Supporting Information

Hetero-apertured Micro/Nanostructured Ordered Porous Array: Layer-by-Layered Construction and Structure- Induced Sensing Parameters Controllability

Lichao Jia, Weiping Cai, Hongqiang Wang, Fengqiang Sun and Yue Li*

Key Laboratory of Materials Physics, Anhui Key Laboratory of Nanomaterials and Nanotechnology,
Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, 230031, Anhui (P.R. China)

E-mail: wpcai@issp.ac.cn

Figure S1. Response curves to 500 ppm NH_3 test gas at 60°C for different hierarchically micro/nanostructured porous films, after six months. (a): 1000/100nm, (b): 1000/200nm, (c): 1000/350nm.

Figure S2. XRD patterns of the In_2O_3 hierarchical micro/nanostructures porous films. (a): 1000/100nm, (b): 1000/350nm.

Figure S3 FESEM image (a) and response curves to 500 ppm NH_3 test gas at 60°C (b) for the heteropore sized porous Fe_2O_3 film (1000/200nm). (c) and (d) corresponds to the homo-pore sized porous Fe_2O_3 films with pore sizes of 1000nm and 200nm, respectively.

Fabrication of Fe_2O_3 micro/nanostructured porous film: The precursor solution is 0.05M $\text{Fe}(\text{NO}_3)_3$ aqueous solution and the final heating temperature is at 500°C for 1h. The other details are similar to those of In_2O_3 films described in the Experimental section.