Electronic Supplementary Material (ESI) for Nanoscale
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Supporting Information for

Ultraselective and sensitive detection of xylene and toluene for monitoring indoor air pollution using Cr-doped NiO hierarchical nanostructures.

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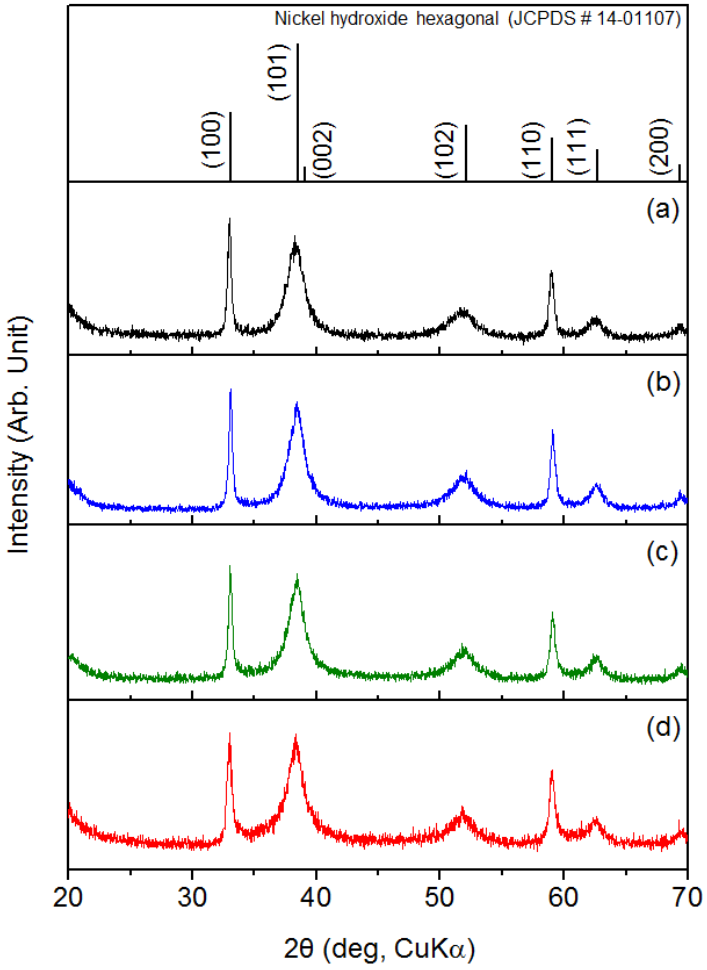

Fig. S1 X-ray diffraction patterns of (a) pure, (b) 1.15 at% Cr-doped, (c) 1.86 at% Cr-doped and (d) 2.56 at% Cr-doped Ni precursors after solvothermal reaction at 180 °C for 8 h.

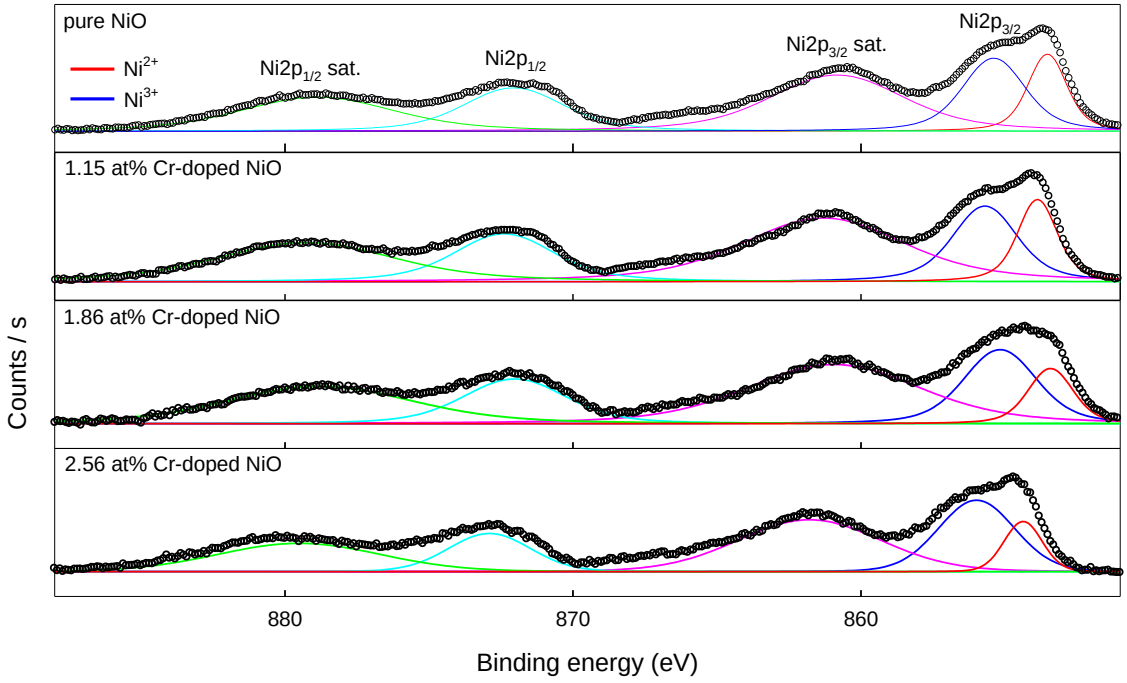

Fig. S2 Curve fitting of Ni$2p_{3/2}$ peaks in XPS spectra of NiO, 1.15Cr-NiO, 1.86Cr-NiO, and 2.56Cr-NiO hierarchical nanostructures.

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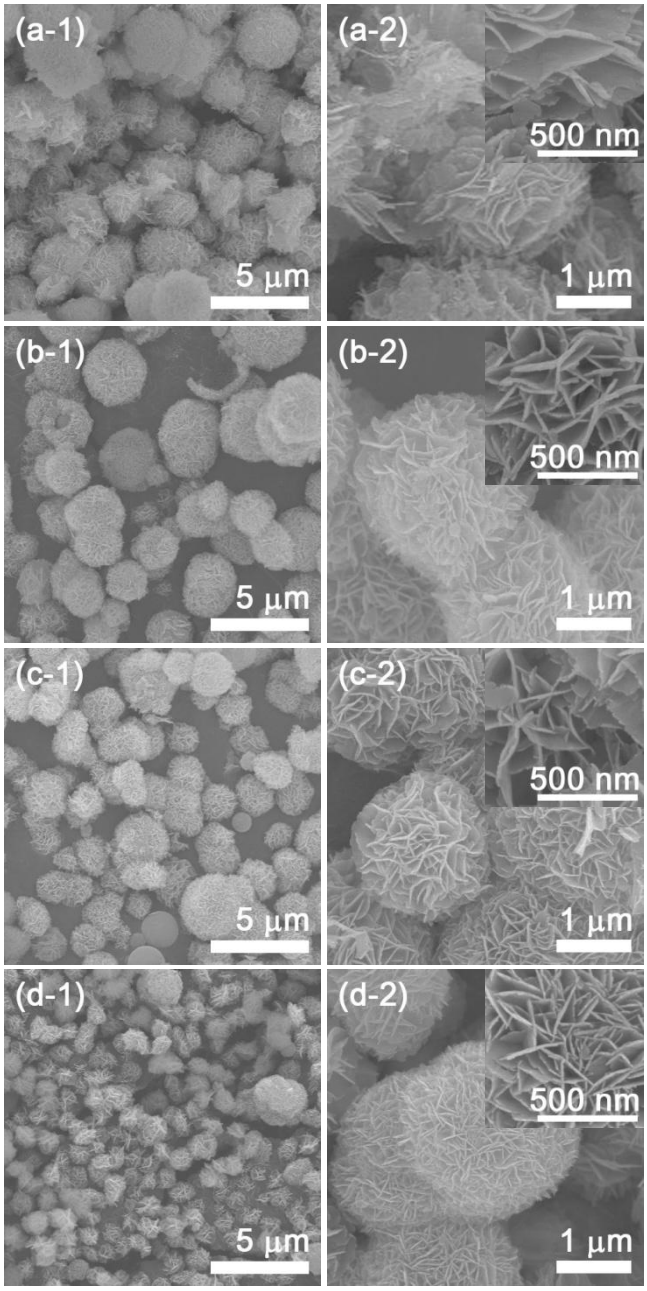

Fig. S3 SEM images of as-prepared undoped and Cr-doped Ni precursors: (a) pure Ni-precursors; (b) 1.15 Cr at% doped Ni precursor nanostructures; (c) 1.86 Cr at% doped Ni precursor nanostructures; (d) 2.56 Cr at% doped Ni precursor nanostructures;

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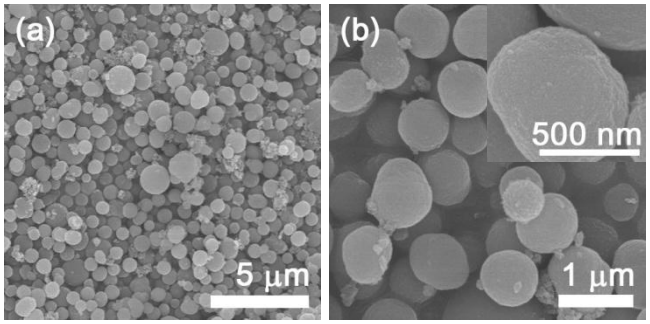

Fig. S4 SEM images of Ni-precursor spheres prepared by solvothermal reaction of anhydrous ethanol solution containing Ni-acetate and lysine at 180 °C for 8 h.

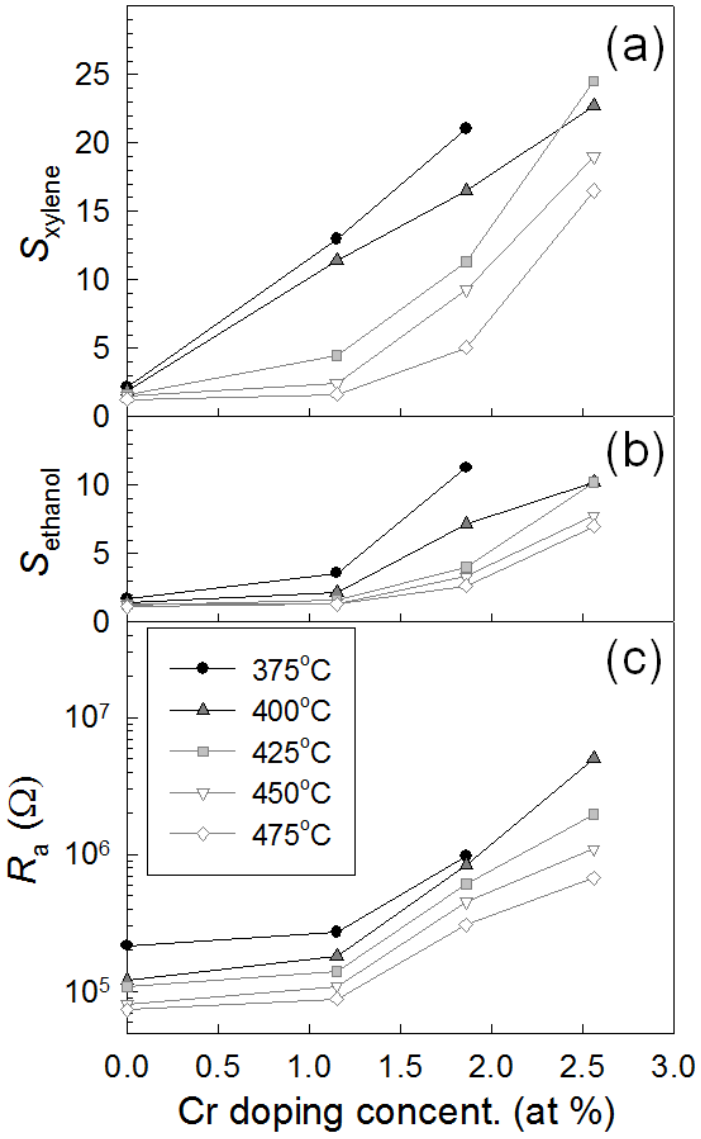

Fig. S5 (a) Responses to 5 ppm *o*-xylene (S_{xylene}) and (b) 5 ppm ethanol ($S_{ethnaol}$) and (a) the resistance of sensor in air (R_a) as a function of Cr-doping concentration.

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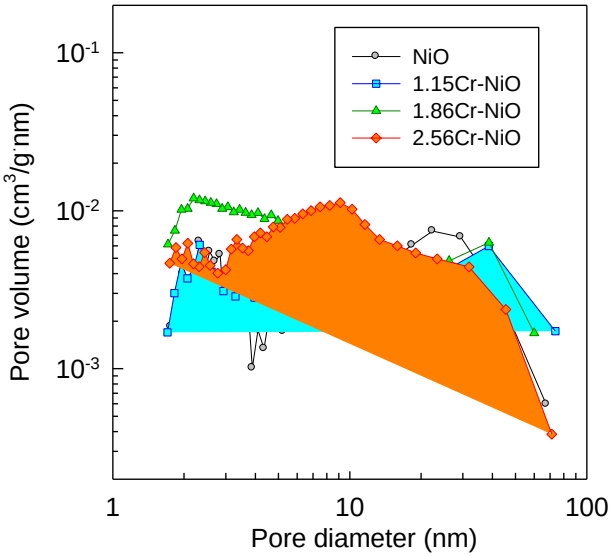

Fig. S6 Pore size distributions of specimens determined from the nitrogen adsorption-desorption isotherm.

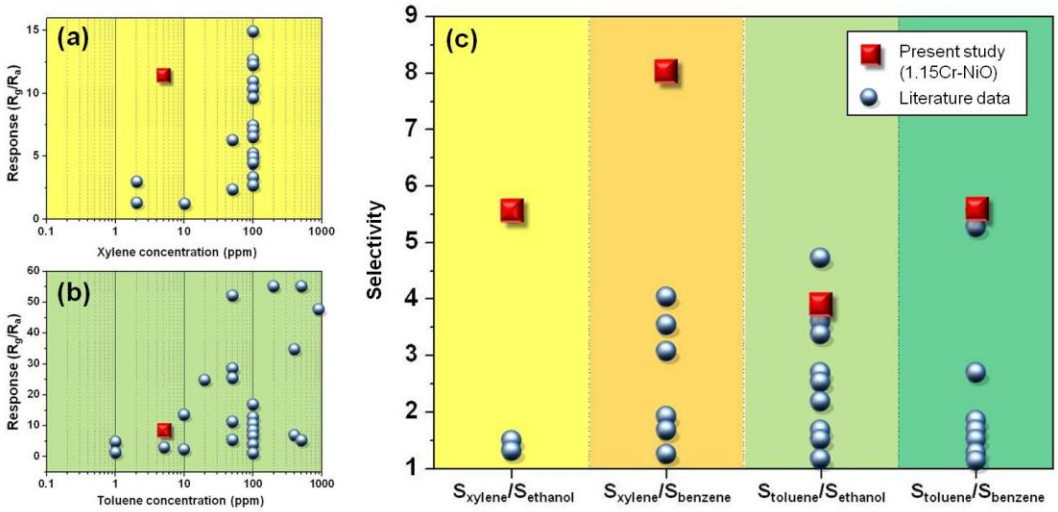

Fig. S7 Sensor (a) responses to xylene, (b) responses to toluene, and (c) selectivity to xylene and toluene over ethanol and benzene as reported in the literature and the present study (1.15Cr-NiO hierarchical structures at 400 ^{o}C).[37–54] (More detailed information from the literature is available in Table 1 and the references.)