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Paper

Electronic Supplementary Information for:

Hydrogen gas sensor based on metal oxide nanoparticles decorated graphene transistor

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ESI 1.

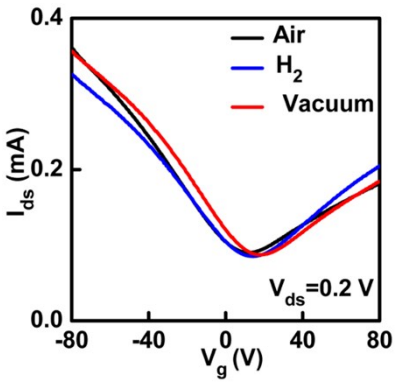

Fig. S1. Representative graphene transistor with no obvious sensitivity to different external environments, especially to the hydrogen gas.

ESI 2.

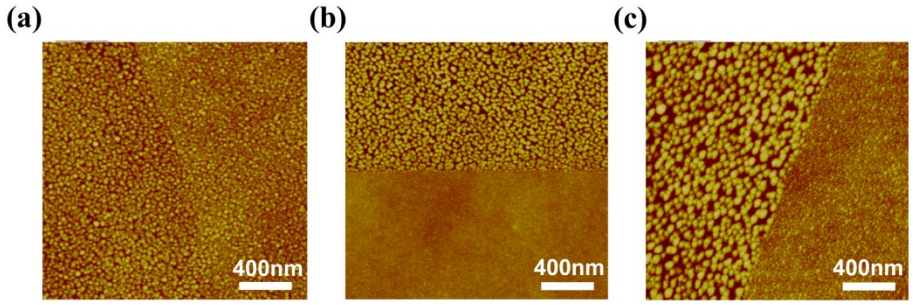

Fig. S2. The 2×2 um AFM characterization after the metal oxide deposition. (a) SnO_2 NPs. (b) CuO NPs. (c) ZnO NPs. The scale bar is 400 nm.

ESI 3.

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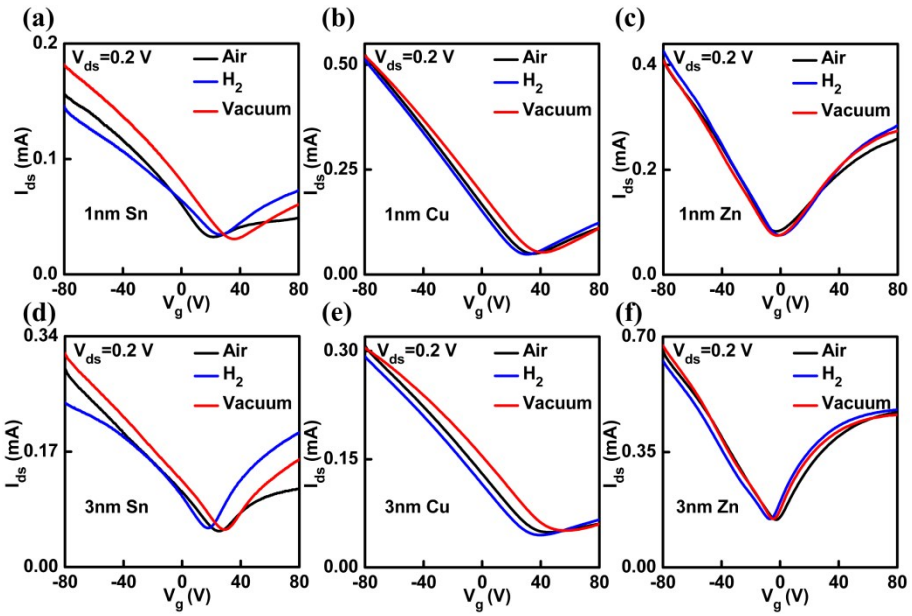

Fig. S3. The sensitivity of graphene FETs decorated with different thickness metal oxide NPs. (a) (d) SnO_2. (b) (e) CuO. (c) (f) ZnO.

ESI 4.

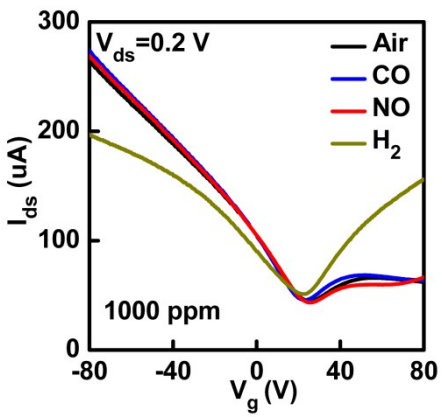

Fig. S4. The selectivity of graphene FET decorated with SnO_2 NPs in different atmosphere conditions: Air, CO, NO, H_2. The gas concentration is all 1000 ppm.

ESI 5.

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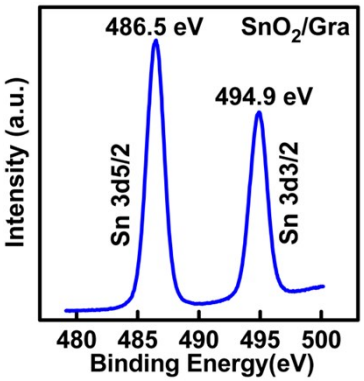

Fig. S5 XPS characterization of the sample after the Sn deposition followed by annealing.

ESI 6.

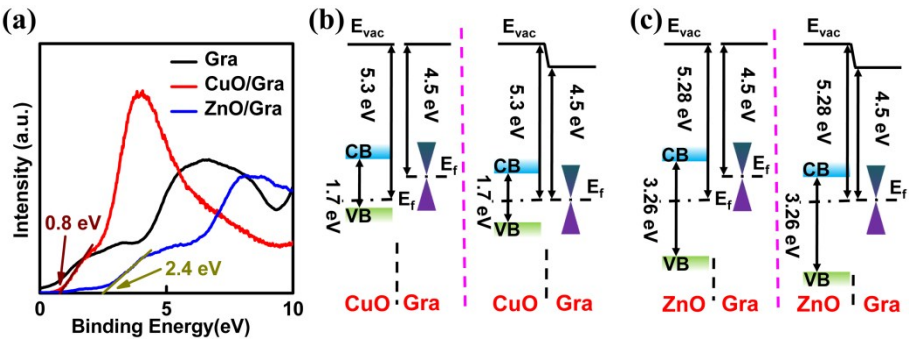

Fig. S6. (a) Valence band spectra of the sample after the Cu and Zn deposition followed by annealing. (b-c) Band diagrams of CuO/Gra and ZnO/Gra interfaces before and after the NPs deposition.