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Electronic Supplementary Information to

Trisodium Citrate Assisted Synthesis of ZnO Hollow Spheres via a Facile Precipitation Route and its Application as Gas Sensor

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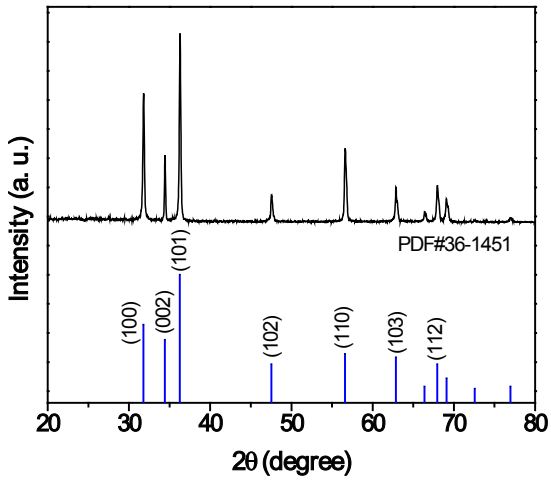

Figure S1. XRD pattern of rod-like ZnO synthesized in comparative experiment.

Figure S1 shows the XRD pattern of the product obtained in comparative experiment. All the diffraction peaks can be indexed to the hexagonal phase of ZnO (zincite, space group 186, P63mc). No characteristic peaks arising from any impurities such as reactants or intermediate products are detected. It indicates that the gained ZnO is high purity.

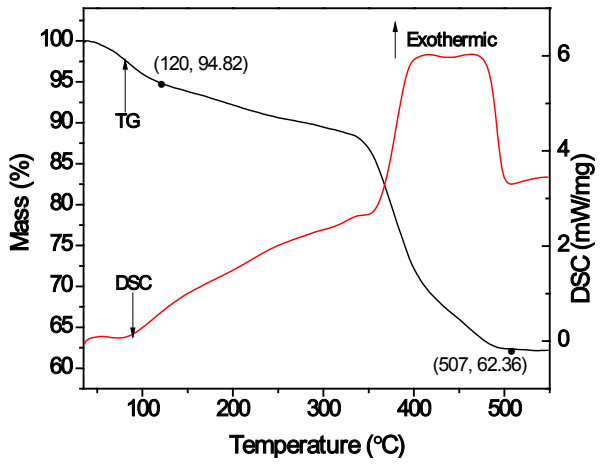

Figure S2. TG-DSC curves of the dried precursor of ZnO hollow spheres.

Figure S2 displays the TG-DSC curves of the precursor of ZnO hollow spheres dried in a vacuum at 60°C for 24h. The mass lose before 120°C attributes to removal of adsorbed moisture. The weight change (about 32.46%) in the temperature range of 120 to 507°C stems from the thermal decomposition of citrate anions adsorbed on ZnO crystal face. Thus, the calculated mass fraction of adsorbed citrate anions in the absolute precursor (waterless, 94.82%) is 34.23%, which is consistent with the theoretical value 38.71% obtained by the mole ratio of reactants.

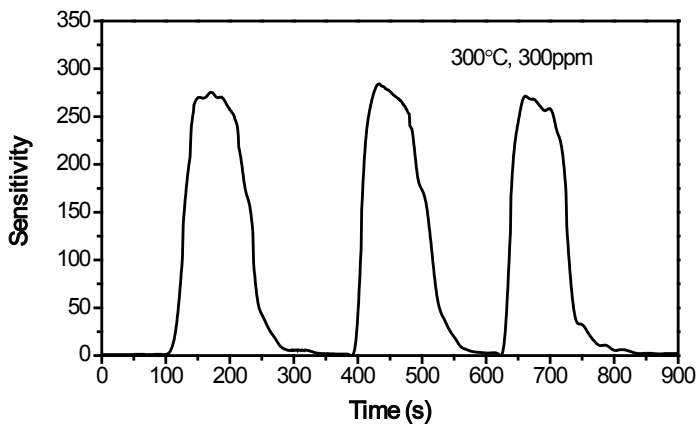

Figure S3 Sensor reproducibility test at ethanol concentration of 300ppm and operating temperature of 300°C

The sensor in base of ZnO hollow sphere shows good signal reproducibility detected in ethanol concentration of 300 ppm and operating temperature of 300ºC.