Superior gas-sensing and lithium-storage performances of SnO$_2$ nanocrystals synthesized by hydrothermal method

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Fig. S1 Size distribution of the as-synthesized SnO₂ nanocrystals.

Fig. S2 TEM image of the as-synthesized SnO₂ nanocrystals without using acetic acid.
**Fig. S3** TEM images of the SnO$_2$ nanocrystals in the presence of different amount of acetic acid: (a) 0.6 mL and (b) 6 mL.

**Fig. S4** Dynamic response–recovery curves of the sensors of SnO$_2$ with different sizes to different ethanol concentrations at 220 °C.
**Fig. S5** Sensor response to different ethanol concentrations at 220 °C.

**Fig. S6** Sensor response to different gases at 220 °C.
Fig. S7 The initial charge and discharge curve of the as-synthesized SnO$_2$ nanocrystals electrode.

Fig. S8 Coulombic efficiency vs. cycle number for the as-synthesized SnO$_2$ nanocrystals electrode.
Fig. S9 Variation of Li intercalation-deintercalation capacity vs. cycle number for the SnO₂ nanoparticles with size of 20-110 nm.