

## **Micro-wheels Composed of Self-Assembled Tungsten Oxide Nanorods for Highly Sensitive Detection of Low Level Toxic Chlorine Gas**

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**Figure S1.** Apparatus for gas sensor testing. The black chamber ensures the gas-sensing measurements were not influenced by light.

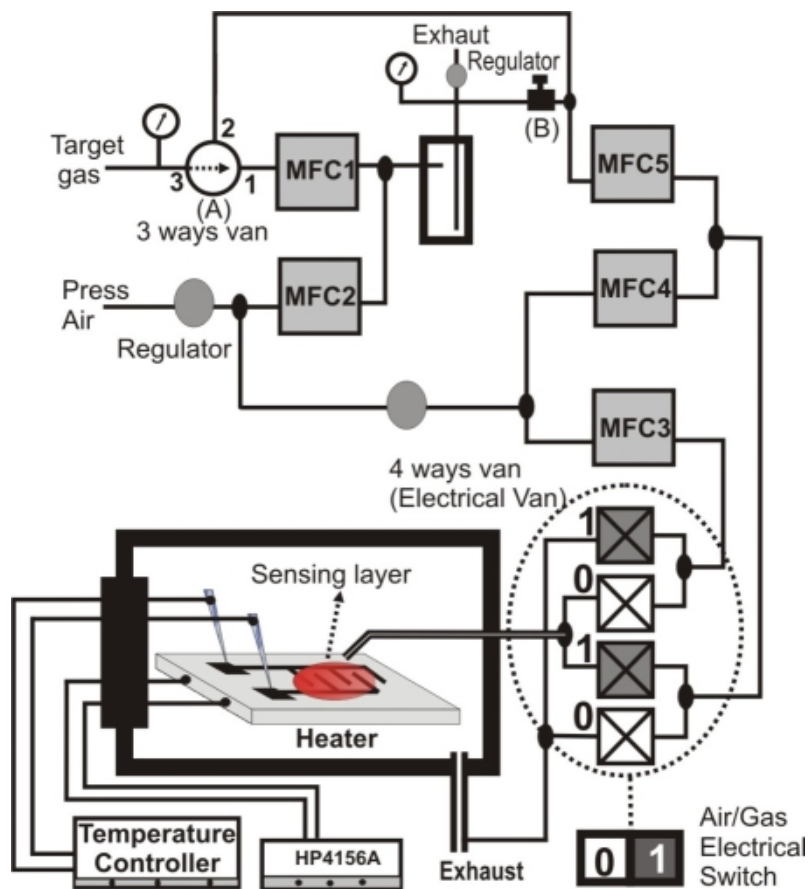
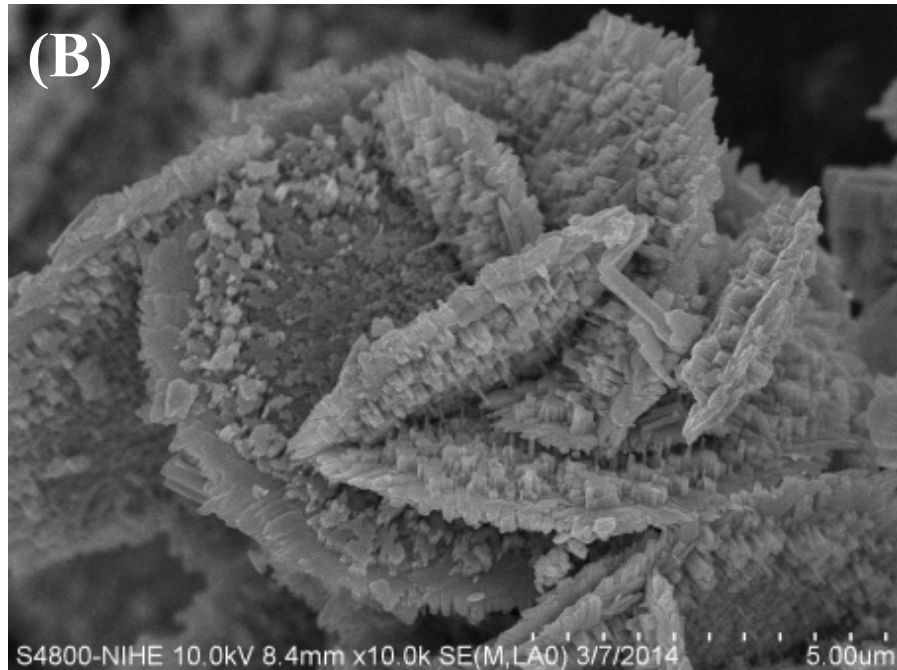
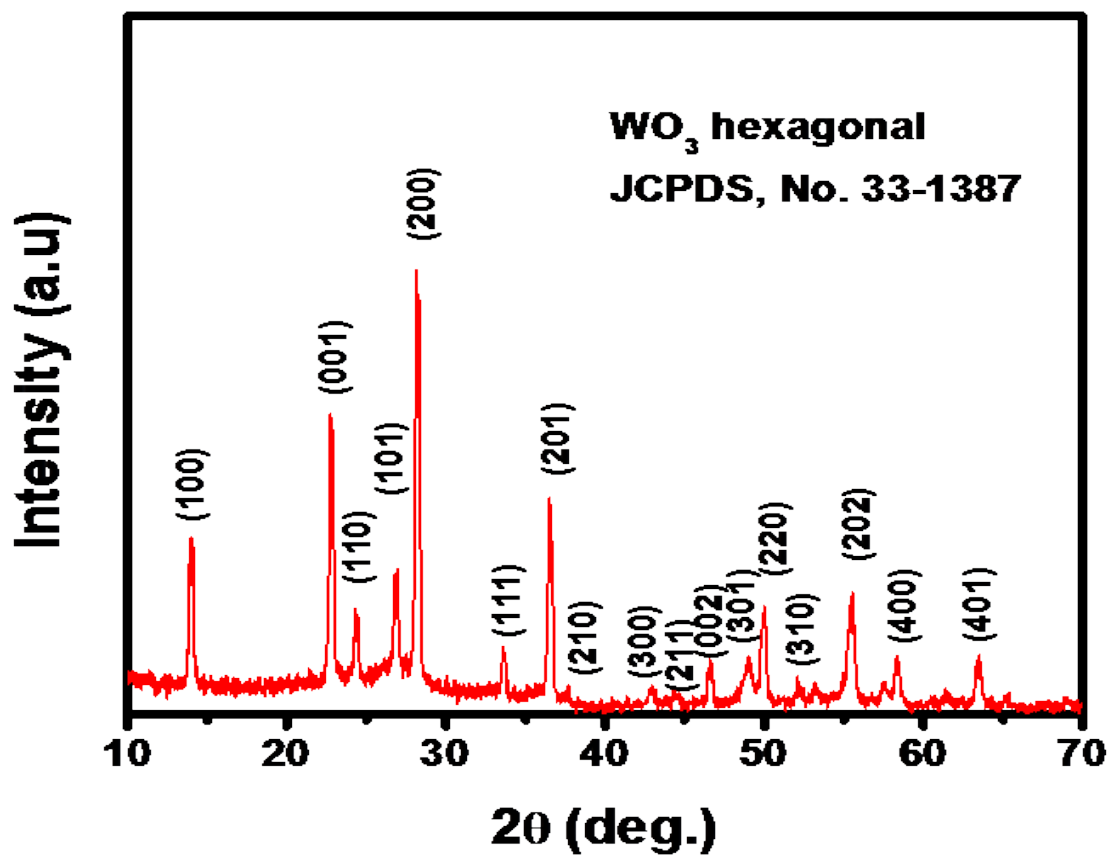


Photo of the black-box chamber for sensing measurement

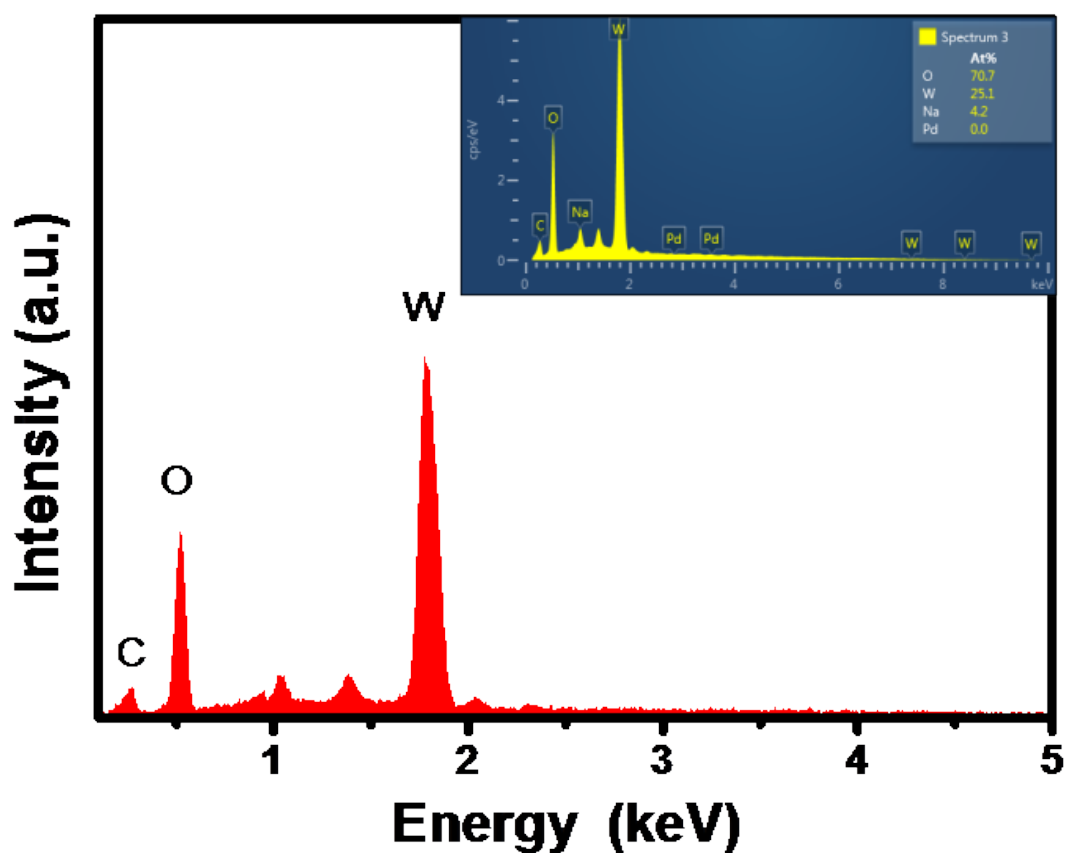
**Figure S2.** SEM images of the products obtained by different experiments under a fixed hydrothermal condition.



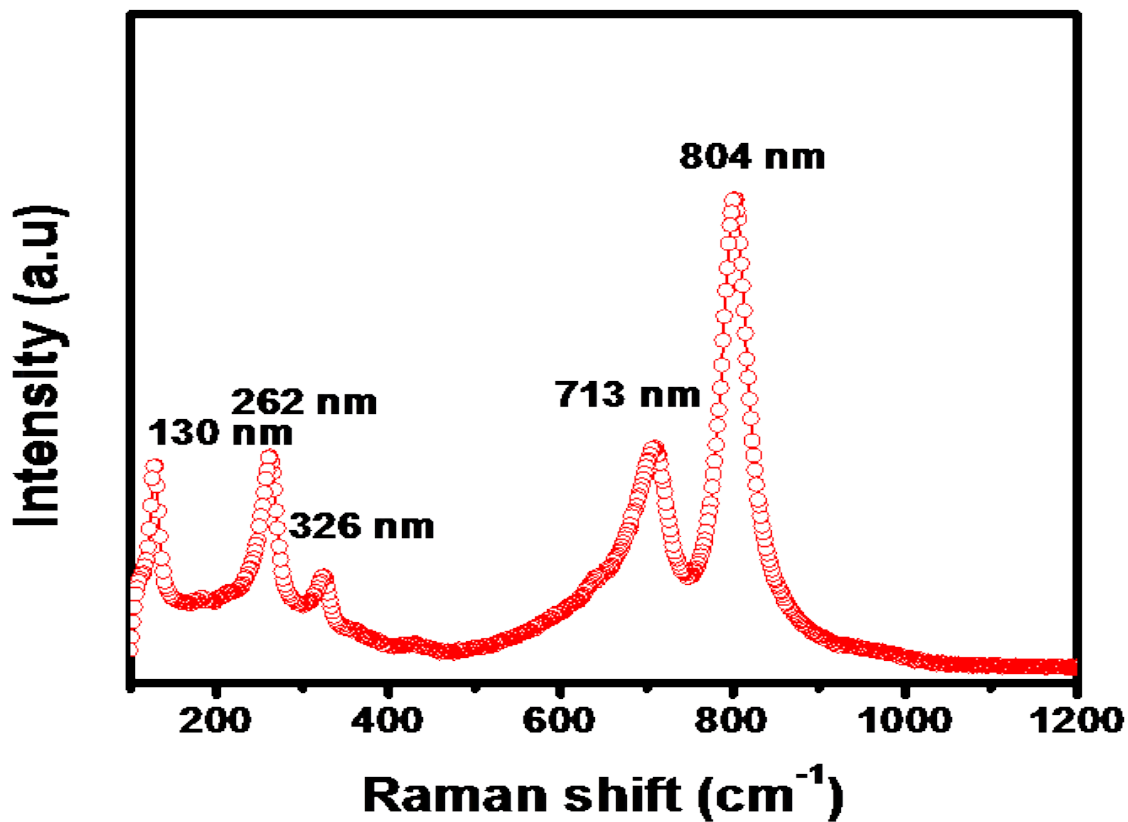
**Figure S3.** XRD pattern of the synthesized of the micro-wheels made of self-assembled tungsten oxide nanorods



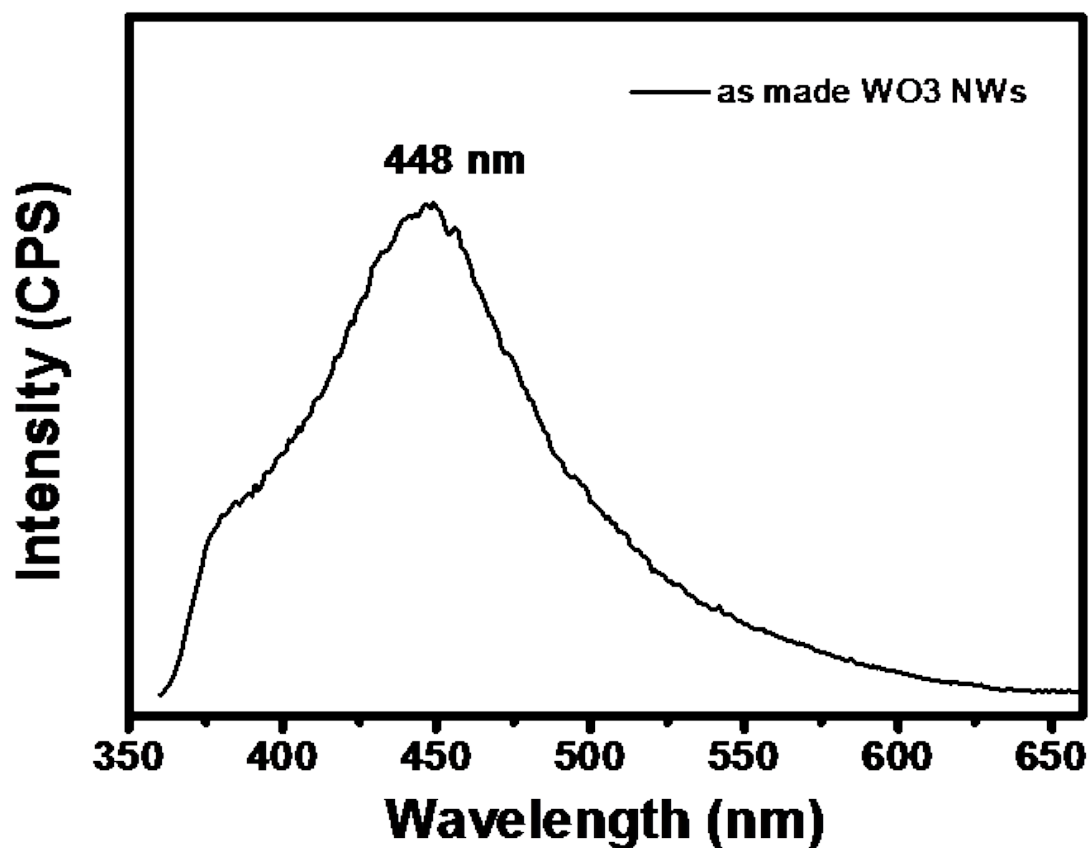
**Figure S4.** EDS analysis of the fabricated tungsten oxide: composition estimated from the EDS confirmed the  $\text{WO}_{2.9}$



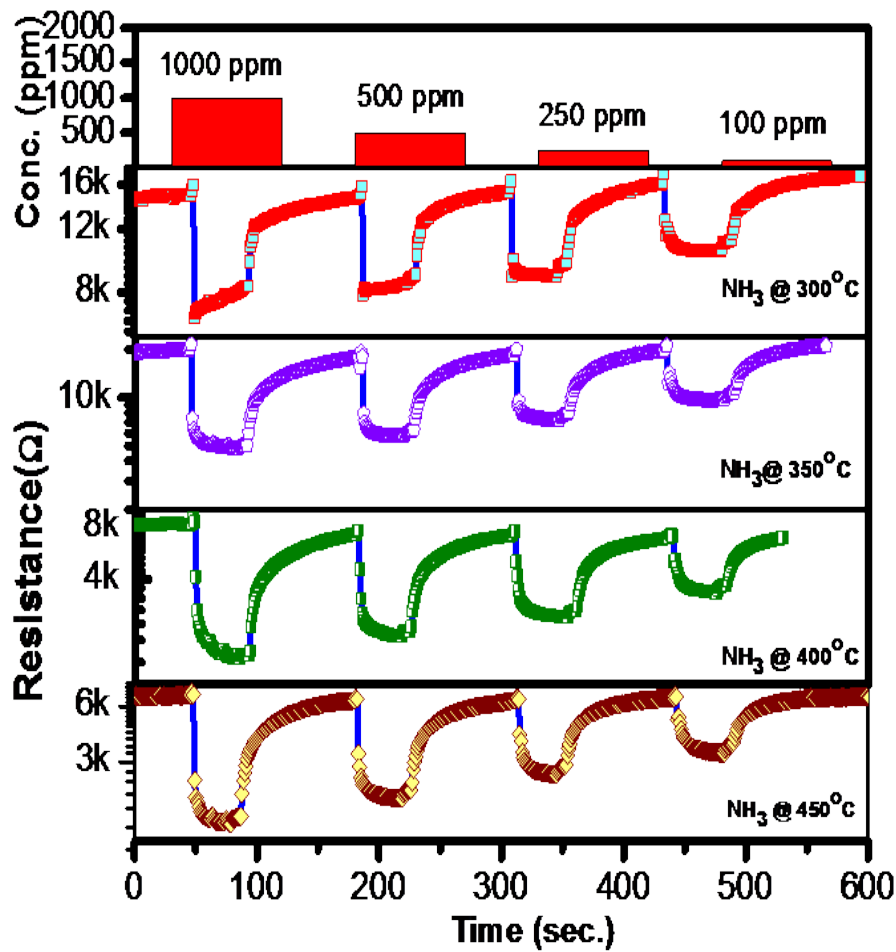
**Figure S5.** Raman spectra of the synthesized of the micro-wheels made of self-assembled tungsten oxide nanorods



**Figure S6.** Photoluminescence (PL) spectrum of synthesized micro-wheels made of self-assembled tungsten oxide nanorods

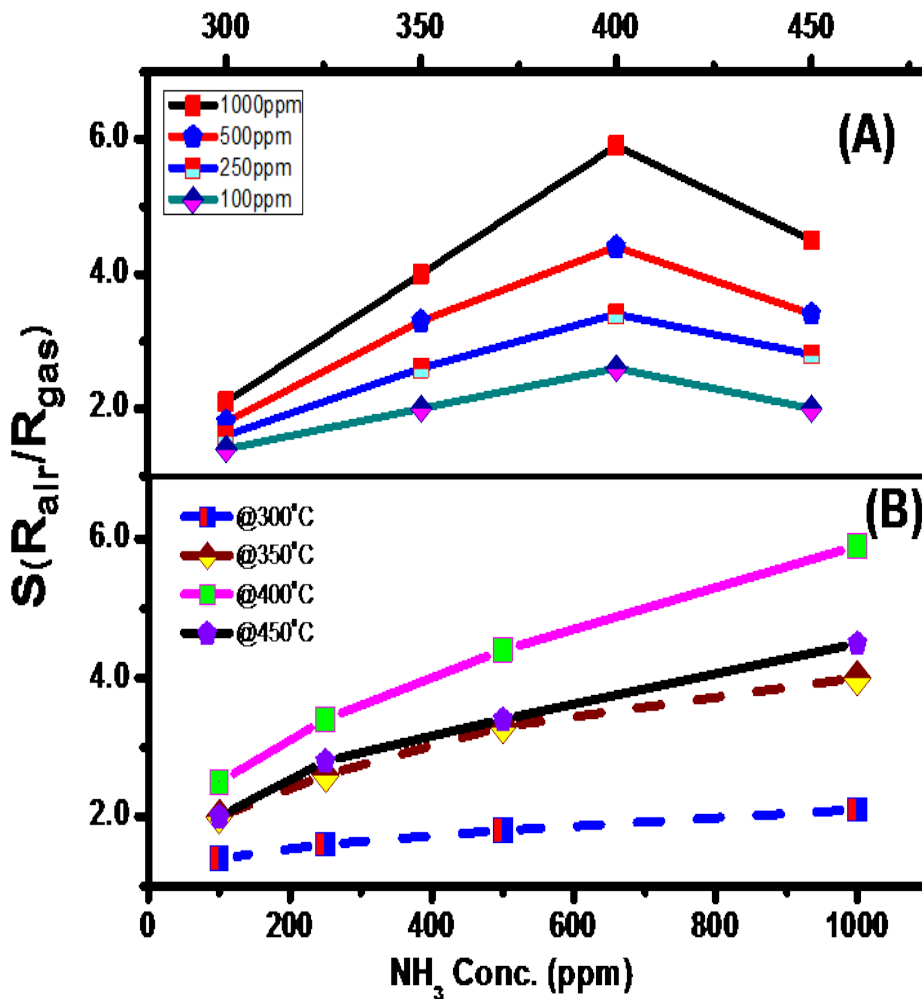


**Figure S7. :** Transient resistance vs. time of the nanosensor upon exposure to different concentration of  $\text{NH}_3$  measured at different temperatures

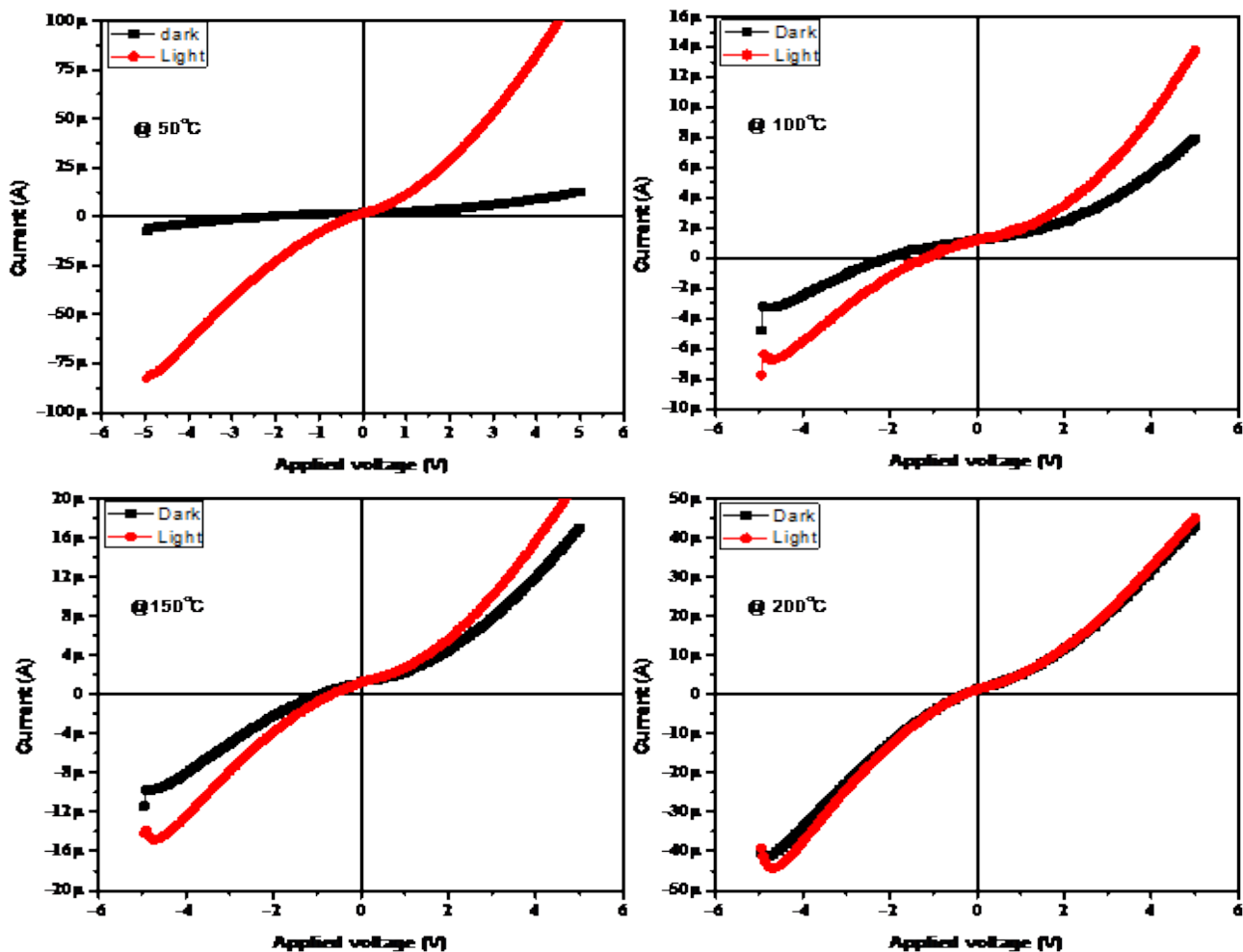




**Figure S8.** : (A) sensor response as a function of temperatures; (B) sensor response as a function of NH<sub>3</sub> measured at different temperatures



**Figure S9.** Light response of the sensor measured at different temperatures



**Figure S10.** Transient resistance vs. time of the sensor measured at 150°C

