

Supporting Information

Highly Sensitive and Room Temperature Ethanol Gas Sensor Based on Spray Deposited Sb doped SnO₂ Thin Film

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1. Gas-sensing measurement setup

The ethanol gas sensing properties of undoped and Sb-doped SnO₂ thin films were tested using an in-house-built gas sensor unit. The pictorial diagram of the in-house-built gas sensor setup is shown in supplementary Figure S1.

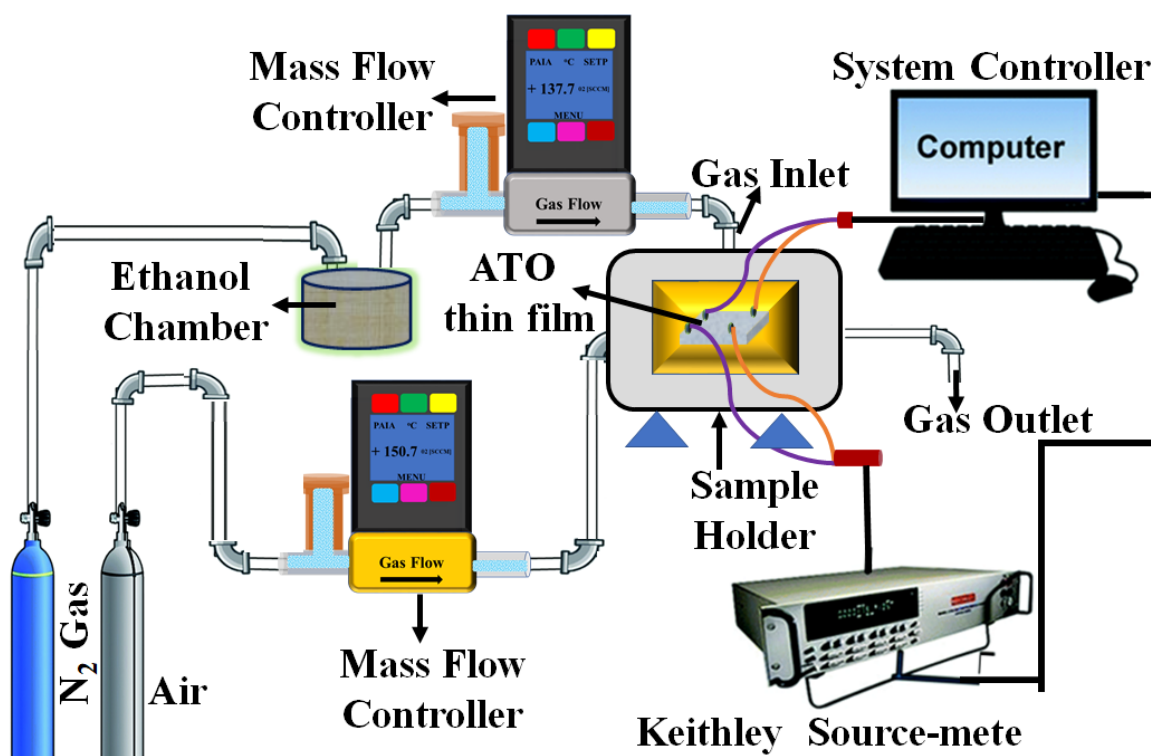


Fig. S1. In-house-built ethanol gas sensor experimental setup.

2. Repeatability study of gas-sensing measurements

To confirm the reliability of the sensor, each response study was carried out 3 times. The TO and ATO thin films exhibited similar response behavior toward ethanal gas sensing, as shown in Figure S2.

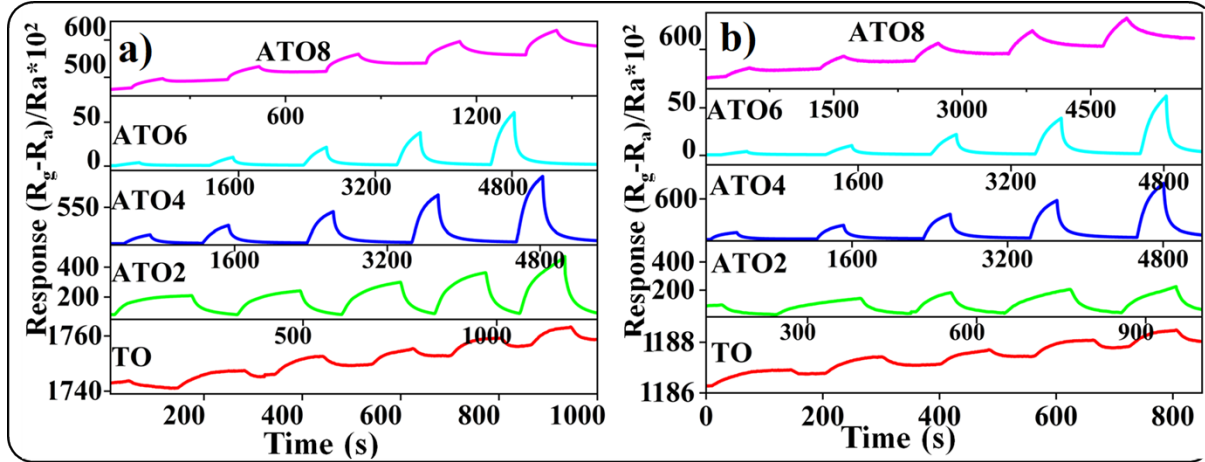


Fig. S2. (a, b) Response behavior of TO and ATO thin films towards 10–50 ppm of ethanol gas at 30 °C.

Table S1. Ethanol gas sensor performance of TO and ATO films for different Sb doping contents.

Sample	Gas (ppm)	TO	ATO2	ATO4	ATO6	ATO8
Response time (s)	10	66	97	190	204	69
	20	85	108	233	213	79
	30	90	132	210	207	86
	40	64	179	243	219	88
	50	79	127	205	259	86
Recovery time (s)	10	34	70	207	108	42
	20	32	105	279	148	71
	30	33	112	291	157	98
	40	34	135	212	189	110
	50	32	101	263	214	179
Response (%)	10	0.2	12	54	235	11
	20	1.6	31	83	379	27
	30	2.4	47	139	639	33
	40	3.8	88	201	715	50
	50	4.7	104	296	842	61
Sensitivity		0.1	2.4	6	16	1.2

