Electronic Supplementary Material (ESI) for Analytical Methods

Electronic Supporting Information (ESI[+])

Highly Sensitive and Selective Volatile Organic Compound Gas Sensors Based on Mesoporous Nanocomposite Monoliths

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Scheme S1. The flow chart of the direct-synthesis of HOM/MO nanocomposite monoliths: (A) Brij 56 disolved in TMOS at 60 °C 1 min, (B) metal chloride (MCl_x) disolved in HCl/H_2O (pH-1.3), (C) mixture of Brij 56, TMOS, MCl_x, HCl/H_2O, (D) Gel-like materials obtained after rotary vacuum dry at 45 °C for about 5 min, (E) photo of dried gel-like materials, (F) after calcination at 500 °C for 8 h, (G) SEM image of nanocomposites.

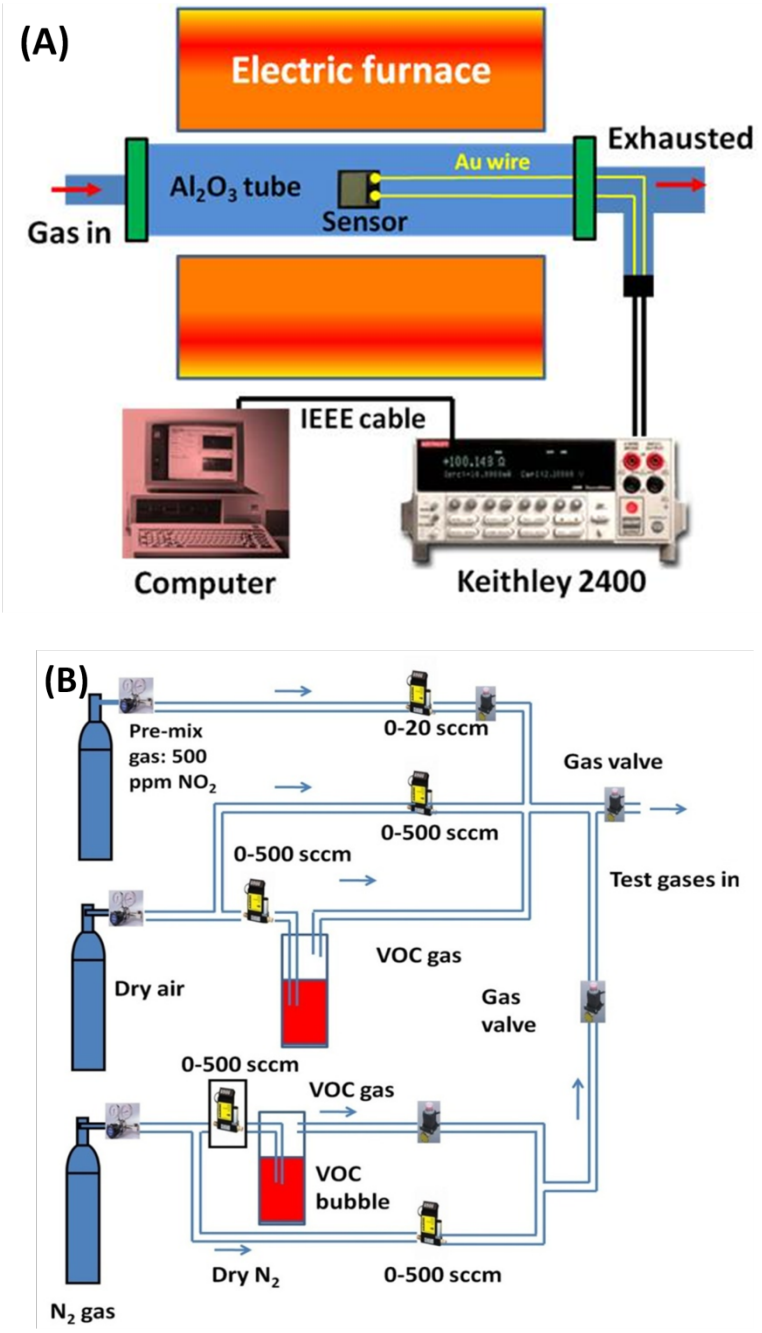

Fig. S1. Schematic diagram of gas-sensing measurement system. (A) The electrical current and resistance of sensors are automatically measured using a Digital Source Meter (Keithley model 2400) controlled by PC computer via IEEE cable and Labview program. (B) Schematic diagram of the VOC bubbler system.

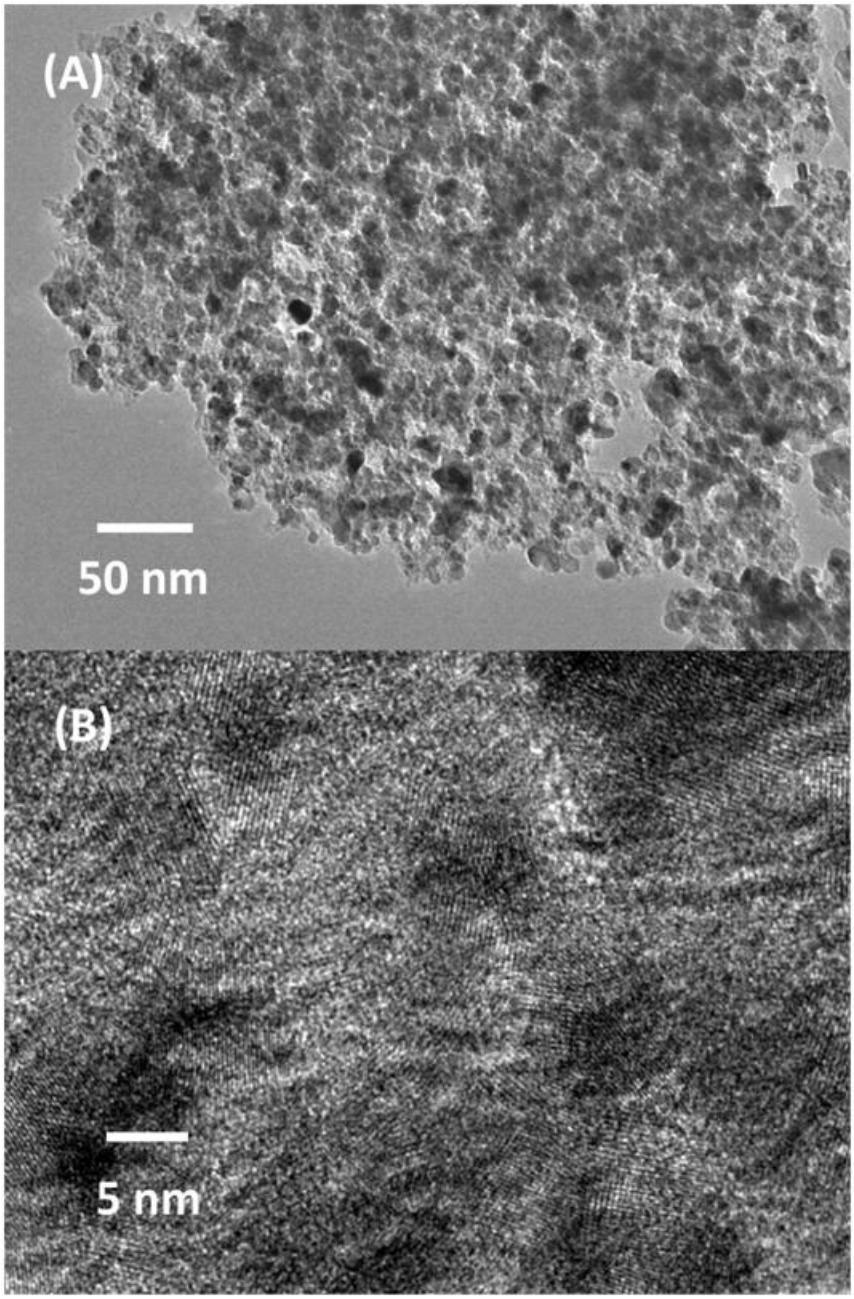

Fig. S2. HRTEM images [(A)- low, and (B)-high magnification] of HOM/SnO_2 (r=4.00). The ordered mesoporous structure of monolith was destroyed when the SnO_2 content was increased to 80%. The monolith contains the aggregated SnO_2 nanocrystals with an average of about 5 nm.