Supporting Information

Porous SnO_2 Hierarchical Nanosheets: Hydrothermal Preparation, Growth Mechanism, and Gas Sensing Properties

Peng Sun, Wan Zhao, Yang Cao, Yue Guan, Yanfeng Sun, and Geyu Lu

College of Electronic Science and Engineering, Jilin University, Changchun 130012, People's Republic of China

Corresponding author. Tel: + 86 431 85167808; fax: + 86 431 85167808;

E-mail address: lugy@jlu.edu.cn, syf@jlu.edu.cn

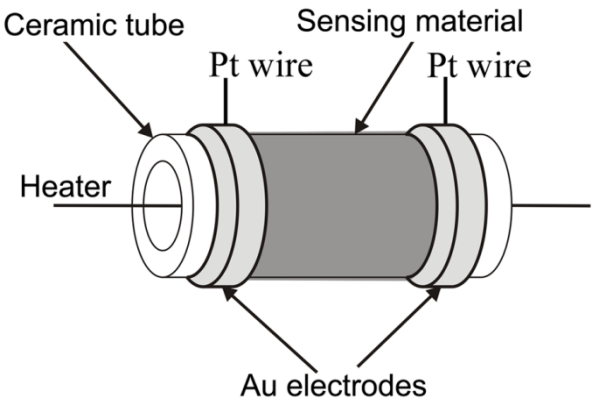

Figure S1 The schematic structure of the gas sensor

Synthesis SnO_2 nanoparticles

SnO_2 nanoparticles were synthesized using a hydrothermal route. In a typical process, $SnCl_4 \cdot 5H_2O$ (0.526 g) and hexadecyl trimethyl ammonium bromide (CTAB, 0.6 g) were added into 30 ml distilled water, Then 0.9 mL HCl was added into the mixture solution. The reaction mixture was transferred into a Teflon-lined stainless-steel autoclave and kept at 200 °C for 24 h. After the hydrothermal procedure, the autoclave cooled naturally down to room temperature. The precipitates were collected by centrifugation, washed several times with distilled water and absolute ethanol, respectively, dried in air at 80 °C for 12 h, and sintered at 600 °C for 2 h.

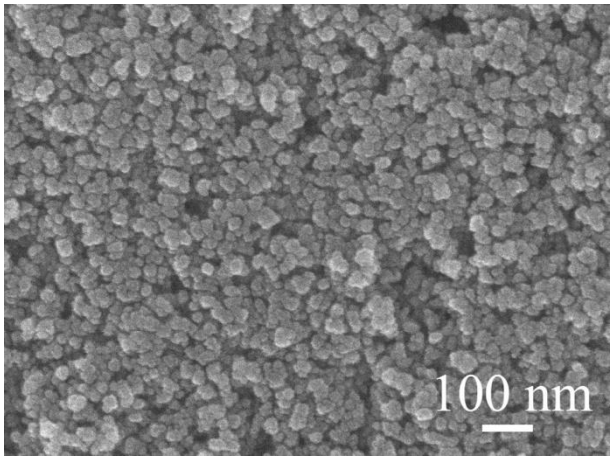

Figure S2 FESEM image of SnO_2 nanoparticles.

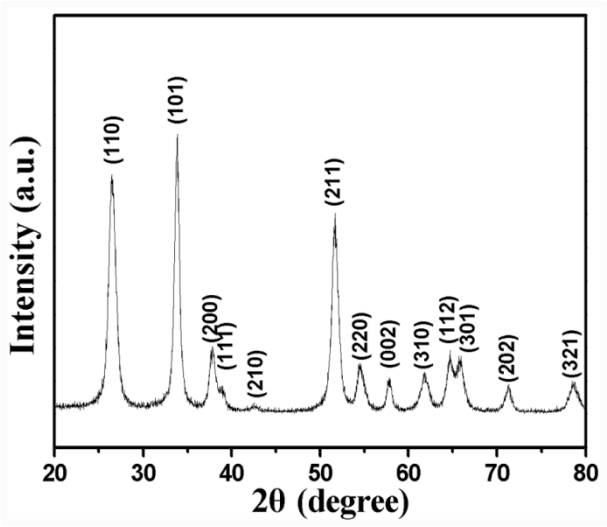

Figure S3 XRD pattern of the as-prepared SnO_2 nanoparticles.

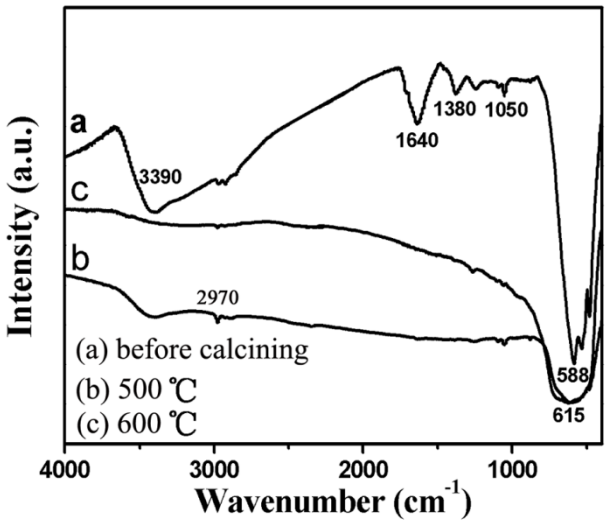

Figure S4 FT-IR spectra taken from KBr pellets that contain the samples (a) before calcining, (b) 500 °C, and (c) 600 °C. For all measurements, the dried samples are mixed with KBr powders and then compress into pellets.

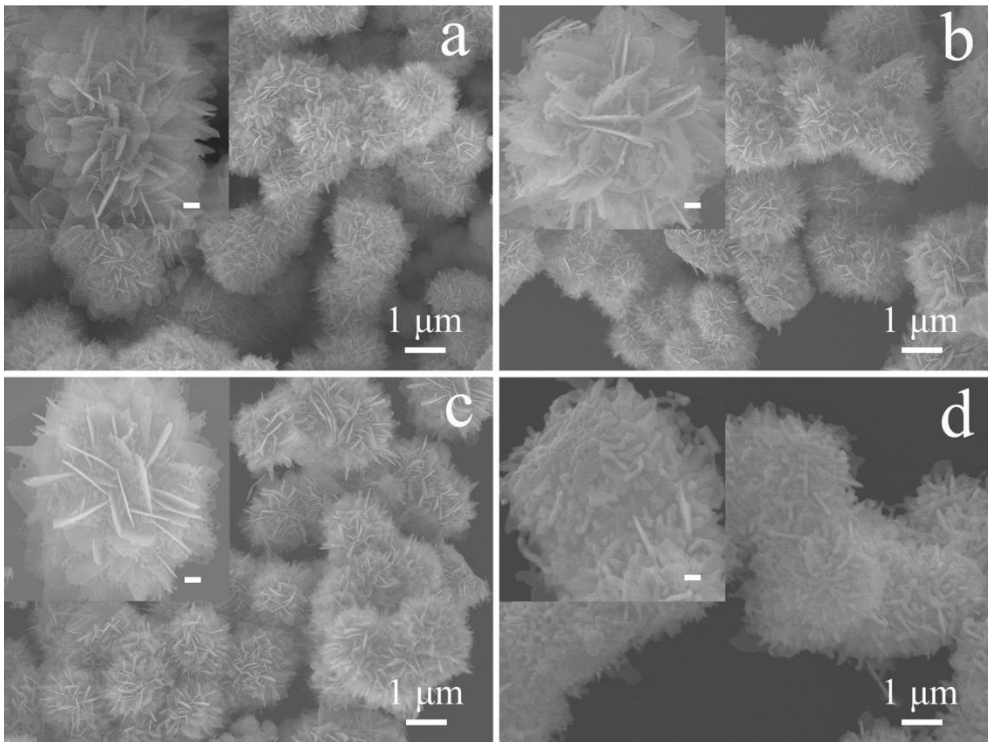

Figure S4 FESEM images of the SnO_2 nanostructures prepared after calcination in air at different temperatures: (a) as-synthesized nanosheets obtained by hydrothermal treatment, (b) after annealing at 500 °C, (c) 600 °C, and (d) 700 °C. The insets of a, b, c, and d show the enlarged images, and the scale bar is 100 nm.