Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

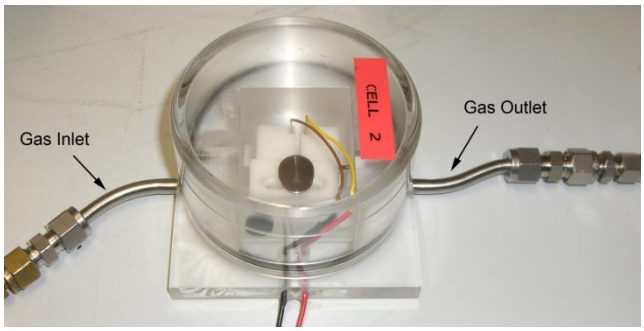

Fig. S1 shows the sample cell with sample stage and gold pins for contacting the sensors, and with inlay for volume reduction.

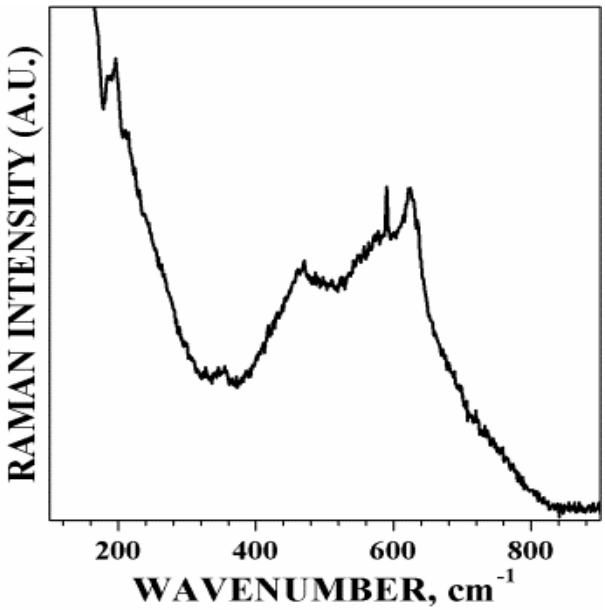

Fig. S2 shows Raman spectrum of ordered nanoporosu 4wt% Pd-SnO_2 thin film.

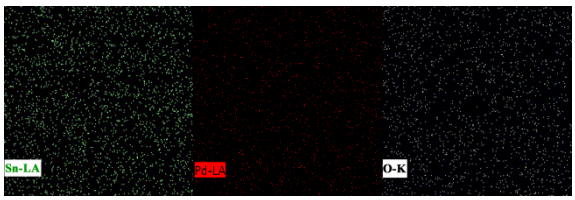

Fig. S3 EDX mapping analysis of ordered nanoporous 4wt% Pd-SnO_2 sensing film.

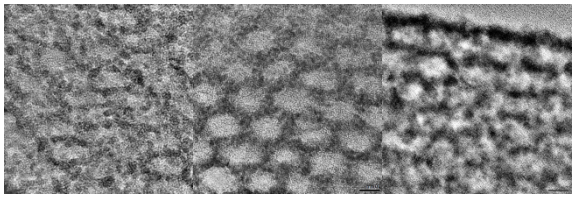

Fig. S4 Cross-section TEM images of 1wt% Pd-SnO_2 annealed thin film (left), 4wt% Pd-SnO_2 annealed thin film (middle), and 8wt% Pd-SnO_2 annealed thin film (right).

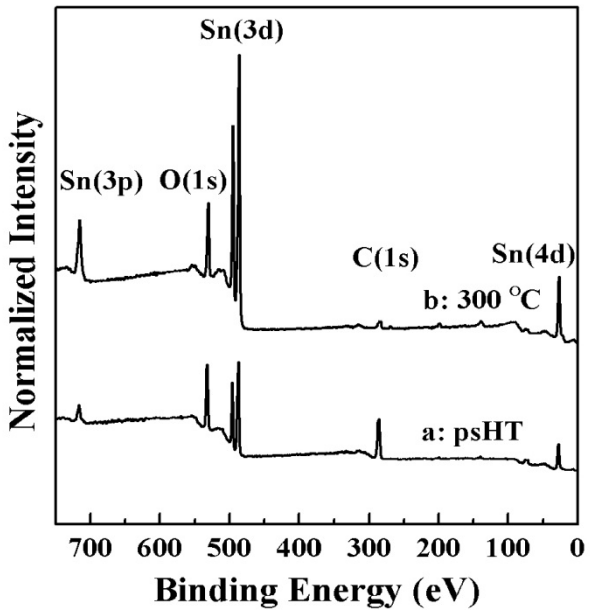

Fig. S5 XPS patterns of pure SnO_2 thin films synthesized after 120°C hydrothermal treatment (a) ; and annealing at 300°C (b).

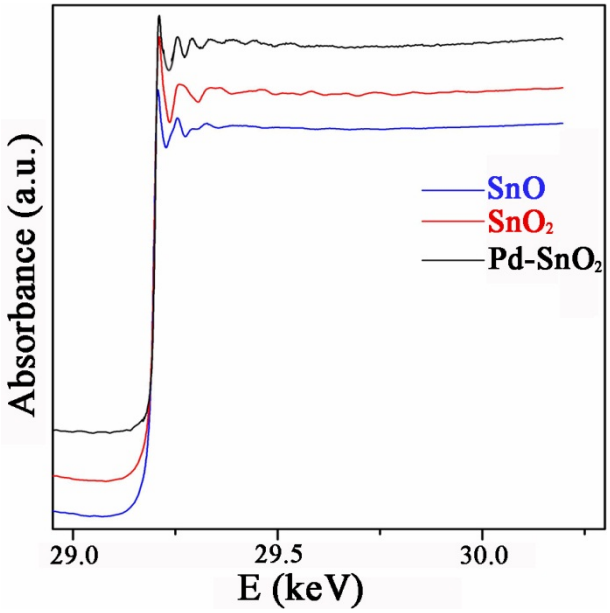

Fig. S6. Sn K-edge normalized XANES of 4wt% Pd doped SnO_2 thin film and reference samples.

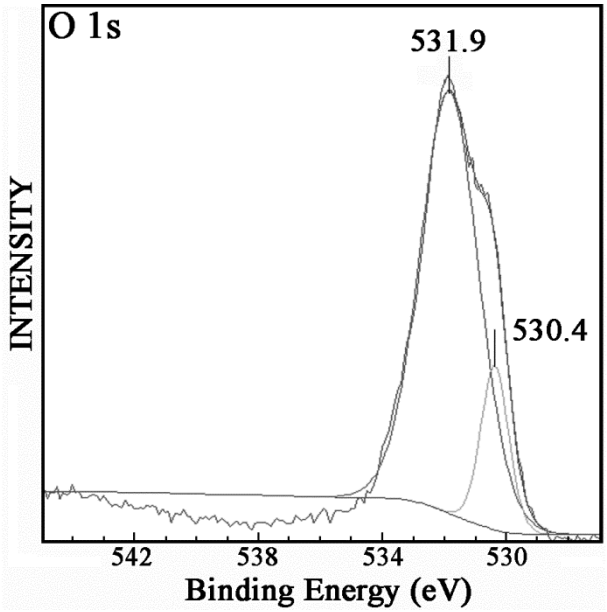

Fig. S7 The high-resolution XPS spectra of superposed O 1s of a 300°C annealed nanoporous Pd-SnO_2 thin film.

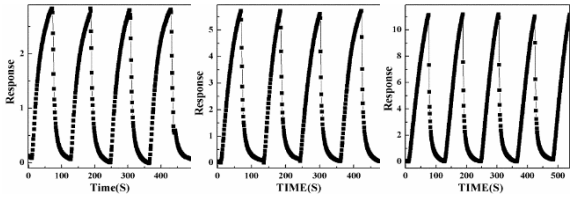

Fig. S8 Repeatability of the ordered nanoporous 4wt% Pd-SnO_2 sensor exposed to 20 ppm (left), 40 ppm (middle), and 80 ppm (right) acetone vapour at room temperature.

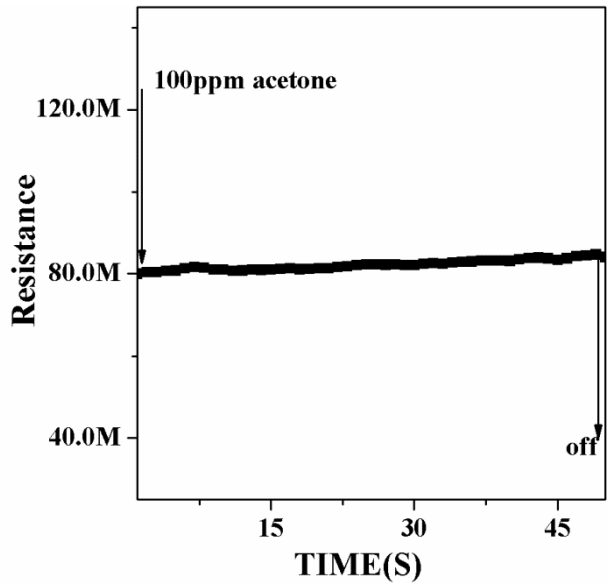

Fig. S9 Gas sensing behaviour of pure nanoporous SnO_2 thin film without any dopant at room temperature.