

# Photoelectric H<sub>2</sub>S Sensing based on Electrospun Hollow CuO-SnO<sub>2</sub> Nanotubes at Room Temperature

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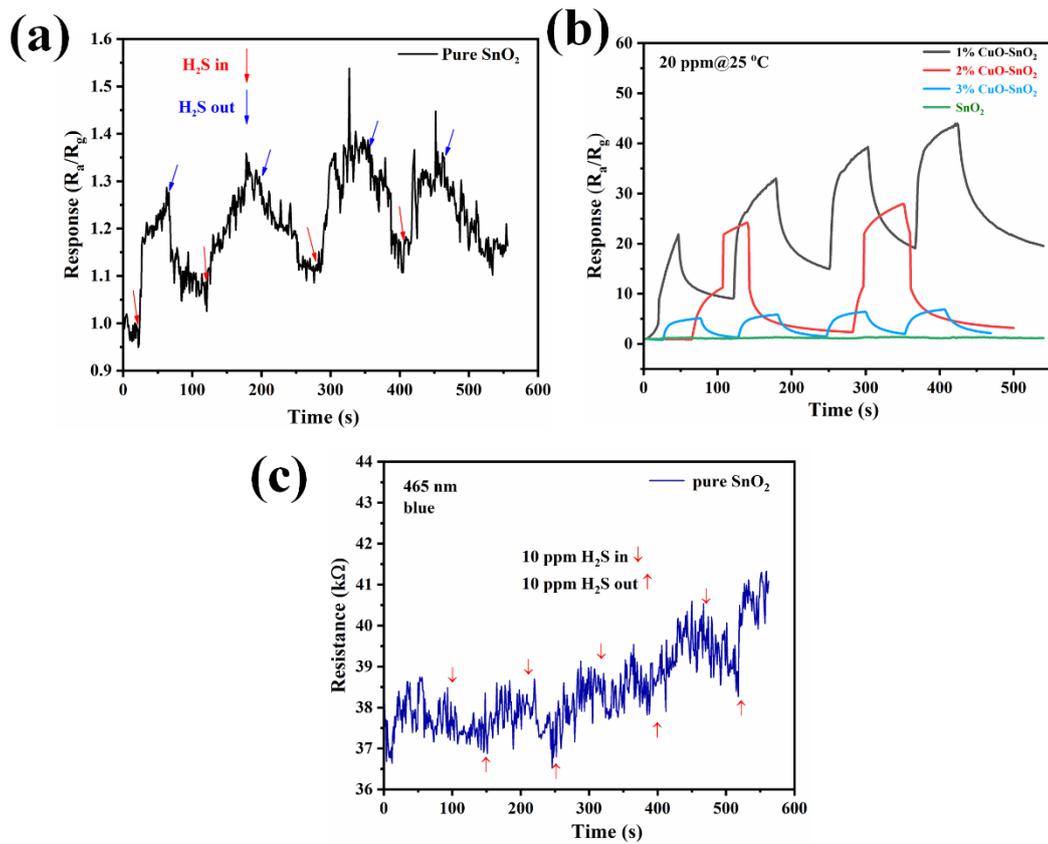
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## Test Procedures

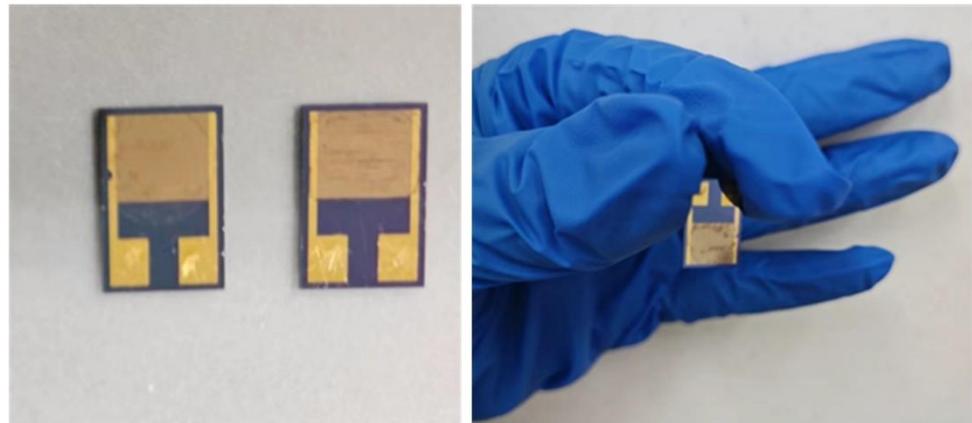
During the dynamic gas-sensing tests, the gas concentration of CO<sub>2</sub>, ethanol, ethylene, CO, SO<sub>2</sub> and H<sub>2</sub>S was calculated by  $(C_s F_s)/(F_s + F_c)$ , where  $C_s$  denoted the standard target gas concentration in the commercial certificated steel bottle while  $F_s$  and  $F_c$  respectively termed the flow rate of the standard target gas and carrier gas (dry air). The sensor response was separately calculated using  $R_a/R_g$  and  $R_g/R_a$  toward reducing and oxidizing gases, wherein  $R_a$  and  $R_g$  represented the stable sensor resistance in the background environment and target gas, respectively. All tests were carried out in dry air (0.3% RH) unless otherwise stated. The response/recovery time ( $T_{res}/T_{rec}$ ) was defined as the elapsed time reaching 90% and 10% of the maximum response upon target gas injection and air purification, respectively.

## Characterization Techniques

The crystal phases of the as-prepared materials were investigated by Panalytical Empyrean XRD diffractometer (Netherlands) using a CuK $\alpha$  radiation source with a scanning rate at 5°/min. The morphological features of the samples were analyzed by a field emission scanning electron microscope (FESEM, S-4800, HITACHI, Japan) performed at an acceleration voltage of 5 kV. Transmission electron microscopic (TEM) images were gathered on a JEOL-2010 TEM manipulated at 200 kV.



**Figure S1.** The dynamic response of (a) pure SnO<sub>2</sub> sensor and (b) all SnO<sub>2</sub>-based sensors toward 20 ppm H<sub>2</sub>S under dark condition at room temperature, and (c) the real-time response of pure SnO<sub>2</sub> sensor toward 10 ppm H<sub>2</sub>S under blue light activation at room temperature.



**Figure S2.** The real images of pure CuO sensors.