Supplementary Information

Nanosheets-assembled, Hollowed-out Hierarchical γ-Fe_2O_3 Microrods for High-performance Gas Sensing

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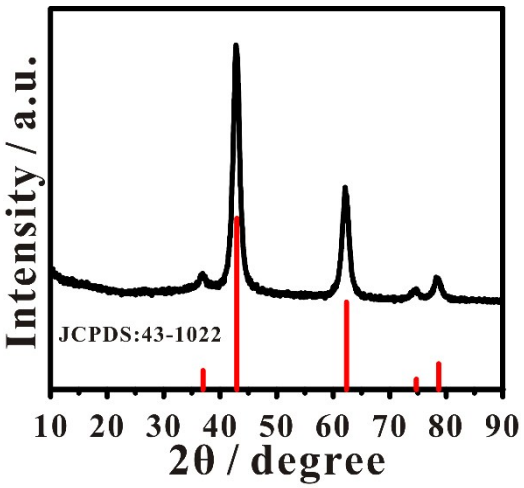

Fig. S1 XRD pattern of MgO.

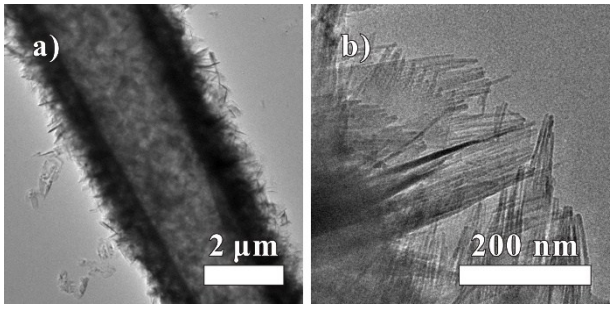

Fig. S2 TEM images of FeOOH.

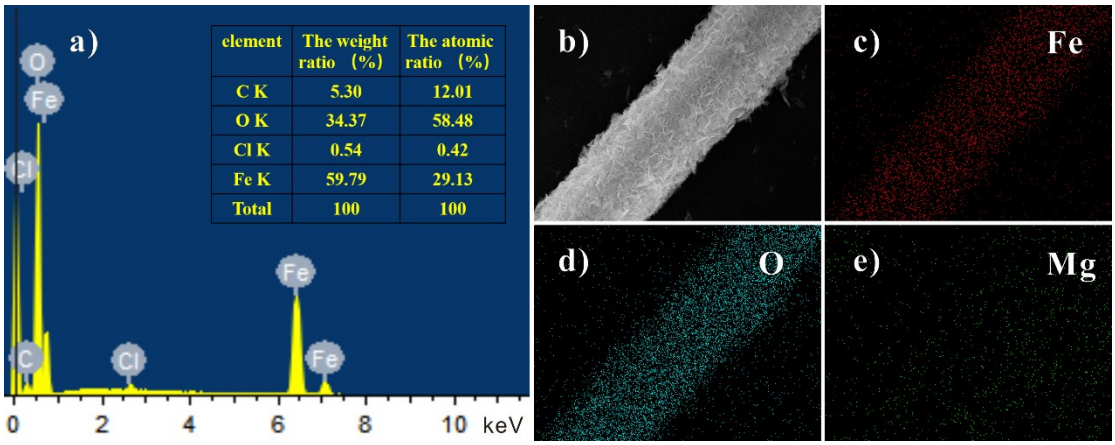

Fig. S3 (a) EDS spectrum and (b-e) mapping images of the FeOOH microrods.

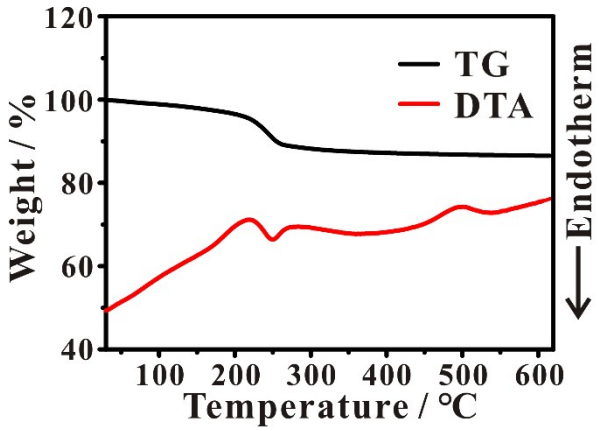

Fig. S4 TG-DTA curves of FeOOH.

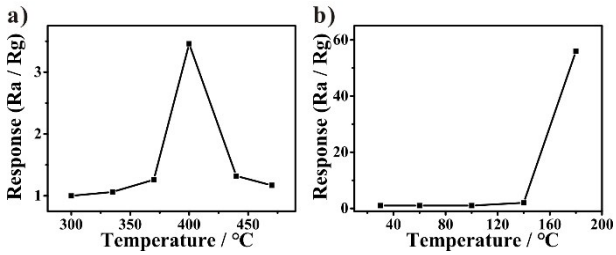

Fig. S5 Response of the sensors based on (a) MgO, (b) FeOOH to 100 ppm acetone at different operating temperatures.

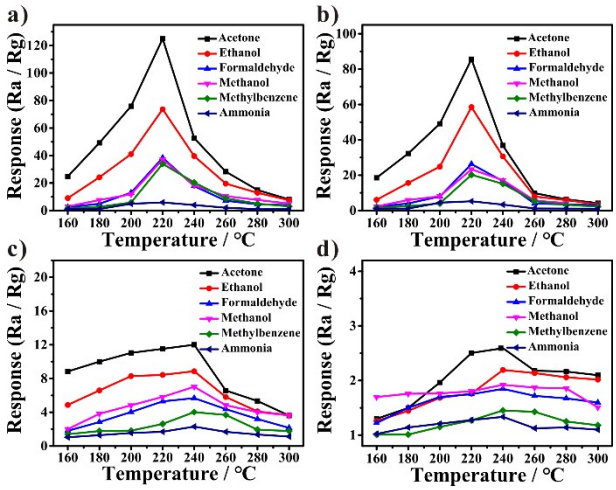

Fig. S6 Response of the sensors based on (a) Fe_2O_3-300, (b) Fe_2O_3-400, (c) Fe_2O_3-500, and (d) Fe_2O_3-com to 100 ppm different gases at different operating temperatures.

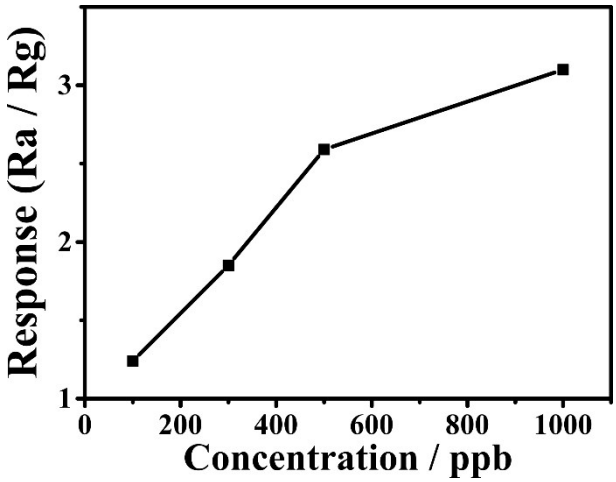

Fig. S7 Detection limit of Fe_2O_3-300.

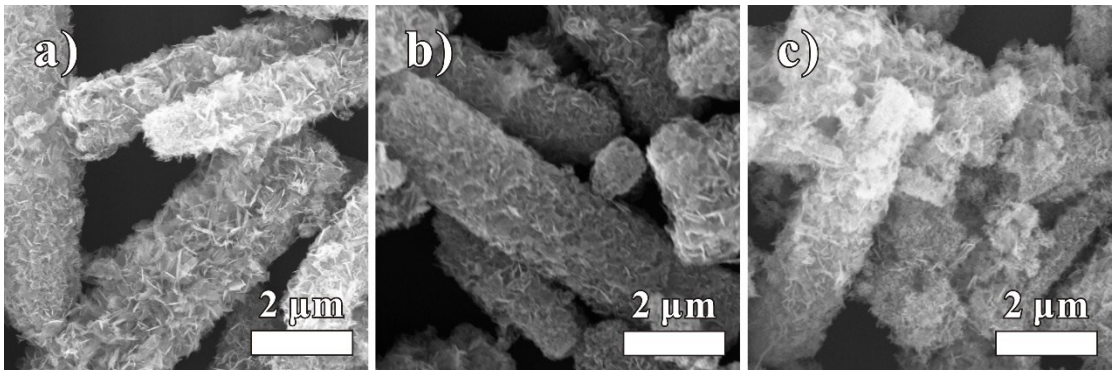

Fig. S8 SEM images of (a) Fe_2O_3-300, (b) Fe_2O_3-400, and (c) Fe_2O_3-400 after long-term stability test.

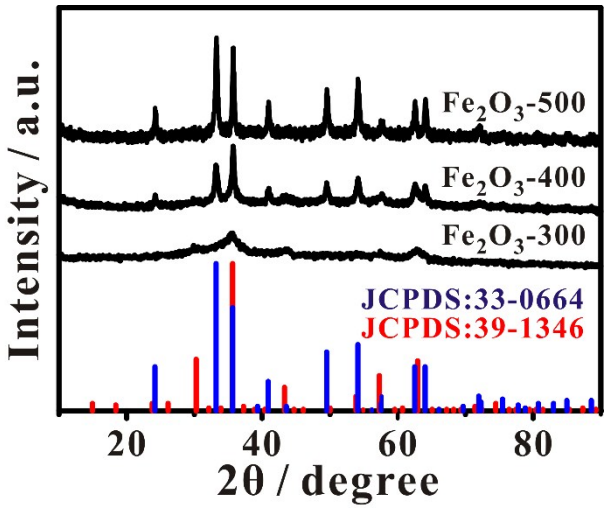

Fig. S9 XRD patterns of Fe_2O_3-300, Fe_2O_3-400, and Fe_2O_3-500 after long-term stability tests.

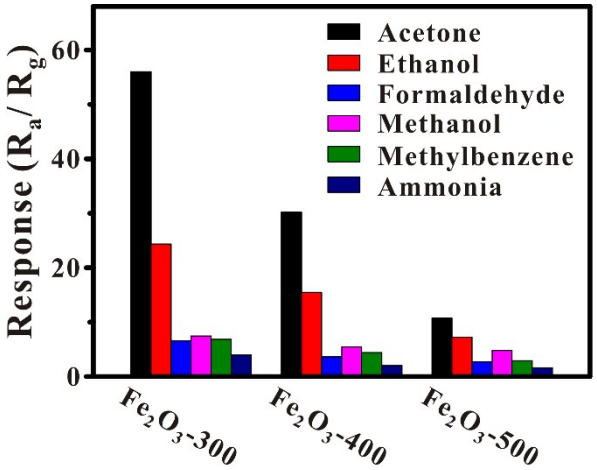

Fig. S10 Response of sensors based on Fe_2O_3-300, Fe_2O_3-400, and Fe_2O_3-500 to 100 ppm different gases at their individual optimal operating temperatures in 87% RH humid ambient condition.

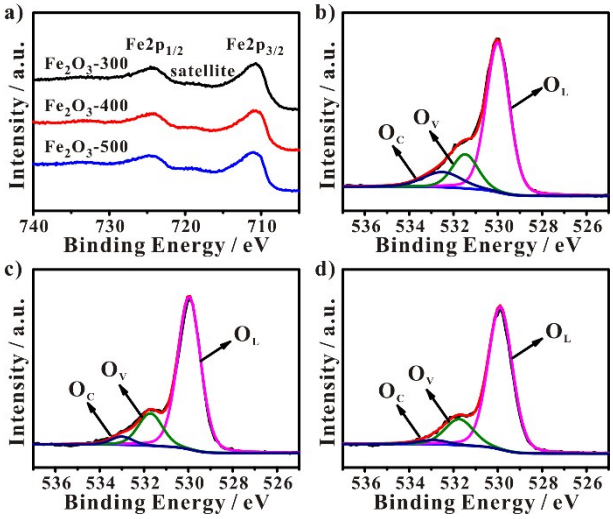

Fig. S11 (a) Fe 2p XPS spectra and O 1s XPS spectra of the three samples: (b) Fe_2O_3-300, (c) Fe_2O_3-400, and (d) Fe_2O_3-500 after long-term stability tests.

Table S1. Fitting results of O 1s XPS spectra of three Fe_2O_3 samples after long-term stability test.

Samples	Relative percentage (%)		
	O_L	O_V	O_C
Fe_2O_3-300	70.3	17.8	11.9
Fe_2O_3-400	78.8	17.2	4.0
Fe_2O_3-500	80.3	16.9	2.8