## Co,N-doped GQDs/SnO<sub>2</sub> mesoporous microspheres exhibit synergistically enhanced gas sensing properties for H<sub>2</sub>S gas detection

Tingting Chen<sup>1,2</sup>, Jianhai Sun<sup>1\*</sup>, Ning Xue<sup>1</sup>, Xinxiao Zhang<sup>1,2</sup>, Hai-

rong Wang<sup>3</sup>, Kaisheng Jiang<sup>1,2</sup>, Tianye Zhou<sup>1,2</sup>, Hao Quan<sup>1,2</sup>

<sup>1</sup>State Key Laboratory of Transducer Technology, Aerospace Information Research Institute, Chinese Academy of Sciences, Beijing, 100194, China

<sup>2</sup>University of Chinese Academy of Sciences, Beijing, 100049, China

<sup>3</sup>School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi 710049, China

\* Corresponding Author: Jianhai Sun, Professor, State Key Laboratory of Transducer Technology, Aerospace Information Research Institute, Chinese Academy of Sciences

Tel: 86-10-58887183, FAX: 86-10-58887183, email: sunjh@aircas.ac.cn



**Figure S1** X-ray photoelectron spectroscopy (XPS) survey spectrum (a) and high resolution XPS spectrum of Co,N-GQDs: (b) C1s, (c) O1s; (d) N1s; (e) Co2p.



**Figure S2** Sensing properties of 0.3 % Co,N-GQDs/SnO2 mesoporous microspheres under repeated exposure to 40 ppm H2S. The deviation of ten repeated test results is 0.299.