Supporting Information

Synthesis of In_2O_3 nanoparticle/TiO_2 nanobelt heterostructures for near room temperature ethanol sensing

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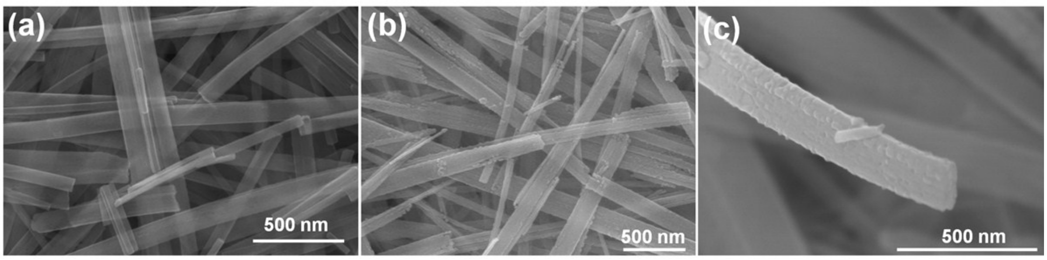

Figure S1. SEM image of (a) TiO_2 nanobelts and (b, c) surface-coarsened TiO_2 nanobelts.

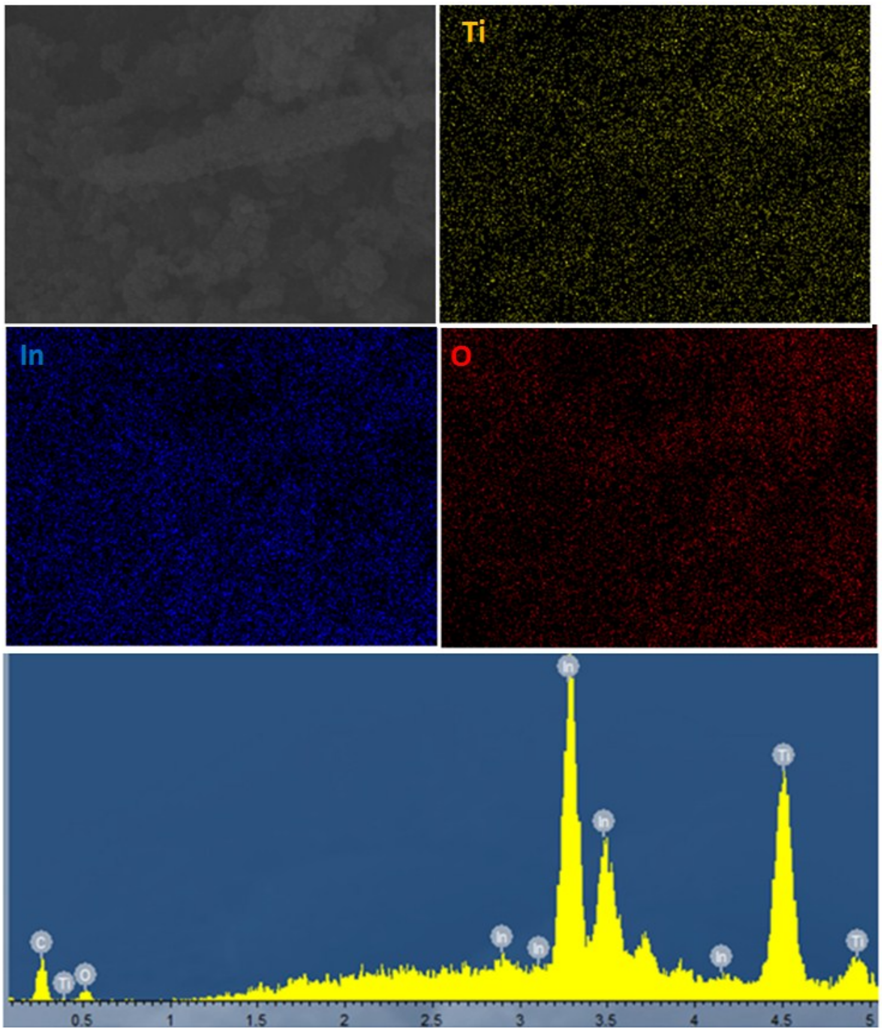

Figure S2. Elemental energy-dispersive X-ray spectroscopy (EDS) mapping of the obtained In_2O_3 nanoparticle/TiO_2 nanobelt heterostructures (mole ratio 1:1).

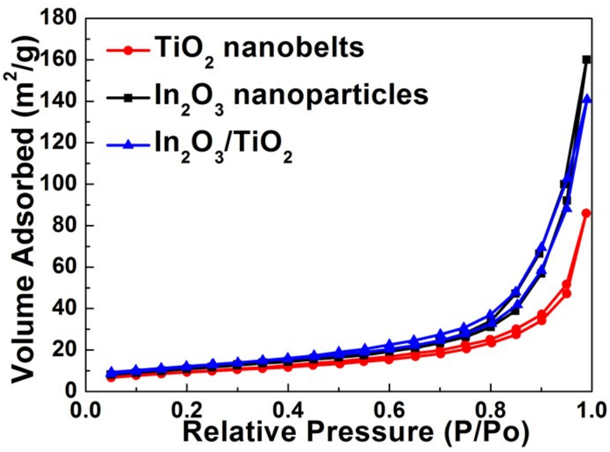

Figure S3. Nitrogen adsorption-desorption isotherms of TiO_2 nanobelts, In_2O_3 nanoparticles and In_2O_3 nanoparticle/TiO_2 nanobelt heterostructures (mole ratio 1:1).

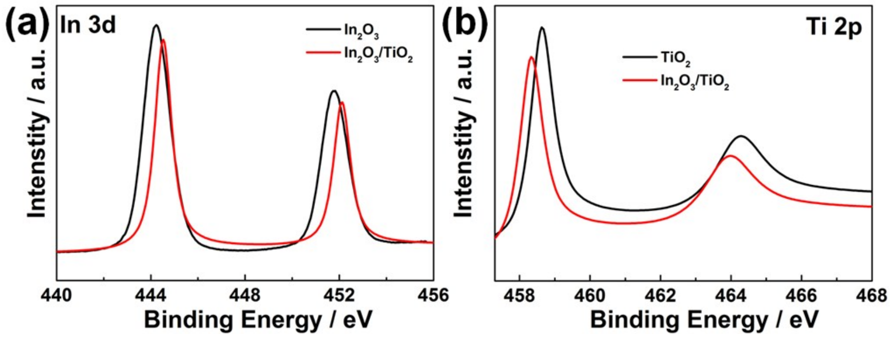

Figure S4. (a) In3d and (b) Ti2p core-level XPS spectra of the samples.

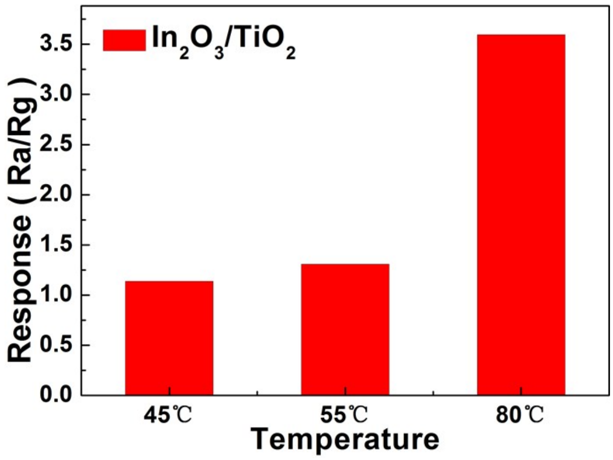

Figure S5. Response of ethanol vapor sensors based on In_2O_3 nanoparticle/TiO_2 nanobelt heterostructures (mole ratio 1:1) upon exposure to 100 ppm of ethanol vapor at low operating temperature (45 ^oC, 55 ^oC and 80 ^oC).

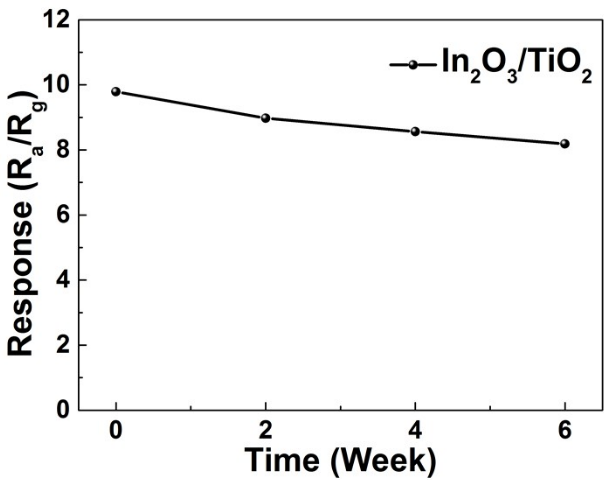

Figure S6. The sensing stability of the In_2O_3 nanoparticle/TiO_2 nanobelt heterostructures (mole ratio 1:1) sensor to 100 ppm ethanol with respect to a low temperature of 100 °C.

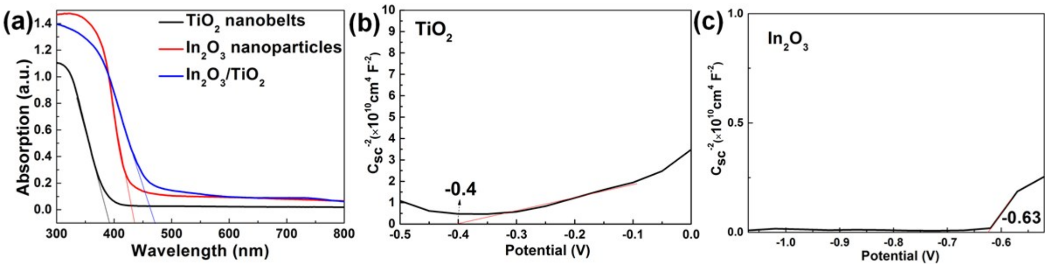

Figure S7. (a) UV–vis diffuse reflectance spectra of TiO_2 nanobelts, In_2O_3 nanoparticles and In_2O_3 nanoparticle/TiO_2 nanobelt heterostructures. Mott-Schottky plots of (b) TiO_2 nanobelts and (c) In_2O_3 nanoparticles collected at a frequency of 1000 Hz in dark.

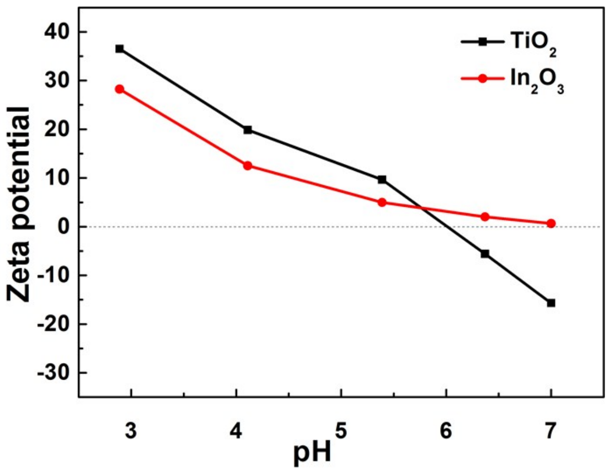

Figure S8. Zeta potentials of TiO_2 nanobelts and In_2O_3 nanoparticles in aqueous solution at different pH values.