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In-situ growth of SnO_2 nanosheets on the substrate via hydrothermal synthesis assisted by electrospinning and gas sensing properties of the SnO_2/polyaniline nanocomposites

Yang Li*, Huitao Ban, Mingfei Jiao, Mujie Yang
MOE Key Laboratory of Macromolecular Synthesis and Functionalization, Department of Polymer Science and Engineering, Cyrus Tang Center for sensor Materials and Applications, Zhejiang University, Hangzhou 310027, China

***Corresponding author.**
Address: Department of Polymer Science and Engineering, Zhejiang University, Hangzhou 310027 China
E-mail: liyang@zju.edu.cn (Yang Li).
Tel.:+86-571-87952444
Fax: +86-571-87952444

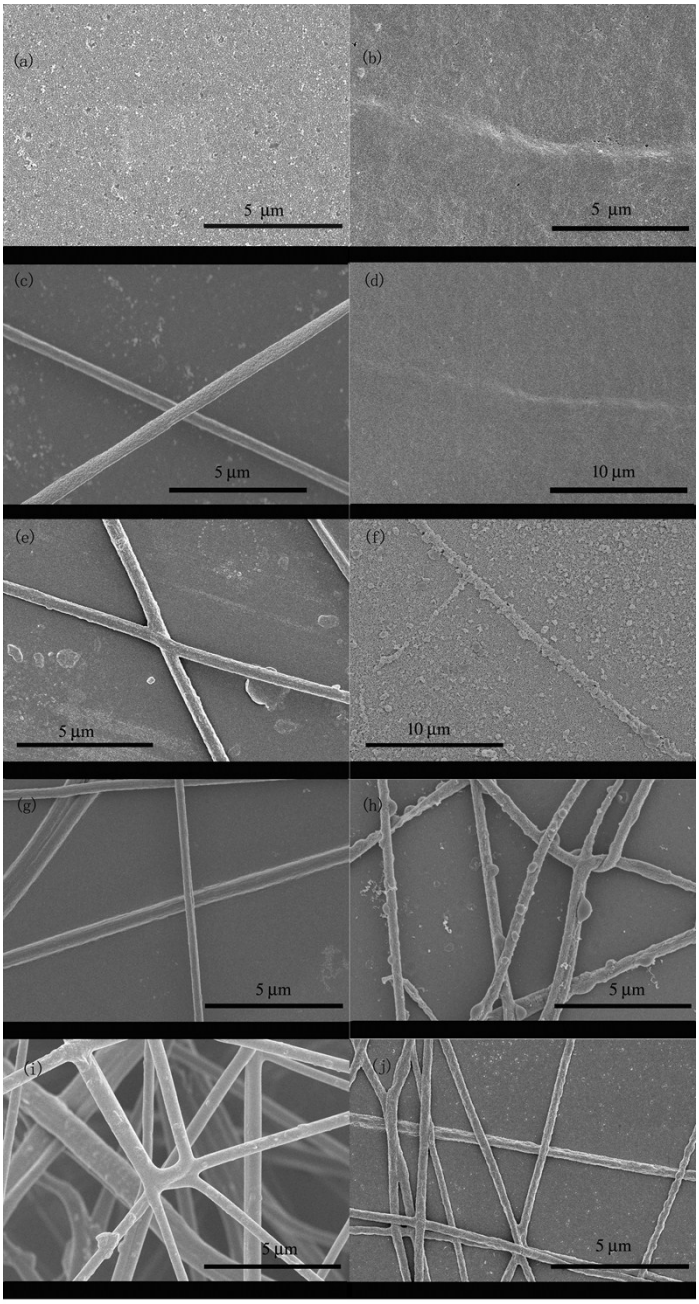

Fig. S1 SEM images of nanofibers obtained with different electrospinning parameters before/after hydrothermal treatment. (a) solvent: DMF, after hydrothermal treatment; (b) solvent: ethanol, after hydrothermal treatment; (c-d) collection distance: 10 cm, (c) before and (d) after hydrothermal treatment; (e-f) collection distance: 20 cm, (e) before and (f) after hydrothermal treatment; (g-h) flow rate: 0.1 mL/h, (g) before and (h) after hydrothermal treatment; (i-j) flow rate: 0.5 mL/h, (i) before and (j) after hydrothermal treatment.

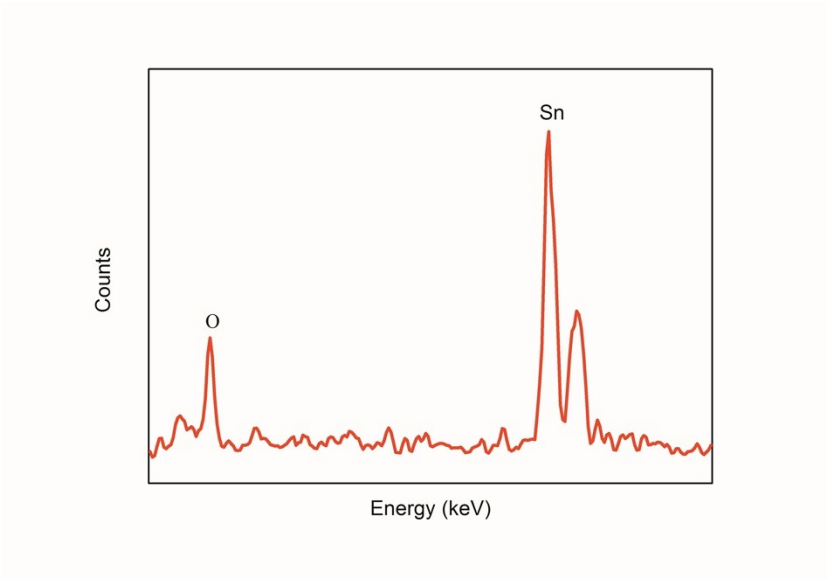

Fig. S2 EDAX pattern of as-prepared SnO_2 nanosheets.

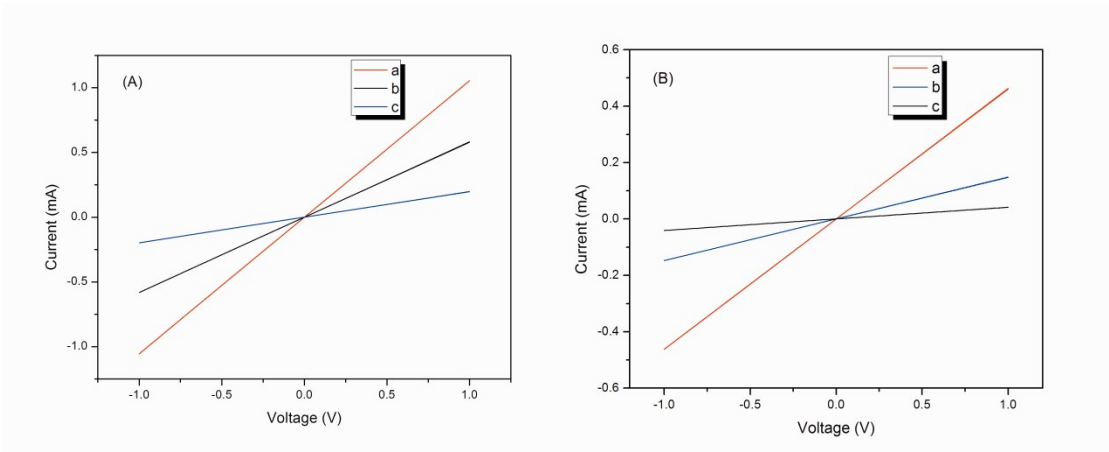

Fig. S3 I-V curves of the (A) SnO_2@PANI-1 and (B) SnO_2@PANI-2 in (a) air; (b) NH_3 of 1 ppm and (c) 5 ppm.

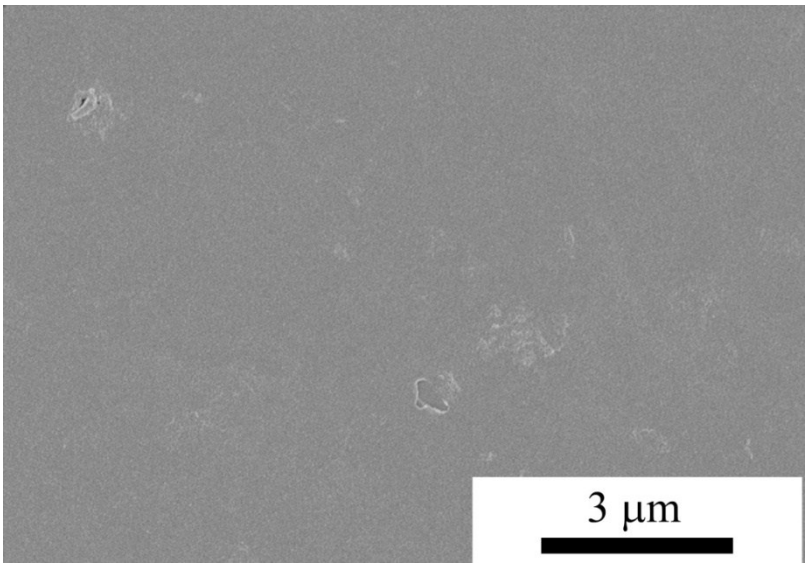

Fig. S4 SEM image of the film prepared by dip-coating of the electrospinning solution after the hydrothermal treatment at 135°C for 8 h.

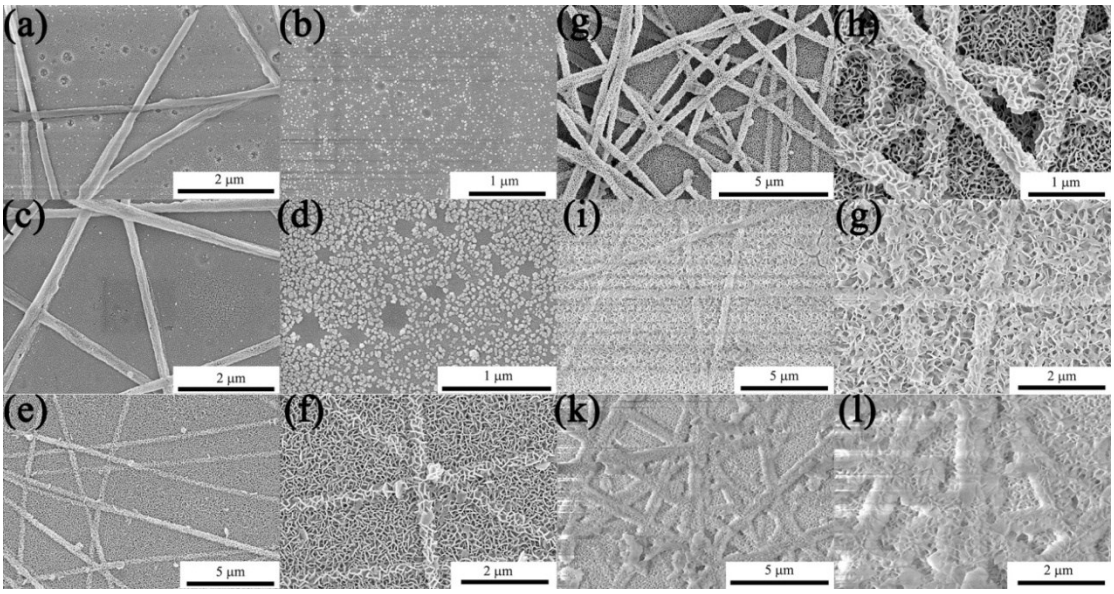

Fig. S5 SEM images of SnO_2 nanosheets fabricated via the hydrothermal treatment of the electrospun nanofibers at 135°C for different times: (a-b) 2 h; (c-d) 4 h; (e-f) 6 h; (g-h) 8 h; (i-g) 12 h; (k-l) 24 h.

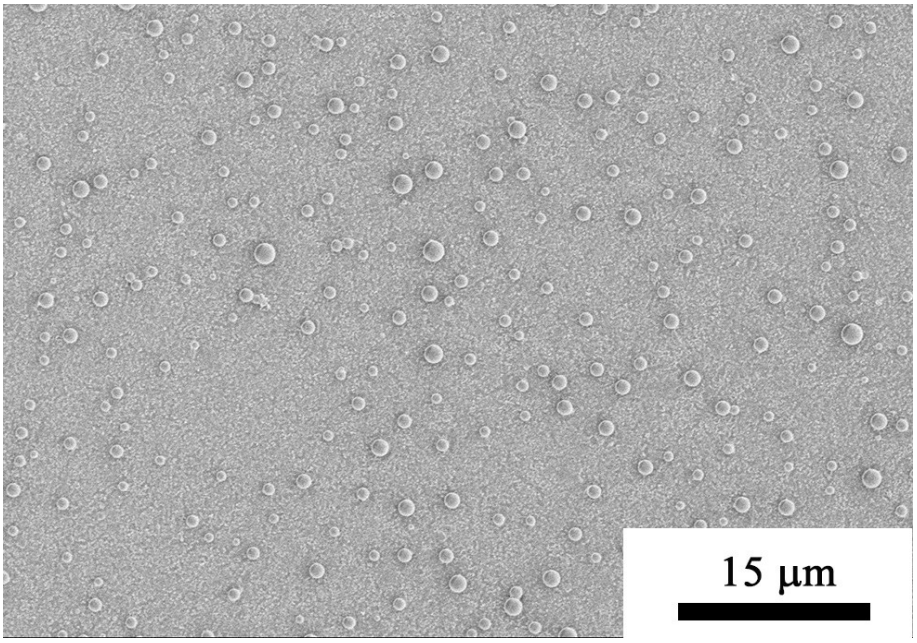

Fig. S6 SEM image of the PVB nanofibers after the hydrothermal treatment at 135°C for 8 h.

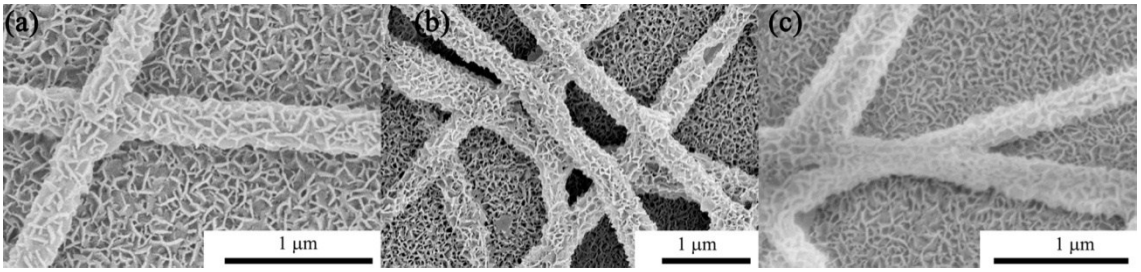

Fig. S7 SEM images of the SnO_2 nanosheets fabricated at different hydrothermal temperatures: (a) 120°C; (b) 150°C; (c) 180°C.

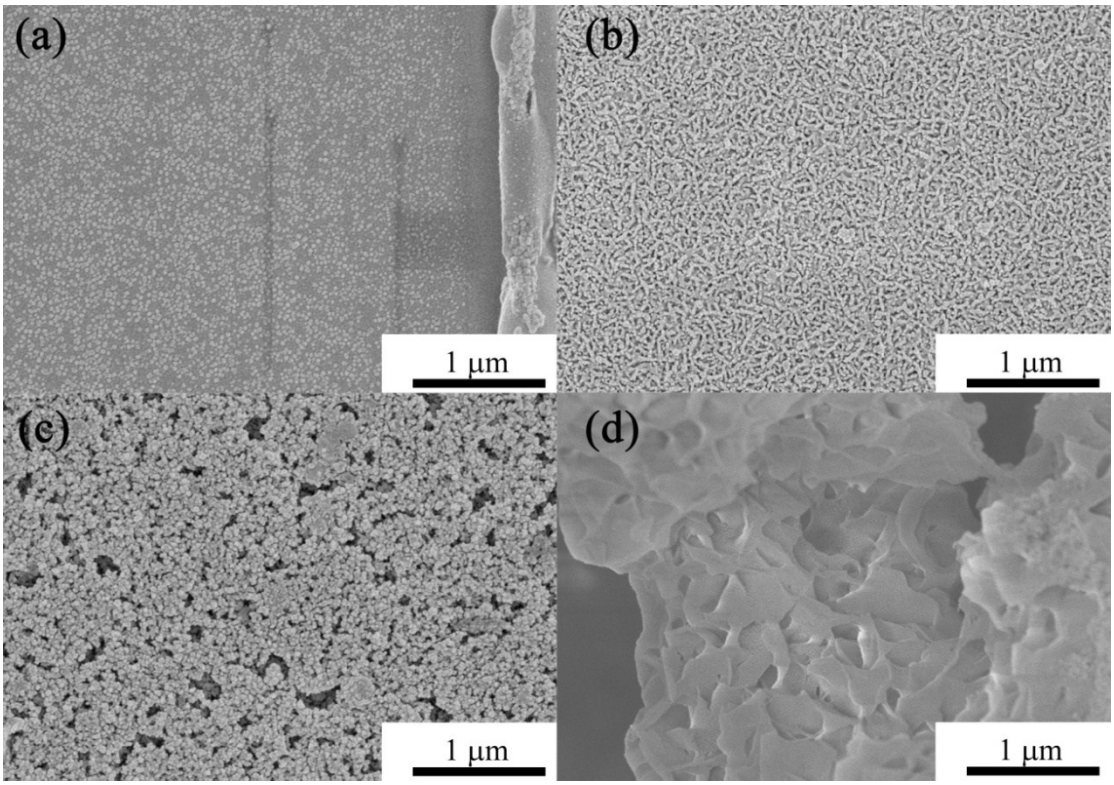

Fig. S8 SEM images of the electrospun nanofibers with different additive: (a) D-glucose; (b) H_2O_2 and NaOH; (c-d) $Na_3C_6H_5O_7$ after the hydrothermal treatment at (a-c) 135°C for 8 h and (d) 180°C for 12 h.

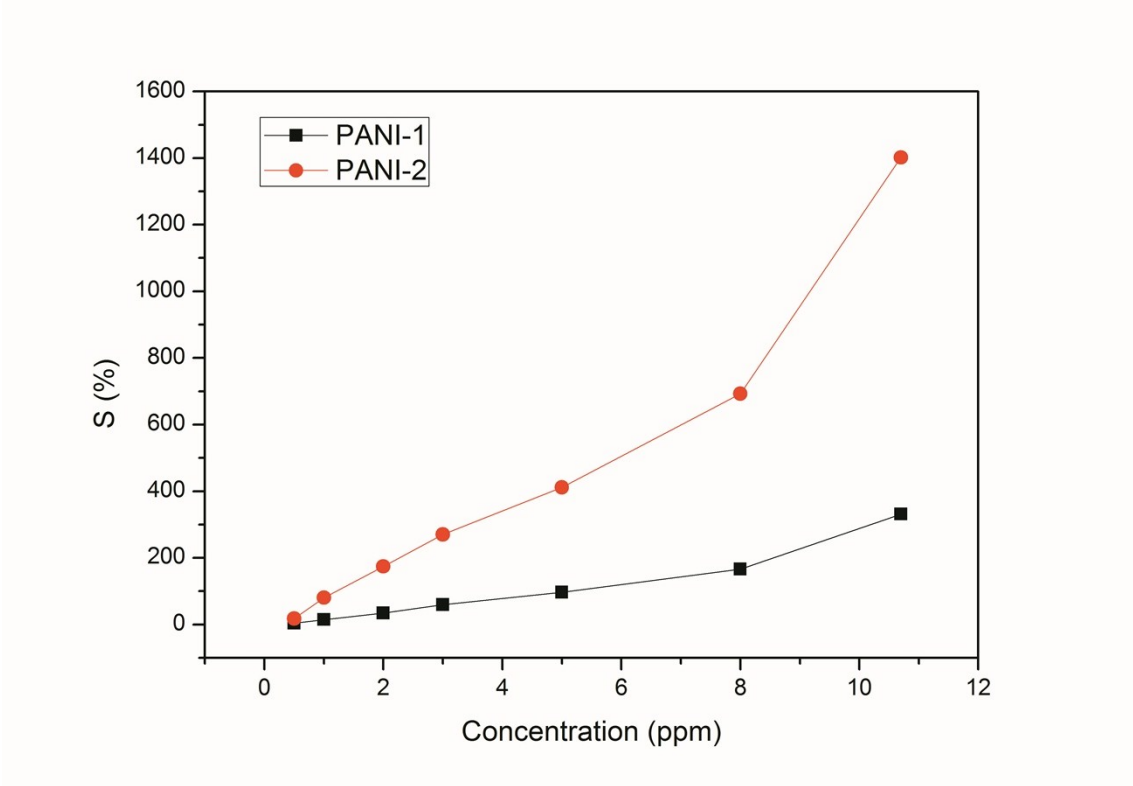

Fig. S9 Calibration curves of the PANI based sensors.

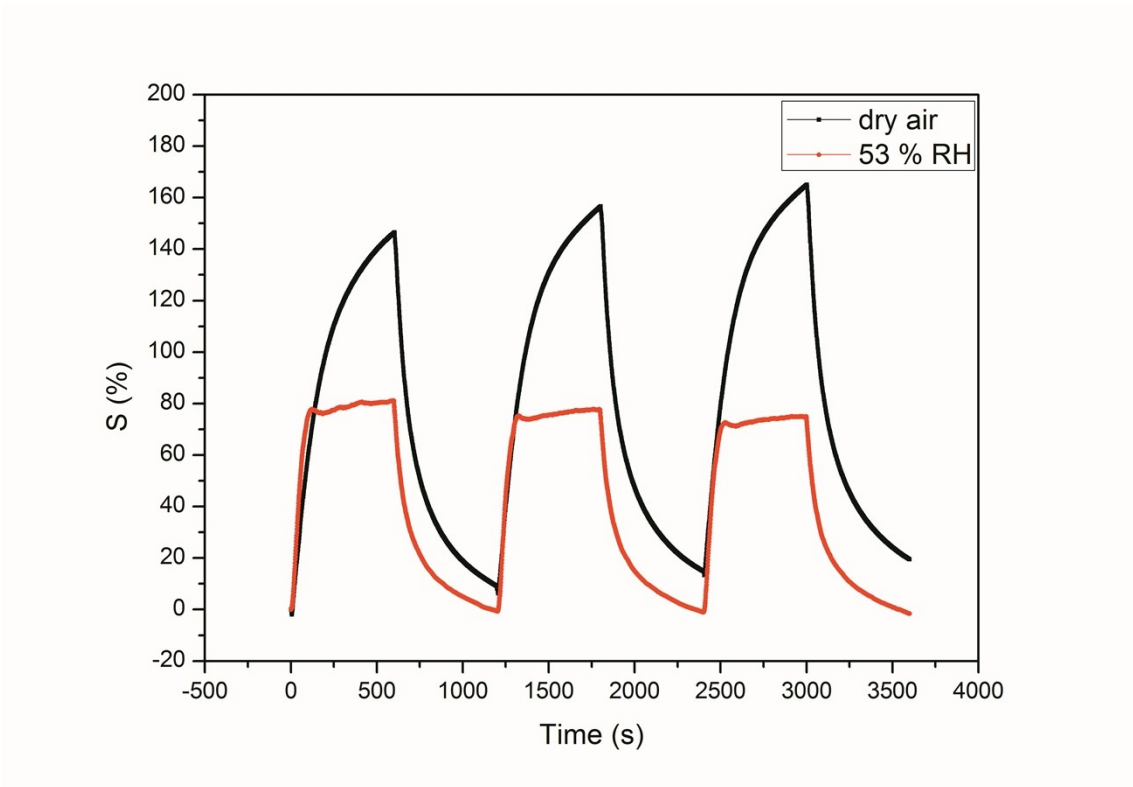

Fig. S10 Effect of humidity on the dynamic responses of SnO_2@PANI-2 towards 5 ppm of NH_3.