Supporting information

An AuNPs-functionalized AlGaN/GaN high electron mobility transistor sensor for ultrasensitive detection of TNT

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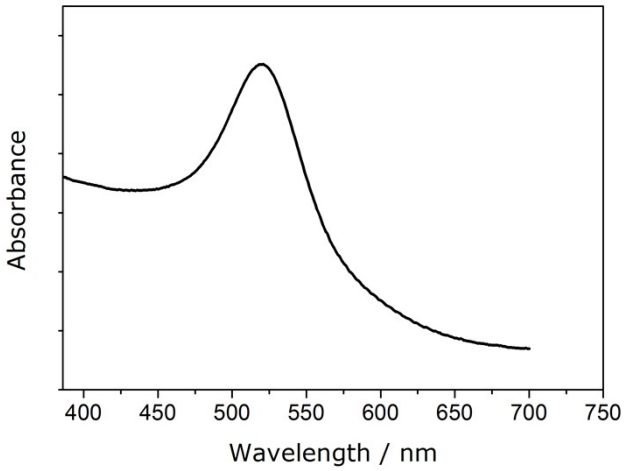

Fig. S1. UV-vis absorption spectrum of the synthesized AuNPs with maximum absorbance at 520 nm for a diameter of 15 nm[1].

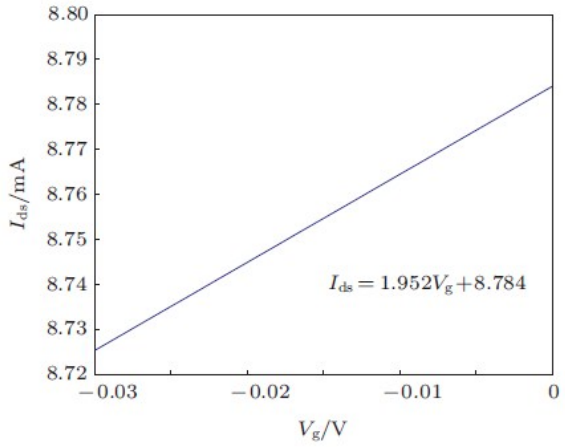

Fig. S2. The relationship between gate voltage (V) and source-drain current (mA).

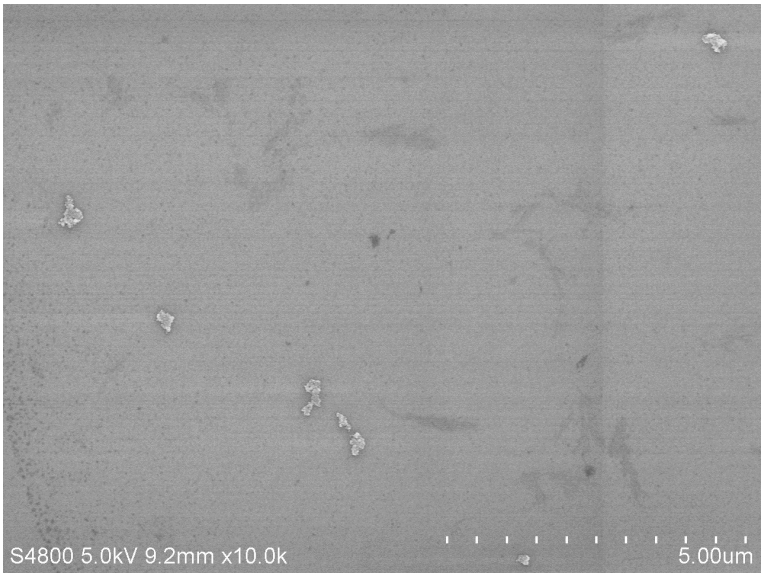

Fig. S3. SEM image of the AlGaN/GaN HEMT sensor surface after modifying AuNPs without the functionalization of MPTES.

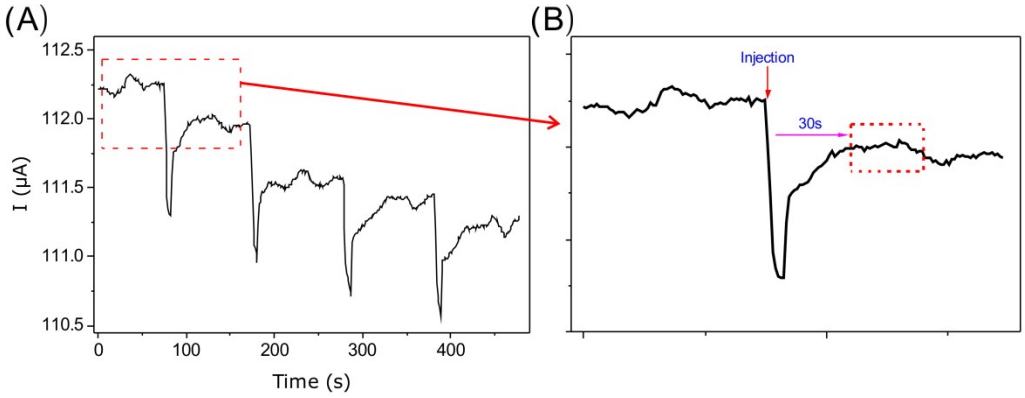

Fig. S4. (A) Real-time response of the AlGaN/GaN HEMT sensor to increasing concentrations of TNT (10 ppt, 100 ppt, 1 ppb, 10 ppb). (B) Magnified I_{ds}-versus-time of the sensor following addition of 10 ppt TNT solution. The signal intensity was collected as the average value of I_{ds} from 30~60s after injecting TNT.

References:

1. W. Haiss, N. T. K. Thanh, J. Aveyard and D. G. Fernig, *Anal. Chem.*, 2007, **79**, 4215-4221.