Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

Porous CeO_2 nanospheres for room temperature triethylamine sensor under high humidity condition

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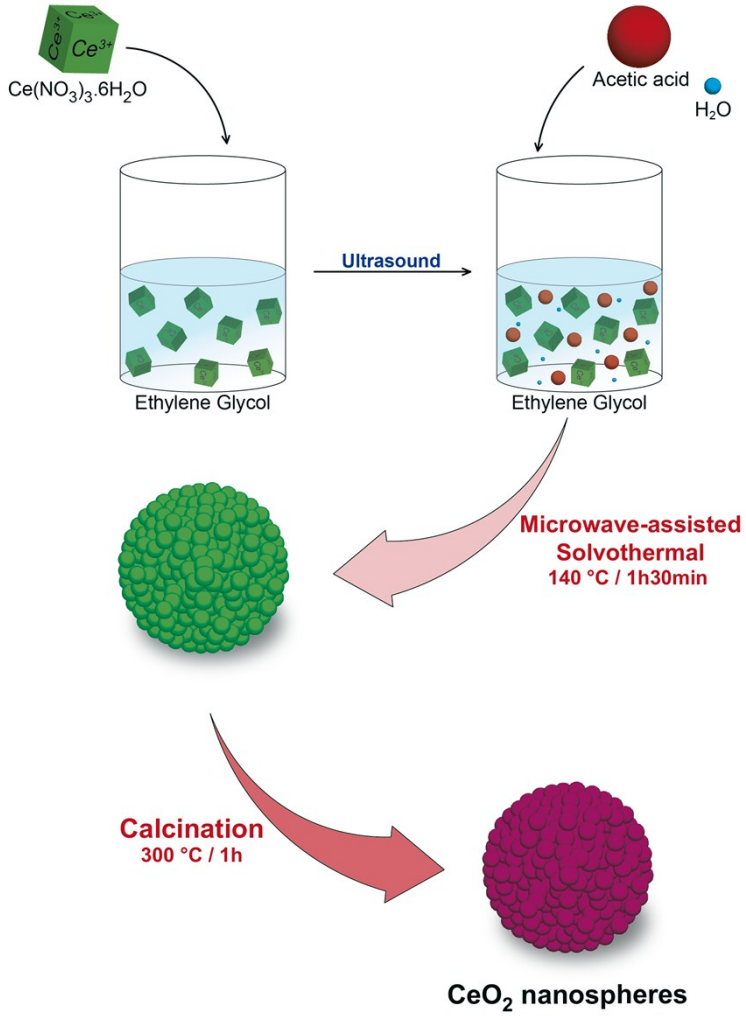

Fig. S1 Schematic illustration of the synthesis of CeO_2 nanospheres (NS).

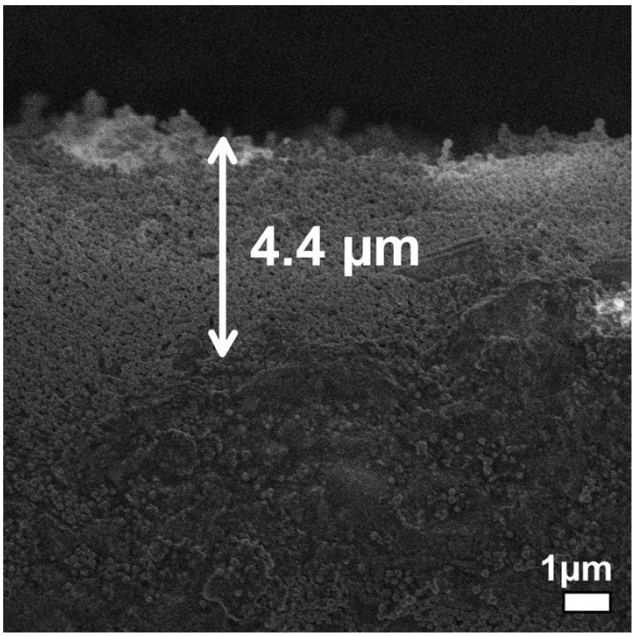

Fig. S2 FESEM image of the cross section of the Au interdigitated alumina substrate after coating with CeO_2 NS. The thickness of the film can be estimated as 4.4 µm.

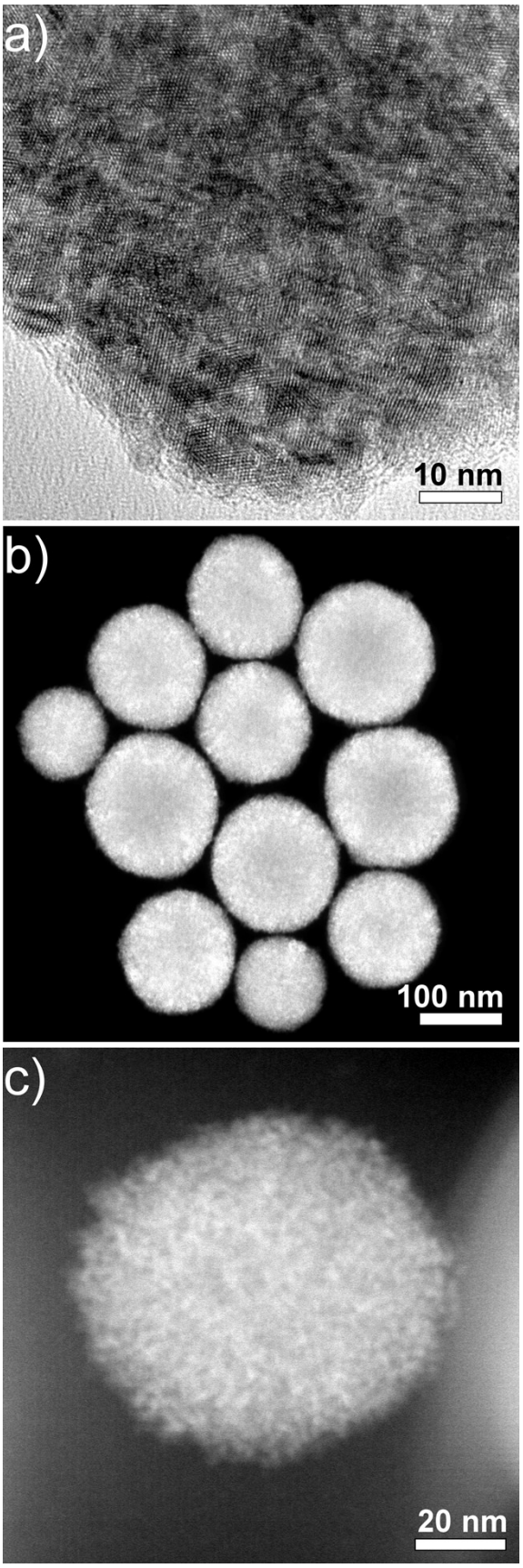

Fig. S3 (a) HRTEM and (b,c) dark-field TEM images of CeO_2 NS.

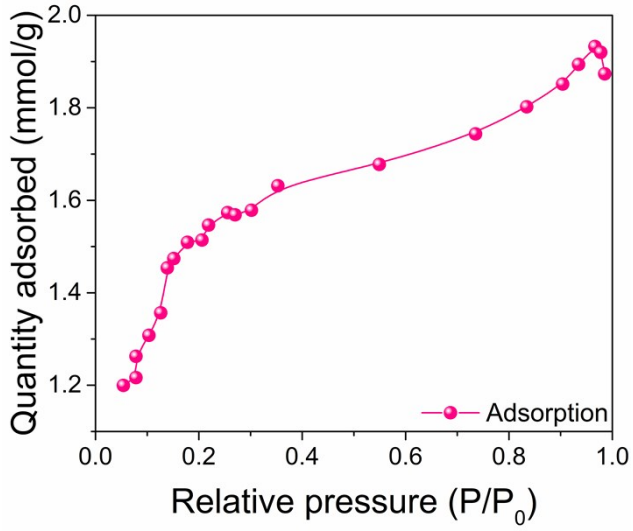

Fig. S4 N_2 adsorption isotherm curve for CeO_2 NS.

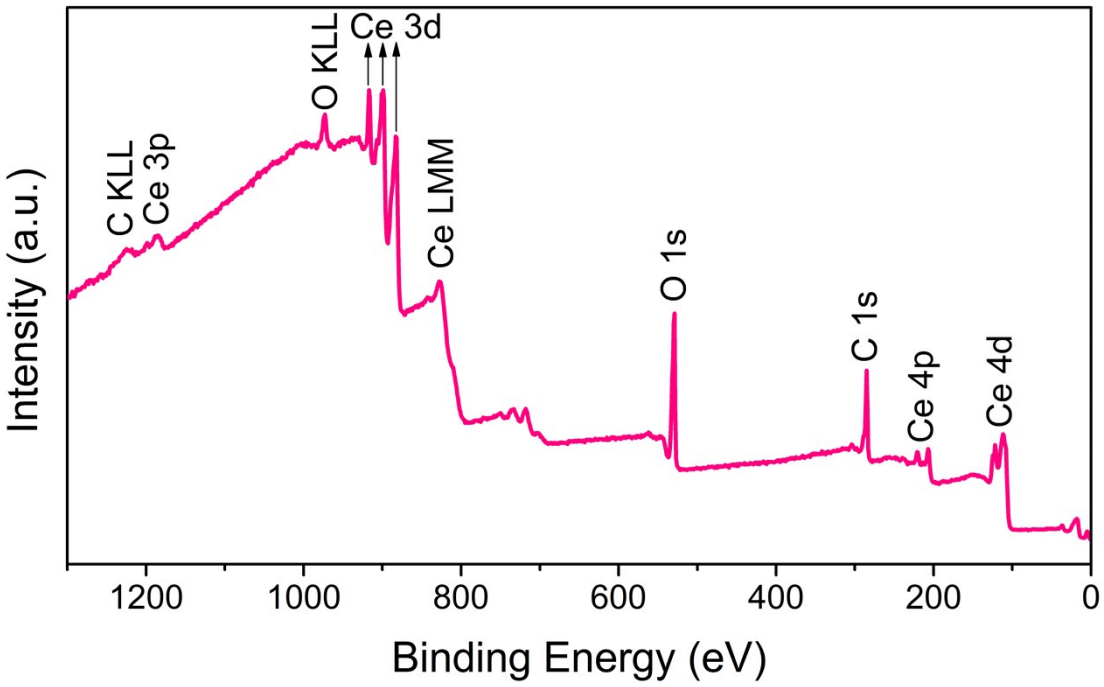

Fig. S5 Survey XPS spectrum of CeO_2 NS.

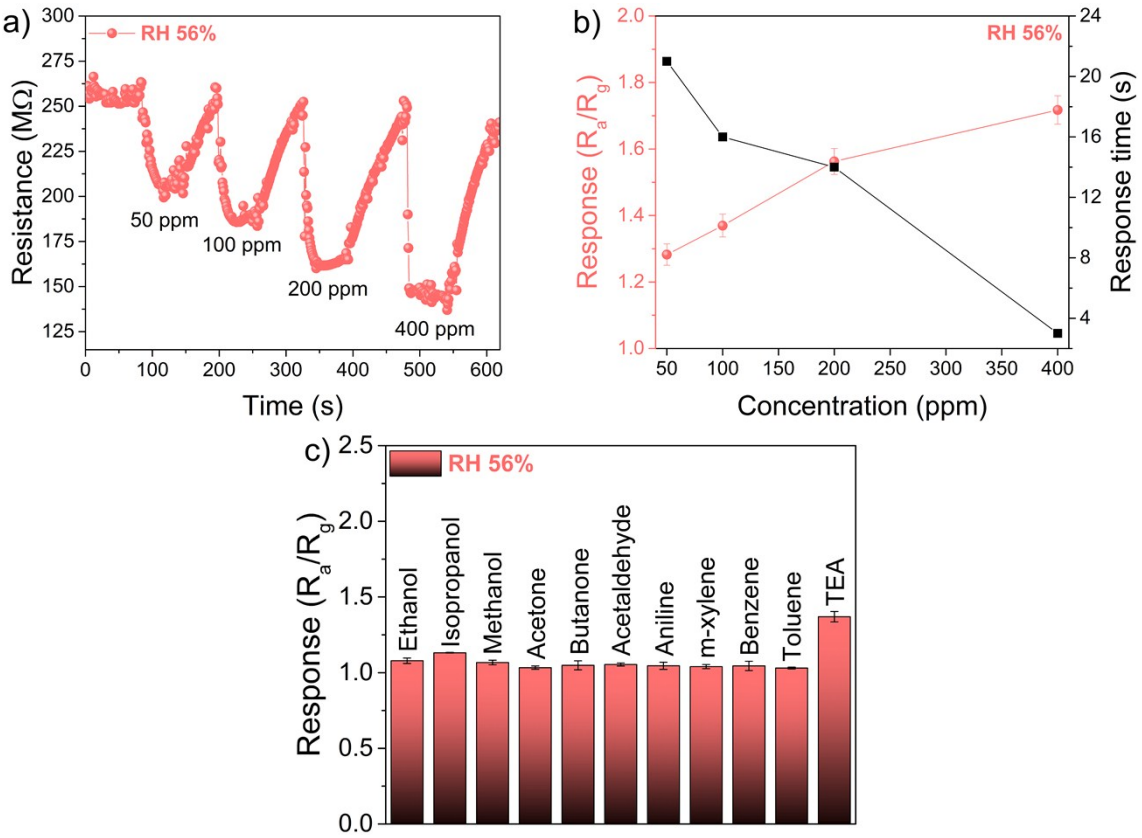

Fig. S6 VOC-sensing performance of CeO_2 NS at room temperature and 56% RH. (a) Transient response curves to the concentration range of 50–400 ppm of TEA. The sensor is not sensitive to TEA concentrations lower than 50 ppm at 56% RH. (b) Sensing response and response time as a function of the TEA concentration. (c) VOCs-sensing selectivity of CeO_2 NS to different VOCs at the concentration of 100 ppm. The error bars show the standard deviation from average.

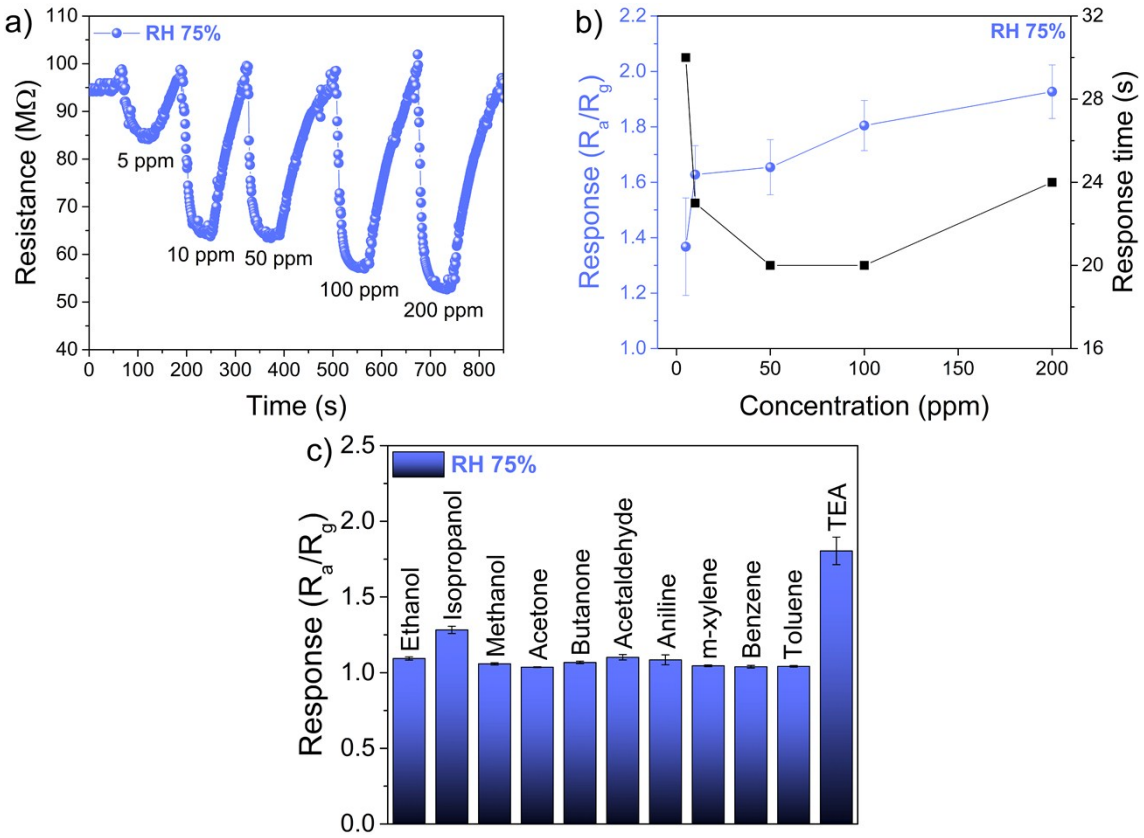

Fig. S7 VOC-sensing performance of CeO_2 NS at room temperature and 75% RH. (a) Transient response curves to the concentration range of 5–200 ppm of TEA. The sensor is more sensitive to TEA at low concentrations, however, the response is lower than that observed at 98% RH. (b) Sensing response and response time as a function of the TEA concentration. (c) VOCs-sensing selectivity of CeO_2 NS to different VOCs at the concentration of 100 ppm. The error bars show the standard deviation from average.

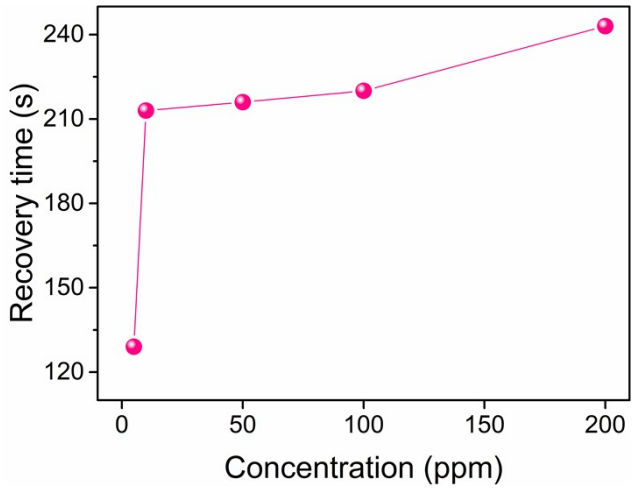

Fig. S8 Recovery time of CeO_2 NS for different TEA concentrations at room temperature and 98% RH.