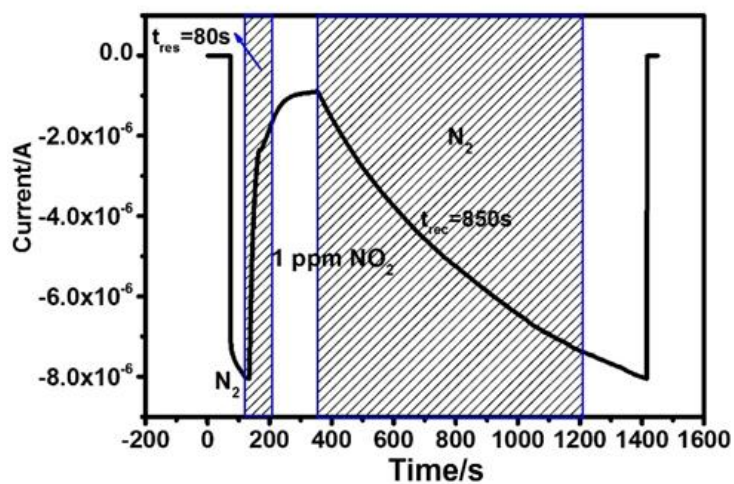


Figure. S4 Response and recovery trace of p-SiNWs/ITO in the presence of 1 ppm NO_2 under illumination at room temperature.

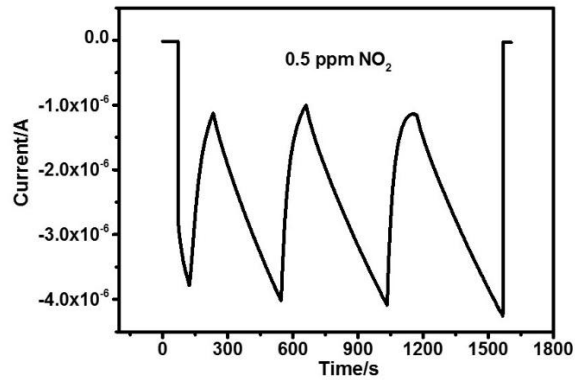


Figure. S5 The gas sensing trace of the device in response to 0.5 ppm NO₂ in three cyclic detection, The result indicate a good reproducibility of the sensor.

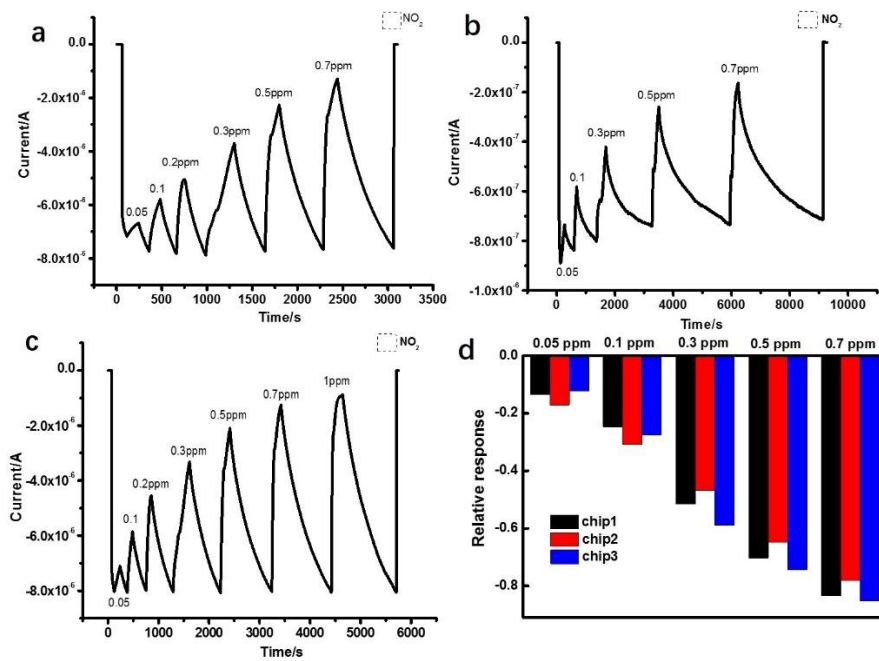


Figure. S6 The gas sensing test on three different chips to NO₂ gas under illumination. (a), (b), (c) represent different sensor devices, (d) was the summary of the relative response for the three chips at the same concentration. The results showed that different batch of the device display a good reproducibility.

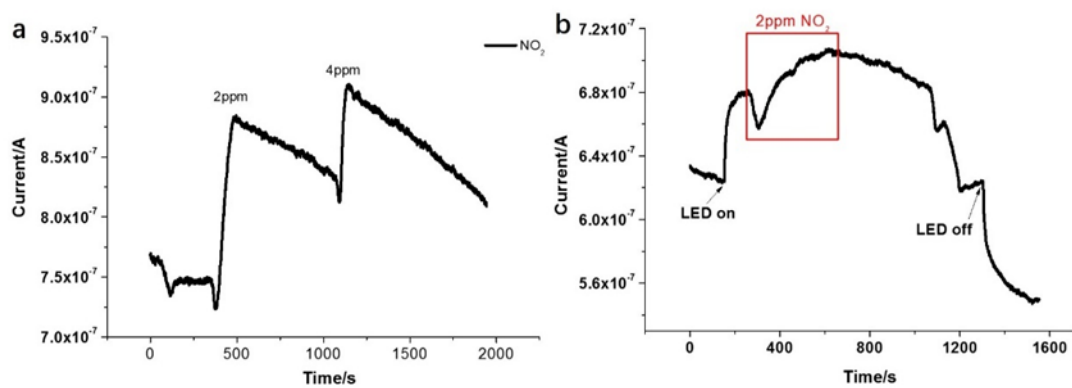


Figure. S7 The gas sensing test on a pure p-SiNWs chip to NO₂ gas with different concentration, (a) without and (b) with light illumination.

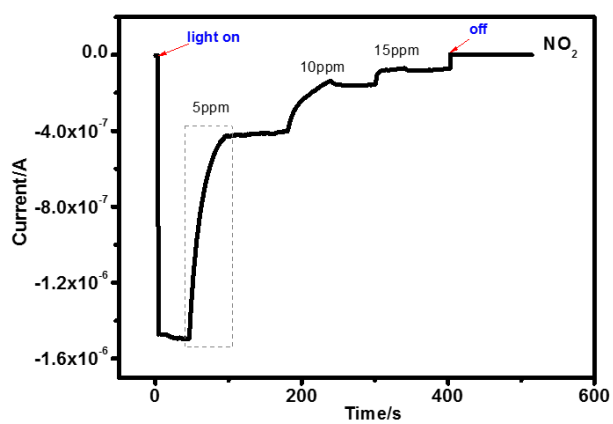


Figure. S8 The photocurrent of p-SiNWs/ ITO heterojunction without the treatment of HF.