

Electronic Supplementary Information

Hydrothermal Synthesis of Novel In₂O₃ Hollow Microspheres for Gas Sensors

Hao Jiang,^a Junqing Hu,^{*,b} Feng Gu,^a Wei Shao^a and Chunzhong Li^{*,a}

[†] *Key Laboratory for Ultrafine Materials of Ministry of Education, School of Materials Science and Engineering, East China University of Science & Technology, Shanghai, 200237, People's Republic of China*

[‡] *State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University, Shanghai, 200051, People's Republic of China*

Gas sensors properties experiments:

For the fabrication of gas sensors, the In₂O₃ powders were mixed and ground with adhesive in an agate mortar to form paste. The paste uniformly coated an alumina tube on which a pair of Au electrodes was previously printed, and dried at 100 °C for 2 h in air, and then sintered at 600 °C for 1 h in air. At last, a Ni-Cr heating wire was inserted. The gas sensors were aged at 300 °C for 240 h in air in order to improve their stability. A stationary state gas distribution was used for the test of gas sensing properties. The chamber was firstly purged by air until a steady baseline of the sensor resistance was reached. Then the test vapor ethanol was injected using a syringe. The gas sensitivity of the sensor in this paper is defined as $S = R_a/R_g$; R_a , resistance in air, R_g , resistance in test gas. The response time is expected as the time required for sample variation

conductance to reach 90% of the equilibrium value following an injection of the test gas, and the recovery time is the time necessary for the sample to return to 10% above original conductance in air after releasing the test gas.

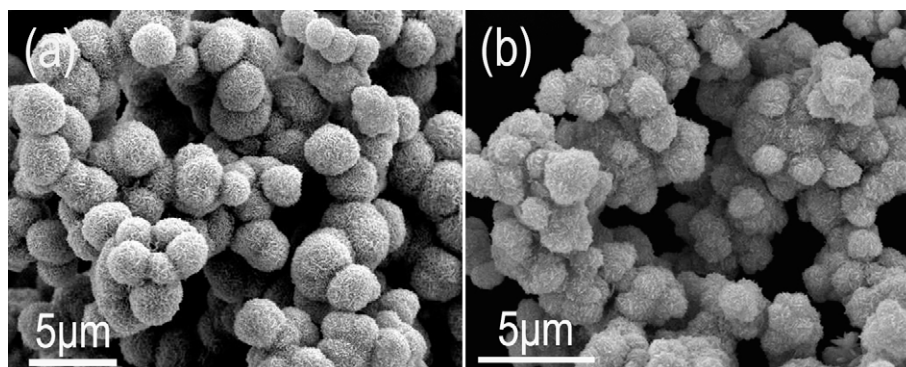


Fig. S1 SEM images of In_2O_3 products prepared at different DMF concentrations at $180\text{ }^\circ\text{C}$ for 24 h, (c) DMF = 1.5 ml and (d) DMF = 3.0 ml.

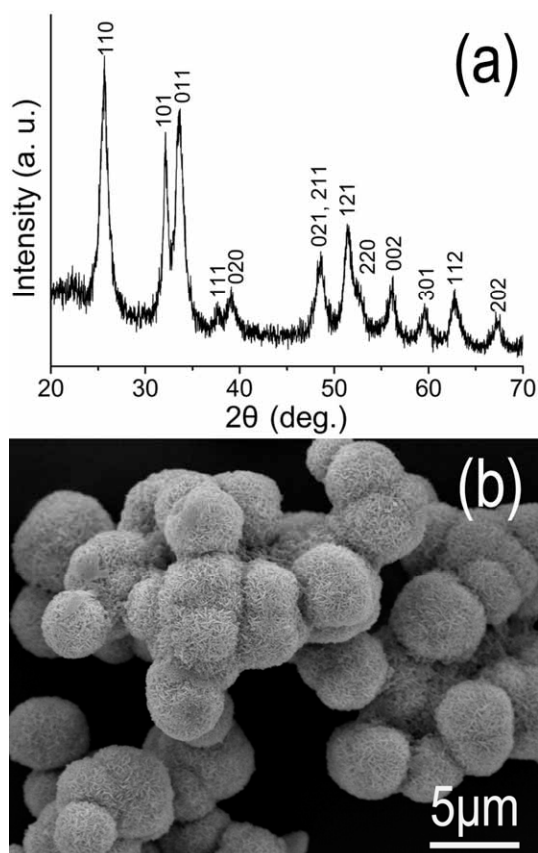


Figure S2. The XRD pattern (a) and SEM image (b) of the products before

calcinations, all of the peaks can be indexed to orthorhombic InOOH

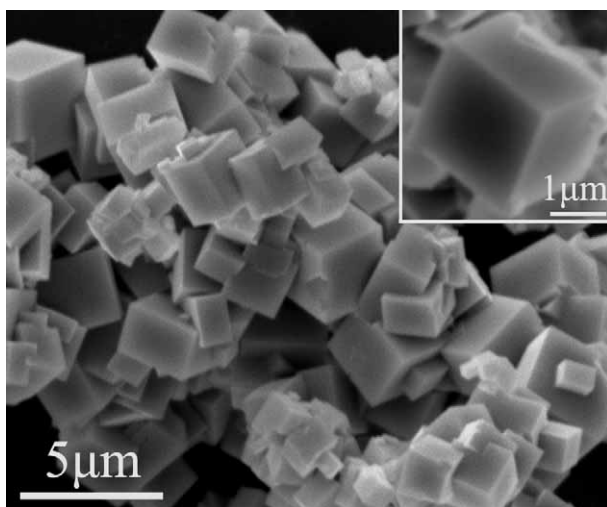


Figure S3. SEM images of In₂O₃ products prepared in the absence of glucose (inset showing a typical well-shaped In₂O₃ cube)