

Electronic Supplementary Information for

Facile synthesis of Cu_2O nanocages and the gas sensing performance

towards gasoline

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Fabrication of gas sensor

The production process of the gas sensor is as follows: the Cu_2O nanomaterials were uniformly dispersed in ethanol to form suspension liquid, and then the suspension liquid was evenly coated on the ceramic tube with rotating way. After the ceramic tube had been treated by heating at 180 °C for 10 h, the four platinum wire connectors of the ceramic tube and two ends of the heating wire were welded in the test position of the base. The prepared component was aged at 2.5 V for 2 h.

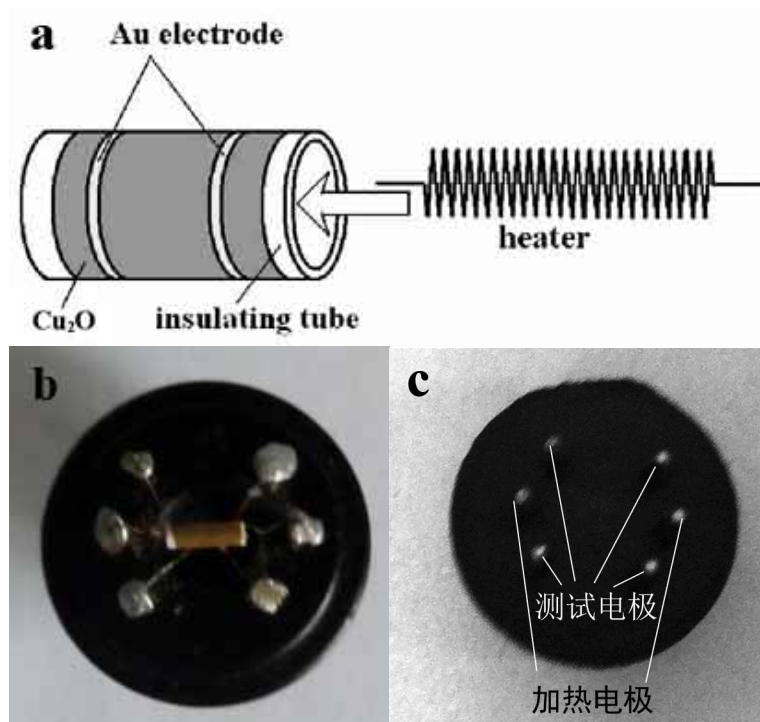


Fig. S1 (a) Schematic diagram of the fabricated ceramic tube, and the photographs of the gas sensor. (b) the front side, (c) the back side.

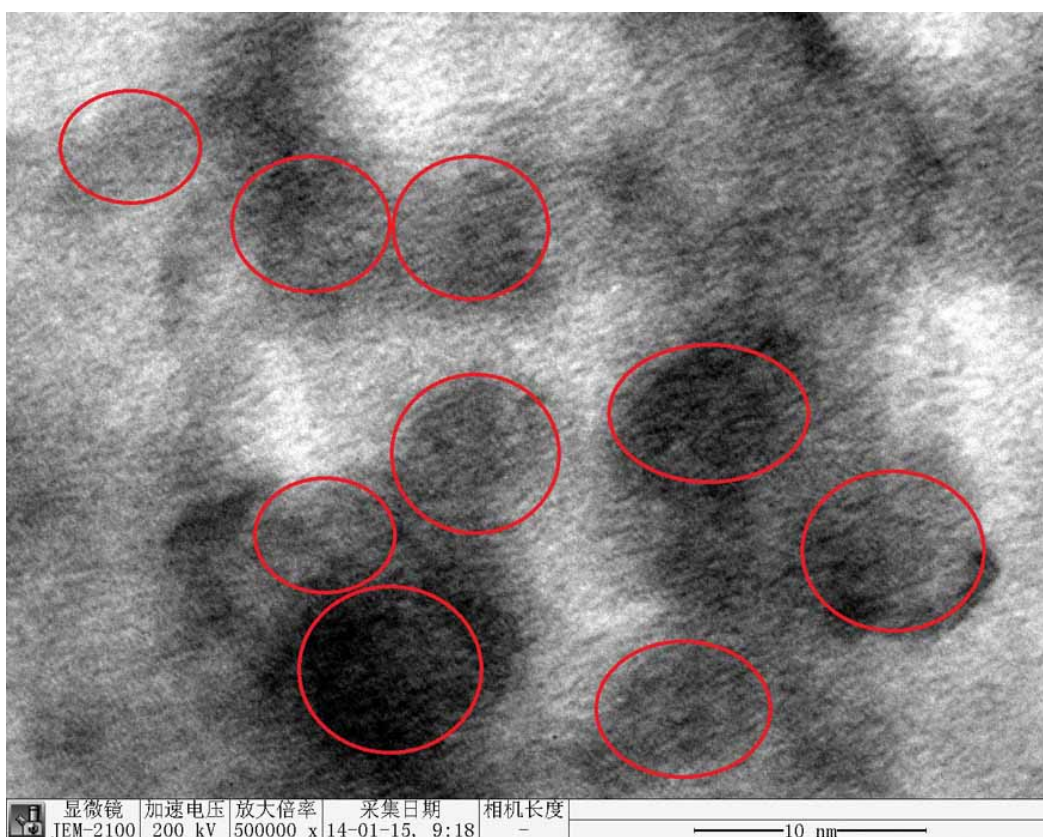


Fig. S2 HRTEM image of the nanocage's shell. Some of the nanoparticle units are marked.

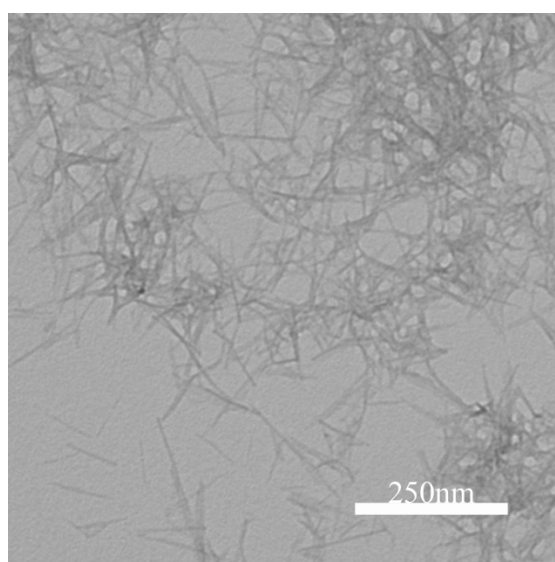


Fig. S3 TEM image of the product obtained at 5 min after adding NaOH to CuCl_2 aqueous solution.



Fig. S4 The photographs showed the color of the solution with the extension of reaction time. (a) 5 min after adding NaOH to CuCl₂ solution, (b) 5 min after adding AA to the solution, (c) 15 min and (d) 30 min after adding N₂H₄·H₂O to the solution.

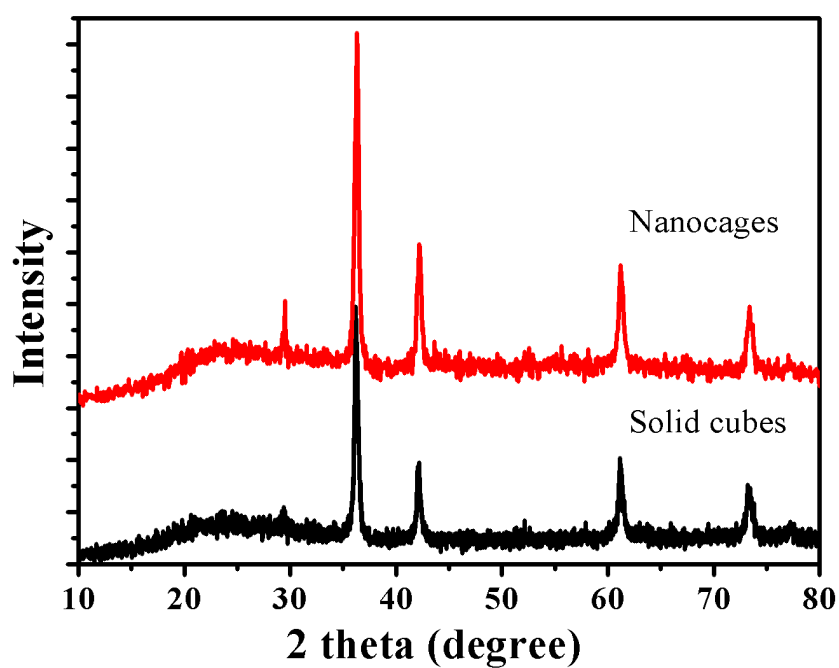


Fig. S5 XRD patterns of the Cu₂O solid cubes obtained by adding NaOH to terminate the reaction (a) and the Cu₂O nanocages (b).

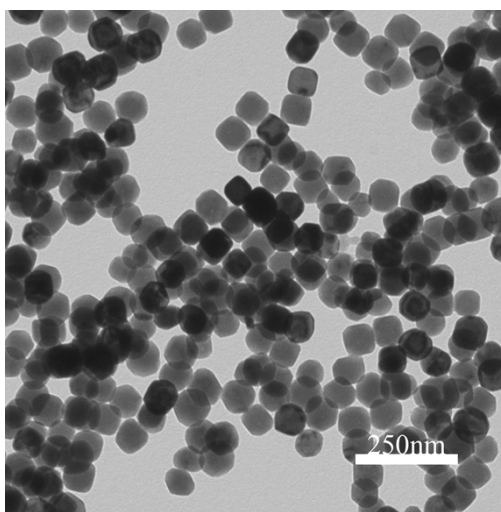


Fig. S6 TEM image of solid Cu_2O nanocubes used as reference in the characterization of gasing property.

Synthesis of solid Cu_2O nanocubes.

A 10 mL syringe filled with 10 mL of 0.061 M AA solution was fixed above a round-bottomed glass flask which filled with 50 mL of distilled water, 3 mL of 0.05 M CuCl_2 , and 0.33 mL of 2 M NaOH. The AA solution dropped into the glass flask when the piston of the syringe was pulled out. The mixed solution was stirred at 25 °C. Reaction continued 10 min after the AA solution was completely dropped into the glass flask. The precipitate was collected through centrifugation and washed two times with distilled water and once with absolute ethanol.