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A high-performance n-butanol gas sensor based on ZnO nanoparticles synthesized by a low-temperature solvothermalroute

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Table S1. Structural and microstructural parameters extracted from the Rietveld refinement of powder XRD pattern.

Space group	$P\,6_3mc$(186)
Lattice parameters	
a (Å)	3.2520 (2)
b (Å)	3.2520 (2)
c (Å)	5.2092 (3)
Unit Cell Volume (Å^3)	47.7104
Zn	
x	0.33330
y	0.66670
z	0.00000
O	
x	0.33330 (0)
y	0.66670 (0)
z	0.38592 (7)
Average apparent crystallite size (nm)	6.862
Average maximum microstrain (10^{-4})	4.2311
Discrepancy factor (profile-weighted residual error) (R_{WP} (%))	10.3
Bragg R-factor	2.93
Goodness-of-fit indicator (GoF-Index)	2.40

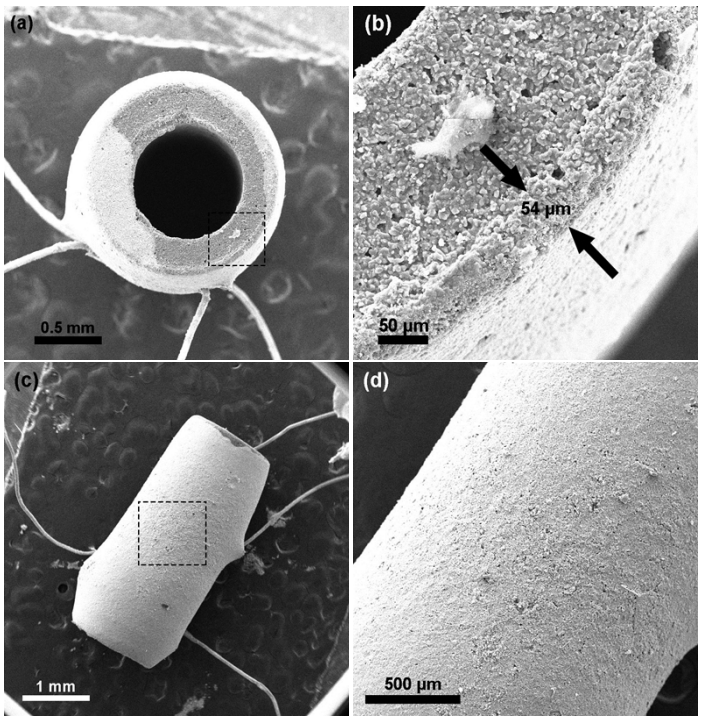

Fig. S1 Cross section SEM images (a) and (b) of the sensor, and surface SEM images (c) and (d) of the sensor.

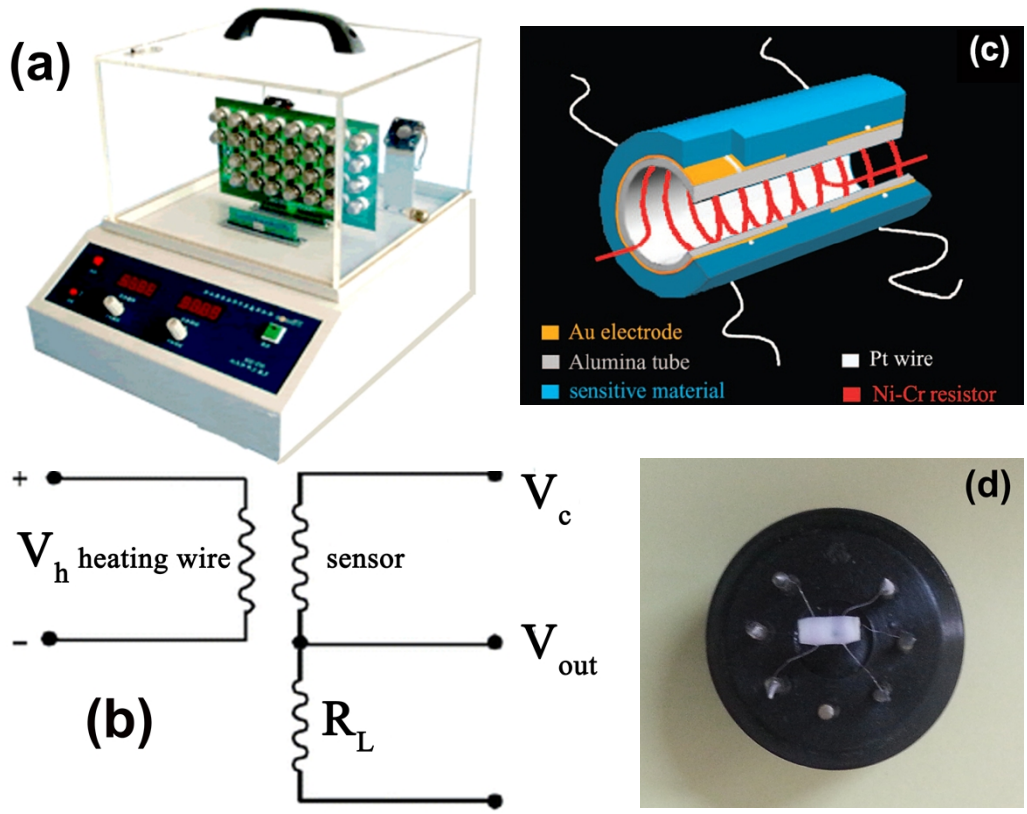

Fig. S2 (a) A photograph of the WS-30 A testing system, (b) the basic testing principle (where V_h is the heating voltage, R_L is a constant load resistance, V_{out} is the sensor export voltage, and V_c is the working voltage (5 V).), (c) the schematic structure of the gas sensor, and (d) the picture of a completed gas sensor.

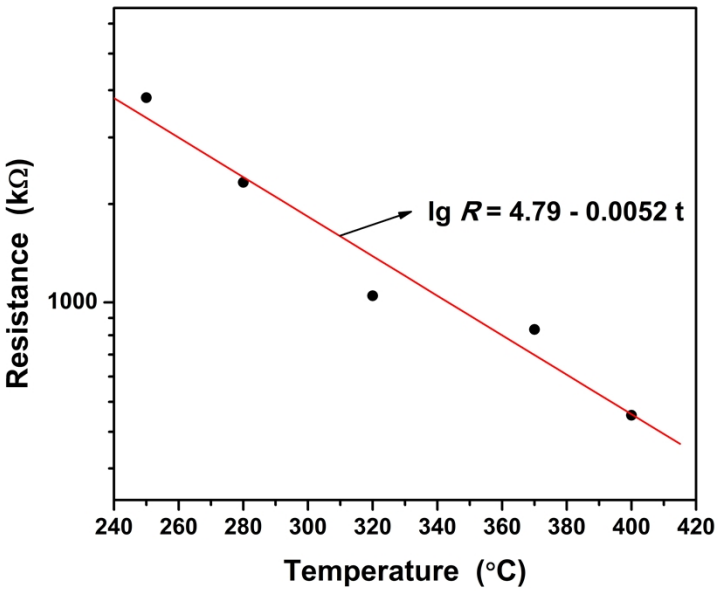

Fig. S3 Variation of resistance with temperature.

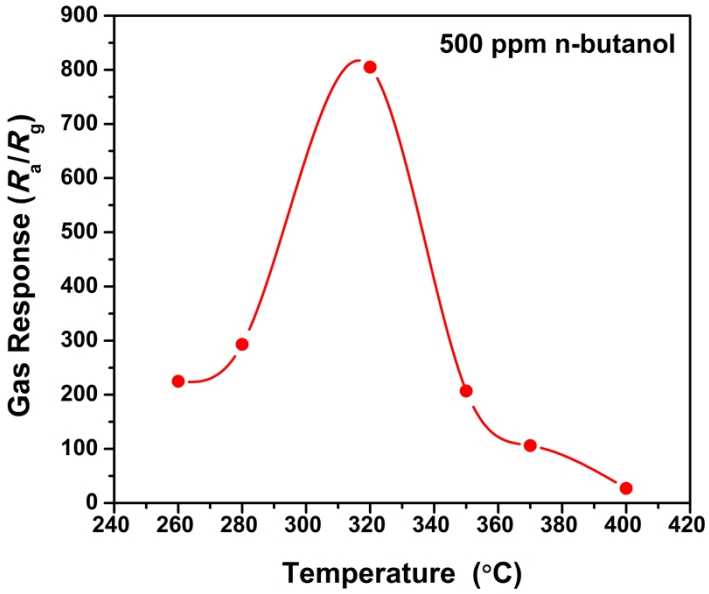

Fig. S4. Gas responses of as-fabricated gas sensor toward 500 ppm n-butanol gas tested at different temperature.

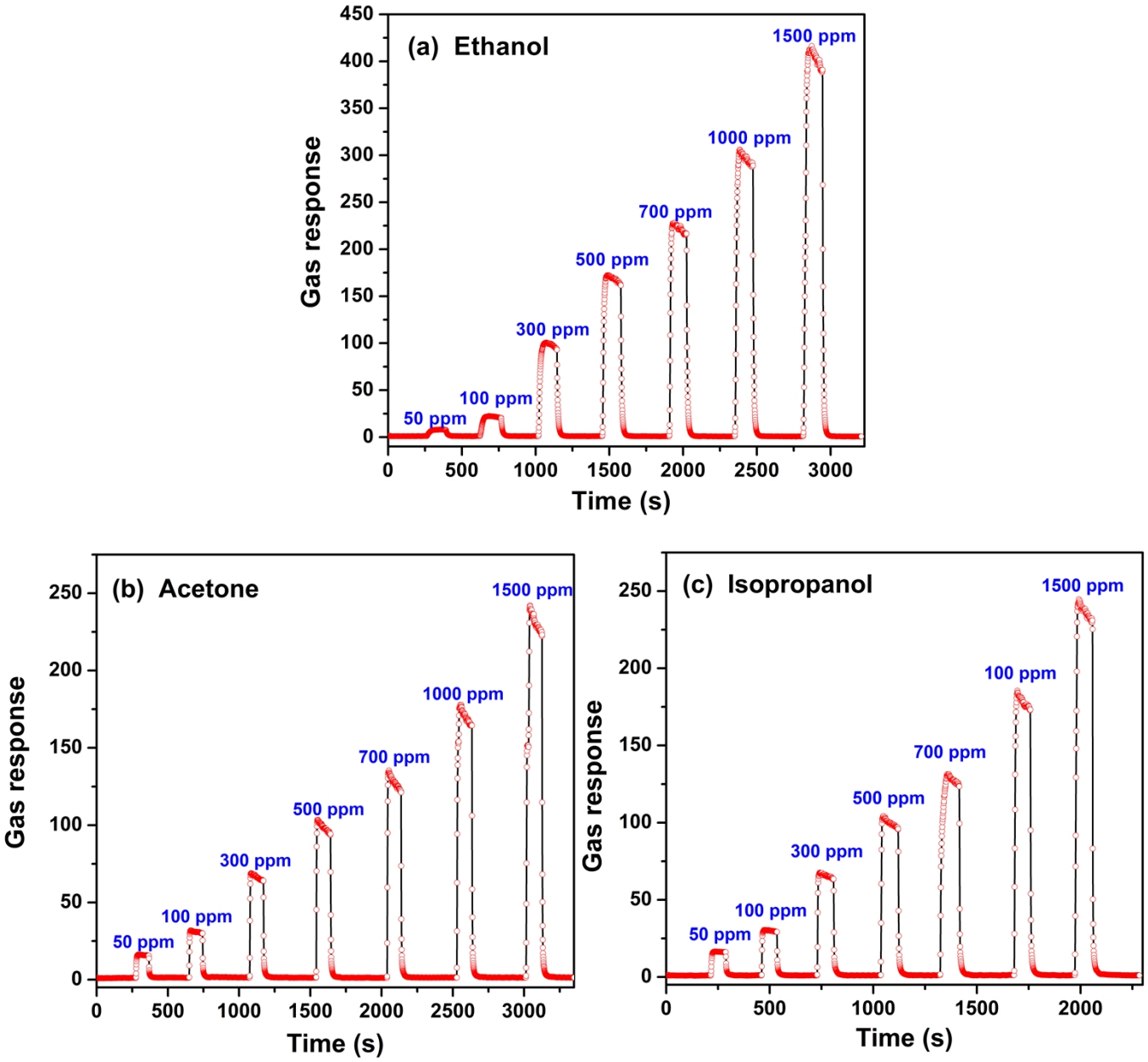

Fig. S5. Dynamic response curves of as-fabricated sensor toward ethanol, acetone and isopropanol at 320 °C.

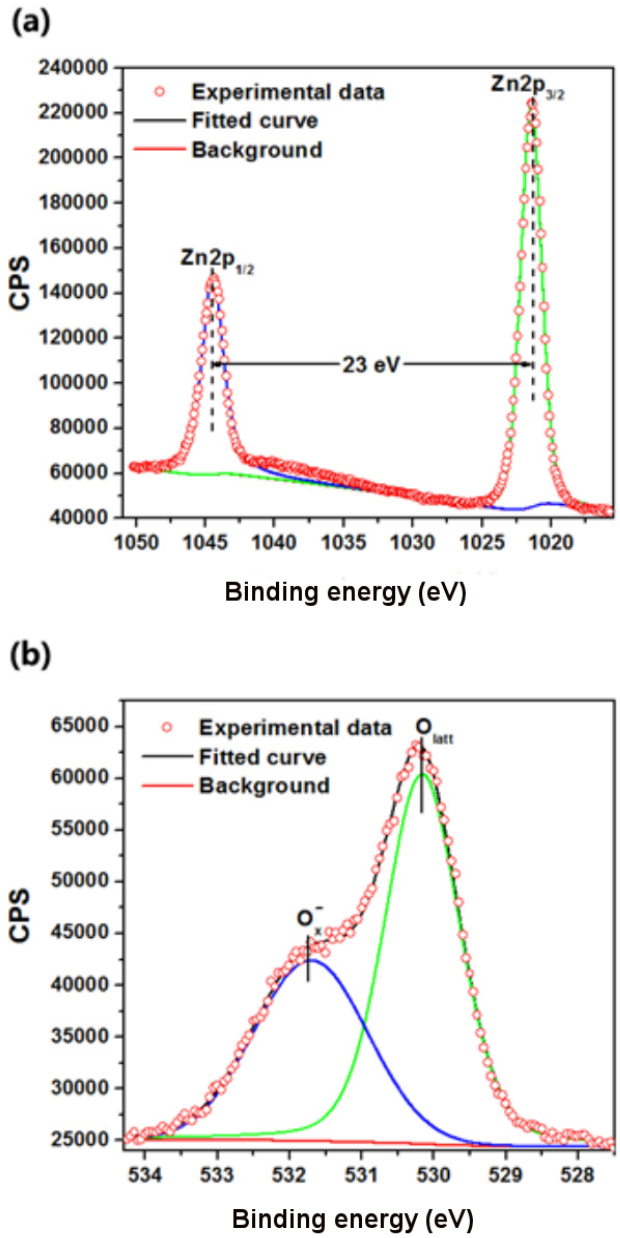

Fig. S6. The high-resolution XPS spectra of (a) Zn2p and (b) O1s of ZnOnanoparticles.