Supporting Information

For

Effect of heterointerface on NO_2 sensing properties of in-situ formed TiO_2 QDs-decorated NiO nanosheets

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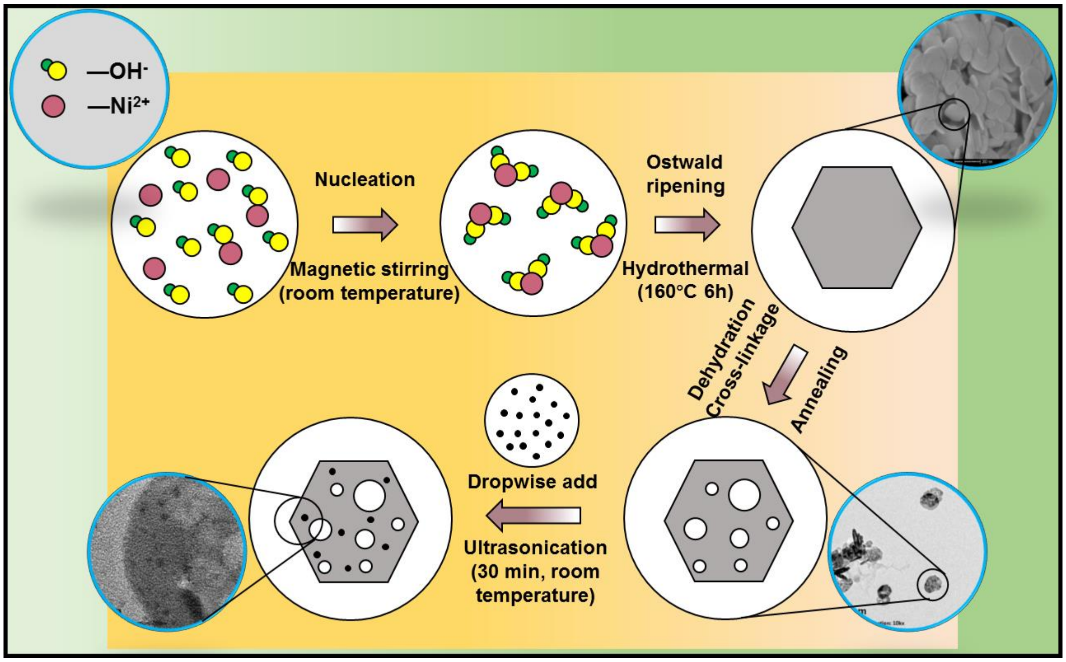

Fig. S1. Schematic illustration of the synthesis procedure of the TiO_2-NiO nanocomposites.

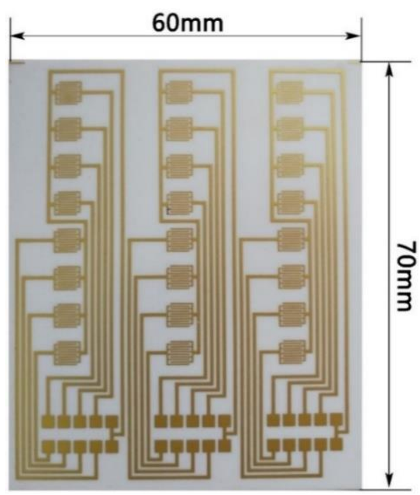

Fig. S2. The schematic diagram of sensor substrate.

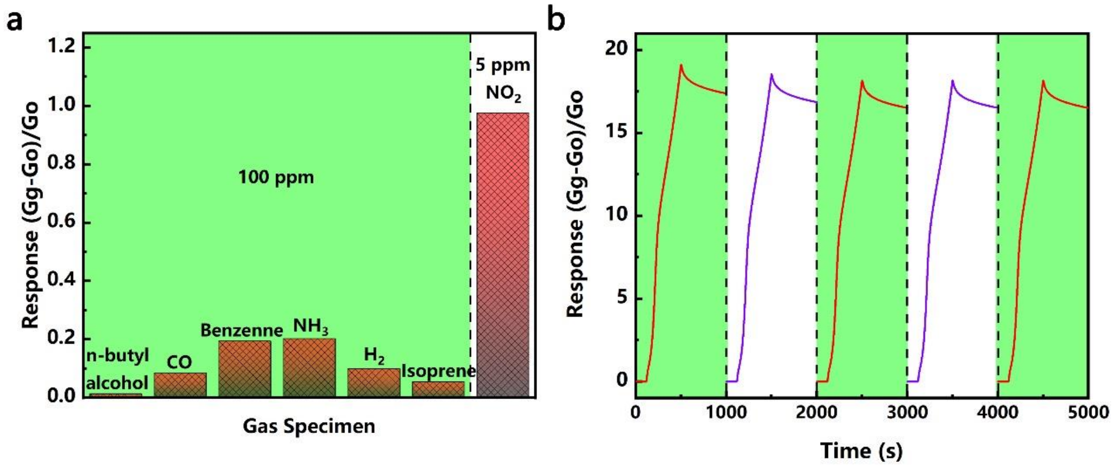

Fig. S3. (a) The responses of the 5TiO_2QDs-NiO towards various gases (5 ppm for NO_2, 100 ppm for the rest). (b)The repeatability of the 5TiO_2QDs-NiO towards 60 ppm NO_2.

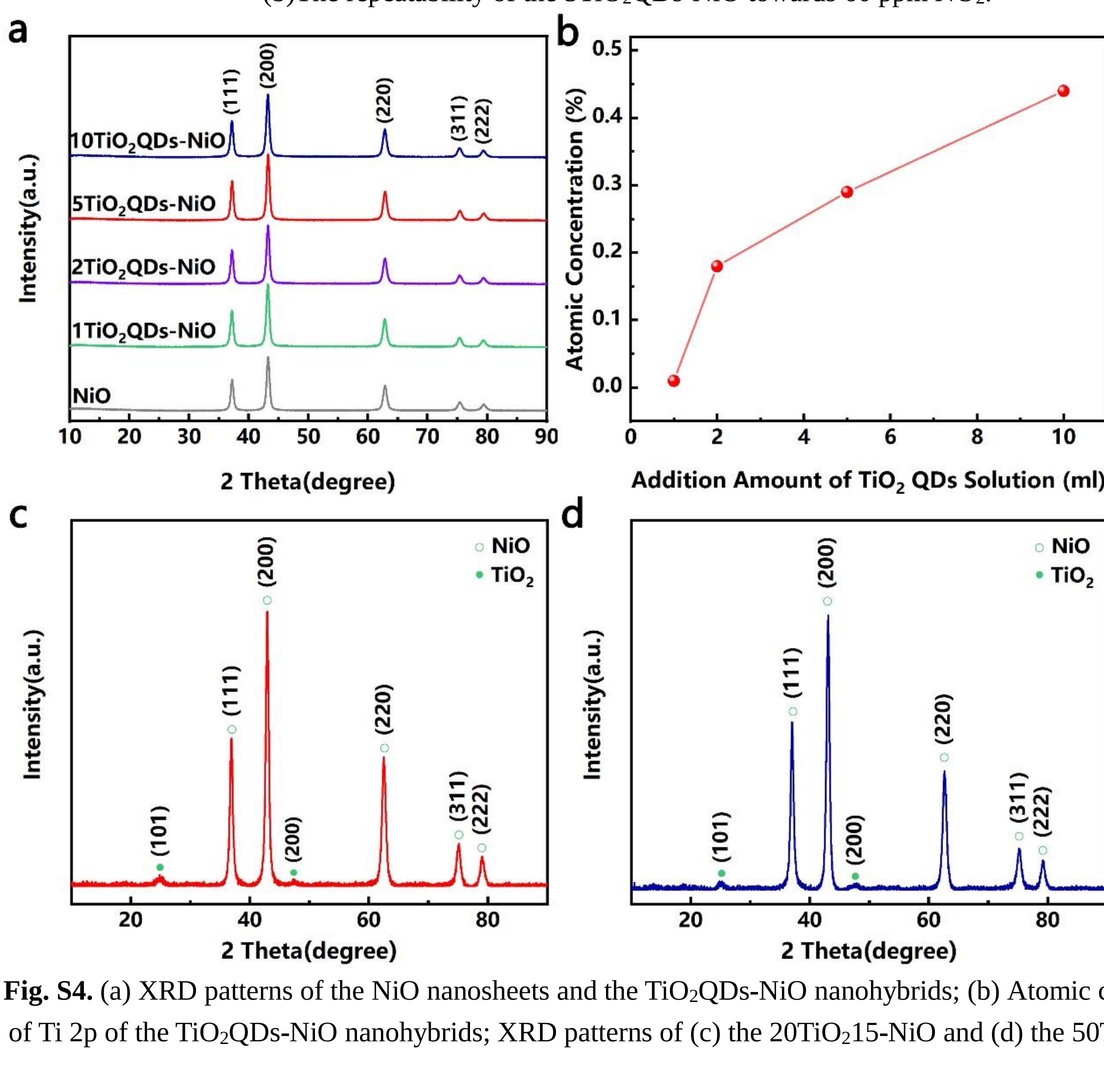

Fig. S4. (a) XRD patterns of the NiO nanosheets and the TiO_2QDs-NiO nanohybrids; (b) Atomic concentration of Ti 2p of the TiO_2QDs-NiO nanohybrids; XRD patterns of (c) the 20$TiO_2$15-NiO and (d) the 50$TiO_2$30-NiO.

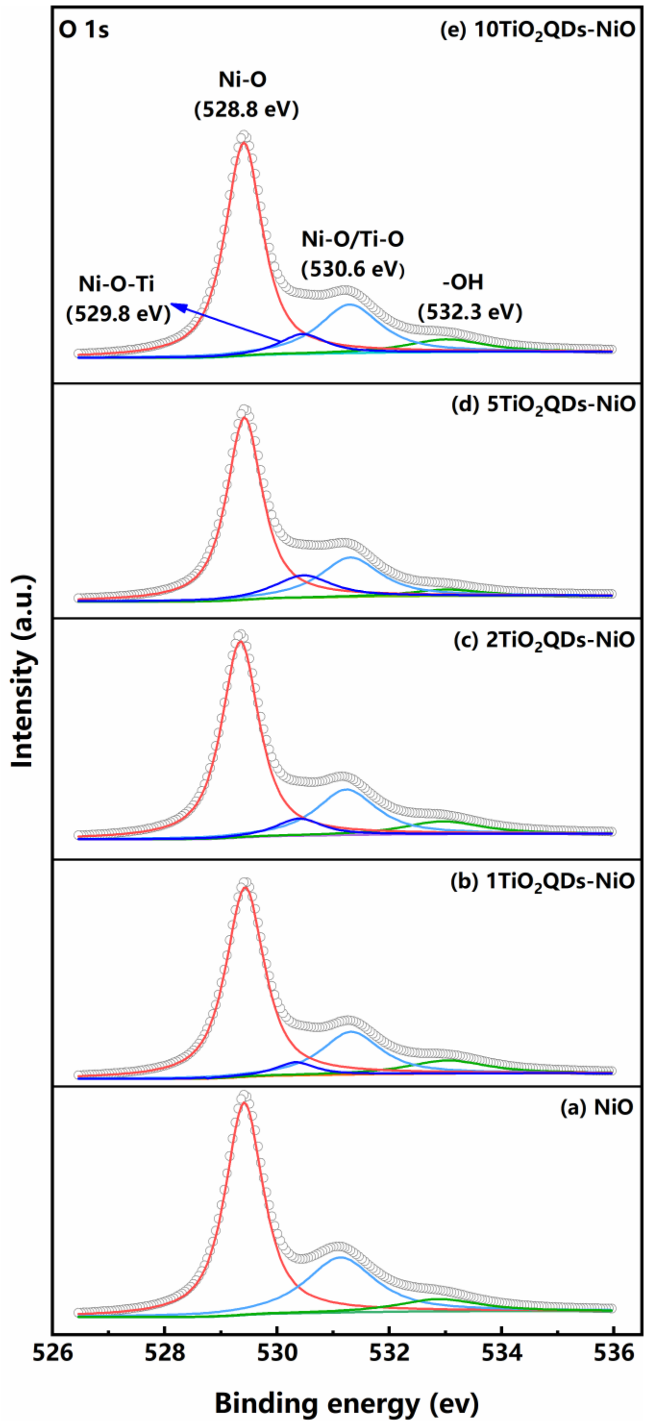

Fig. S5. O 1s spectra of (a) the bare mesoporous NiO, (b) $1TiO_2$QDs-NiO, (c) 2 TiO_2QDs-NiO, (d) 5 TiO_2QDs-NiO, (e) 10 TiO_2QDs-NiO from XPS.

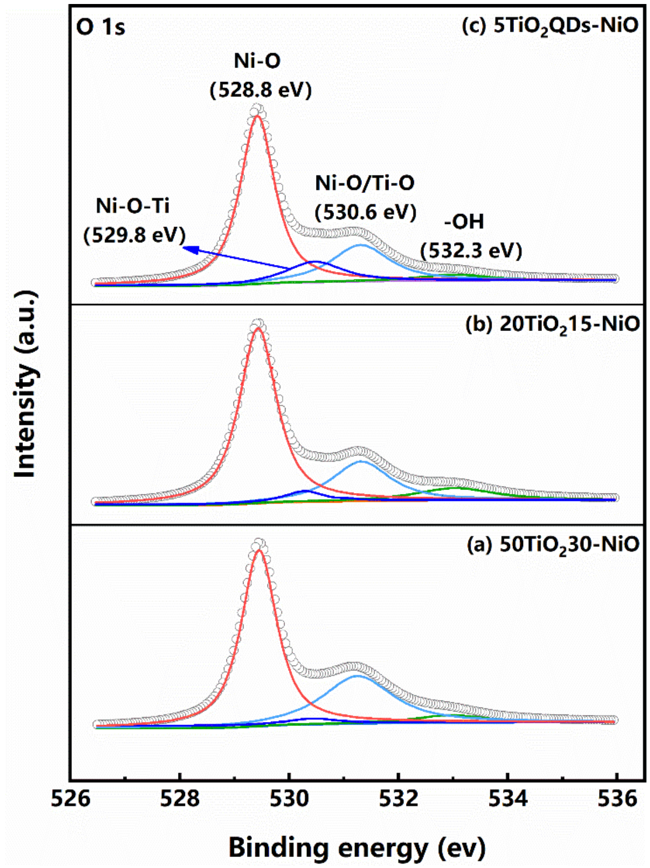

Fig. S6. O 1s spectra of (a) 50$TiO_2$30-NiO, (b) 20$TiO_2$15-NiO, (c) 5 TiO_2QDs-NiO from XPS.

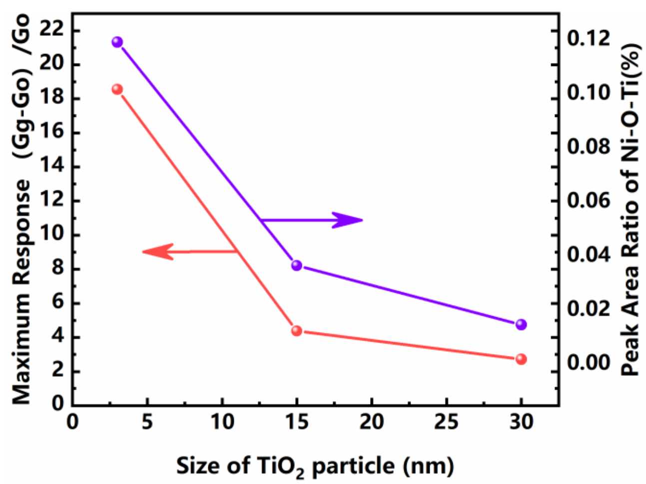

Fig. S7. With the increase of TiO_2 nanoparticle size, comparison between the variation of the maximum responses to 60 ppm NO_2 and the variation of the peak area ratio of Ni-O-Ti.

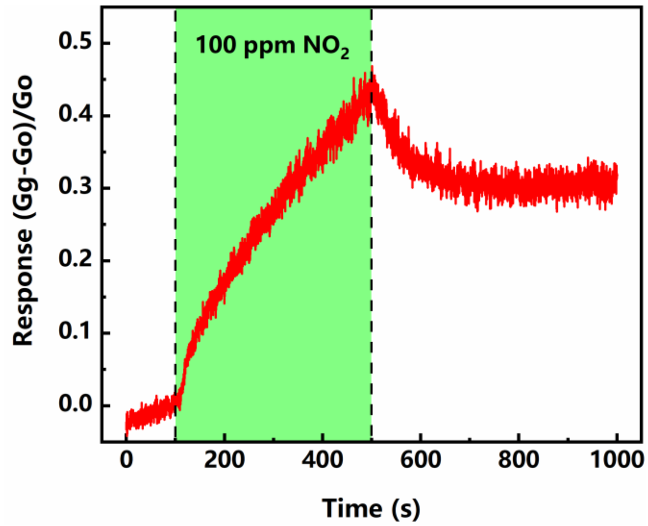

Fig. S8. Dynamic sensitivity-recovery curves of TiO_2 QDs to 100ppm NO_2.

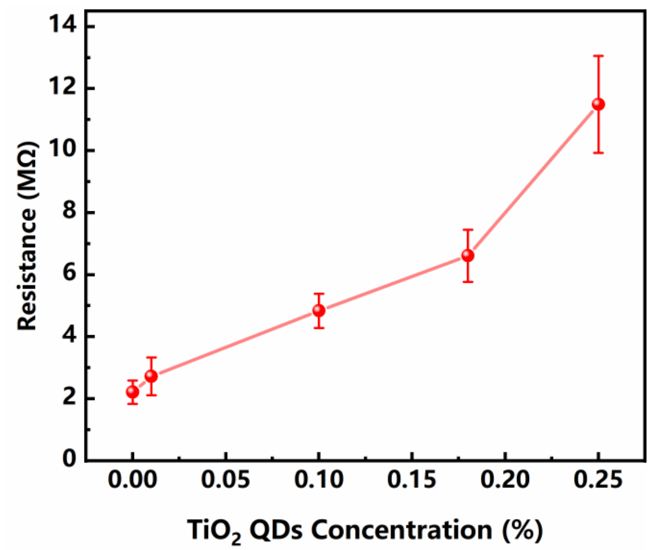

Fig. S9. The Resistance of the nanohybrids with different addition quantity of TiO_2 QDs.