

Supporting Information

Title: Effect of Unsaturated Sn Atoms on Gas-Sensing Property in Hydrogenated SnO₂ Nanocrystals and Sensing Mechanism

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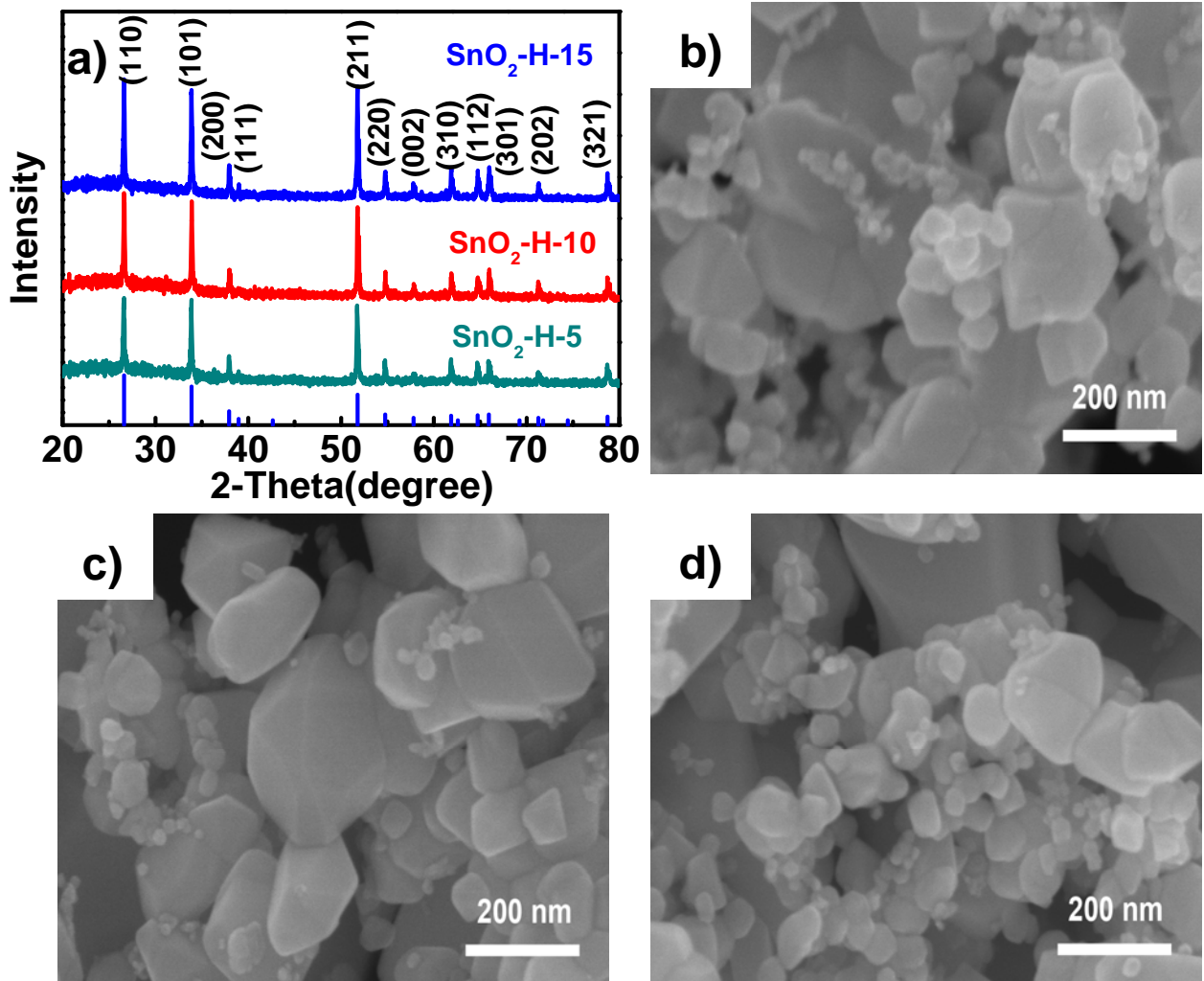
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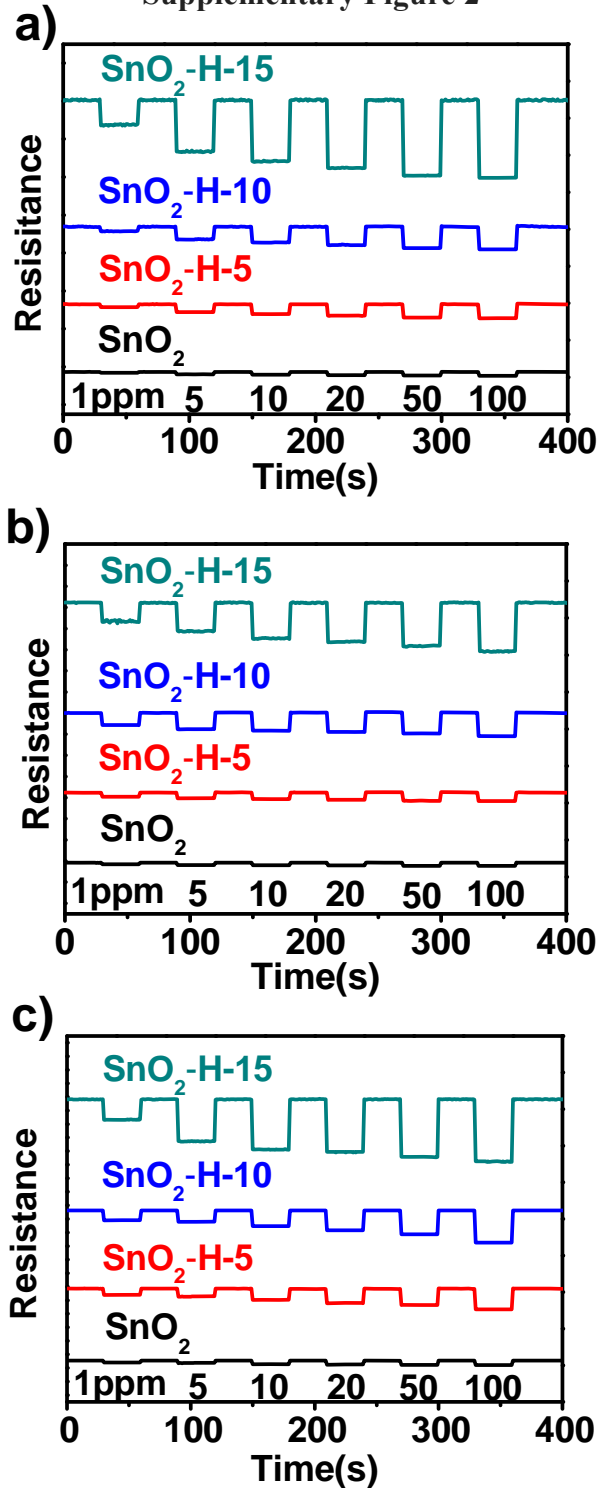
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Supplementary Figure 1



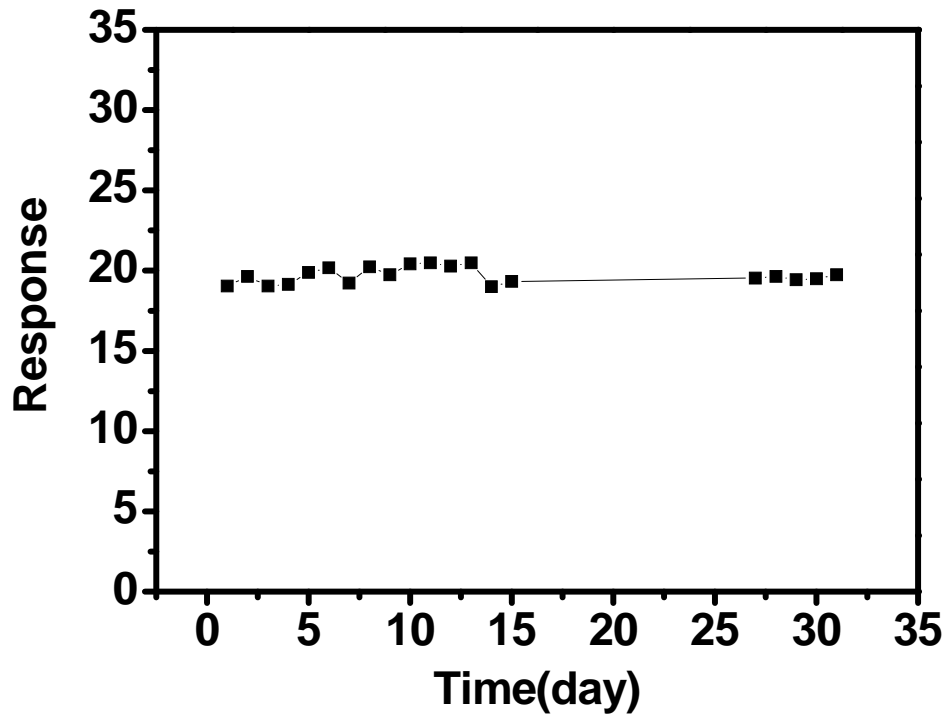
Supplementary Figure 1 | (a) XRD patterns and (b-d) FESEM images of the SnO₂-H-5, SnO₂-H-10 and SnO₂-H-15.

Supplementary Figure 2



Supplementary Figure 2 | Transient response and recovery curves of the sensors based on the hydrogenated and non-hydrogenated SnO₂ samples to different concentrations of (a) ethanol, (b) methanol and (c) triethylamin with 50% of relative humidity at 350°C.

Supplementary Figure 3



Supplementary Figure 3 | Long-term stability of the sensor based on the SnO₂-H-15 sample to 100 ppm ethanol with 3%-35% of relative humidity at 350°C.

Supplementary Table 1

Supplementary Table 1 | Fitting result of O 1s XPS spectra of the hydrogenated and non-hydrogenated SnO₂ samples.

SnO ₂ sample		O _L (Sn-O)	O _V (vacancy)	O _C (chemisorbed) and -OH
SnO ₂	binding energy (eV)	530.27	531.44	532.85
	relative percentage (%)	41.59	37.79	20.61
SnO ₂ -H-5	binding energy (eV)	530.33	531.56	533.00
	relative percentage (%)	40.52	37.98	21.50
SnO ₂ -H-10	binding energy (eV)	530.22	531.42	532.92
	relative percentage (%)	34.85	41.20	23.95
SnO ₂ -H-15	binding energy (eV)	530.22	531.52	532.97
	relative percentage (%)	32.15	42.14	25.71