Supporting Information

SO_2 Detection over a Wide Range of Concentrations: An Exploration on MOX-Based Gas Sensors

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Sensor Fabrication

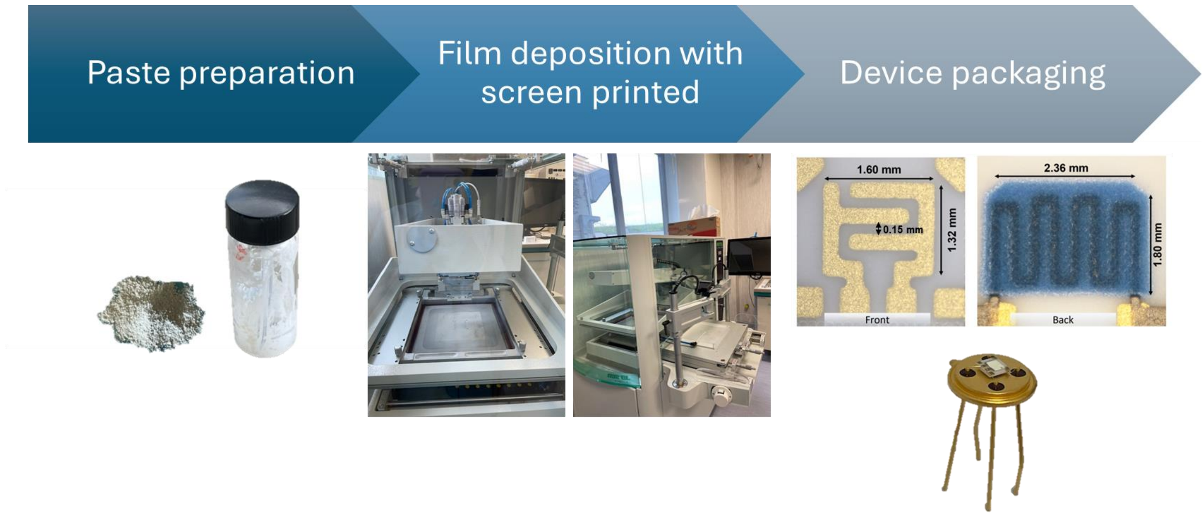

Figure S1. Schematic representation of sensor fabrication.

Electrical characterization

Table S1. The parameters of the calibration fit shown in **Figure 2** for ZnO, WO_3, SnO_2:Pd, SnO_2:Au, SnO_2, and SnO_2:Pt sensors.

Sensor	Equation asymptotic $y = a - b \cdot c^x$			
	a	b	c	R^{2*}
WO_3	0.45 ± 0.059	2.59 ± 6.57	0.018 ± 0.095	0.89
ZnO	3.17 ± 0.18	7.02 ± 0.816	0.24 ± 0.058	0.99
SnO_2	8.19 ± 0.20	6.36 ± 0.33	0.66 ± 0.040	0.99
SnO_2:Au	16.58 ± 1.53	19.04 ± 1.38	0.755 ± 0.032	0.99
SnO_2:Pd	11.29 ± 0.83	12.52 ± 0.74	0.75 ± 0.030	0.99
SnO_2:Pt	2.01 ± 0.022	289.51 ± 1301.79	0.0054 ± 0.0244	0.99

* Expresses the goodness of the fit. As for the SnO_2:Ag-sensor, the trend could not be defined.

Table S2. Load resistances of sensors during selectivity measurements.

Sensor	Relation: $G_S = \frac{1}{R_S} = -\frac{V_{out}}{R_f \cdot V_{in}}$
	Load resistance
WO_3	13 kΩ and 160 kΩ for NO_2 measurement
ZnO	160 kΩ
SnO_2	3.6 kΩ
SnO_2:Au	6.2 kΩ
SnO_2:Pd	130 kΩ
SnO_2:Pt	2.7 MΩ
SnO_2:Ag	750 kΩ

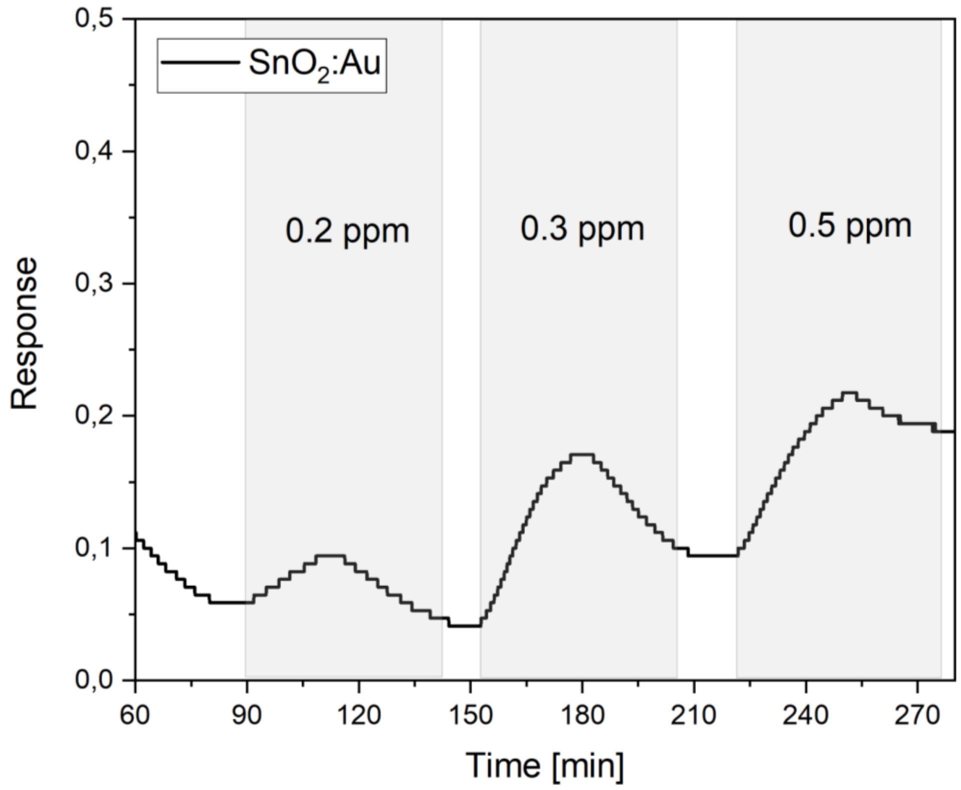

Figure S2. Response to three different concentrations of SO_2 around the theoretical LOD of SnO_2:Au sensor.

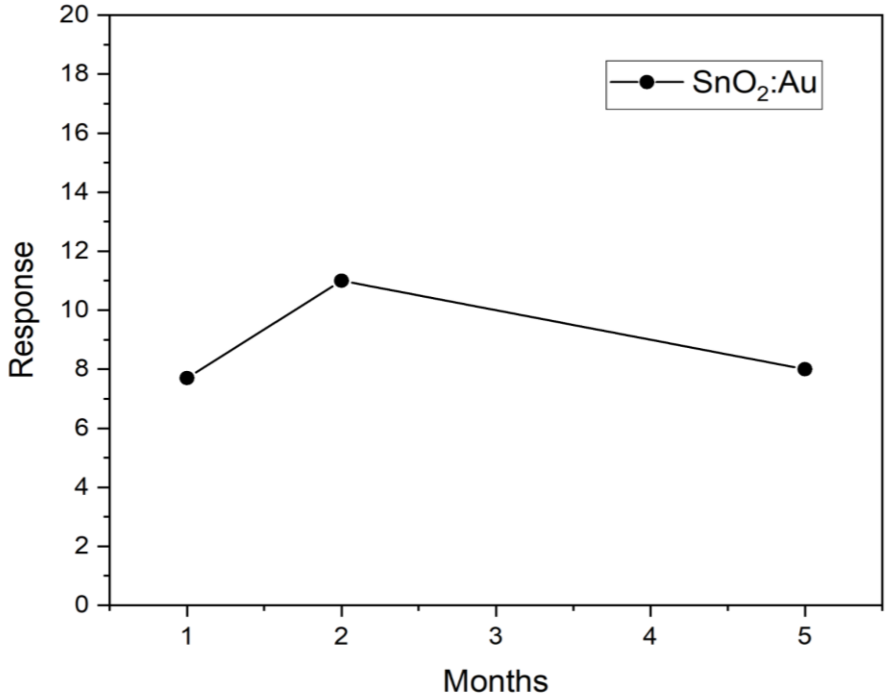

Figure S3. Response to 3 ppm of SO_2 obtained for SnO_2:Au sensor tested with three different measurements over a period of five months.

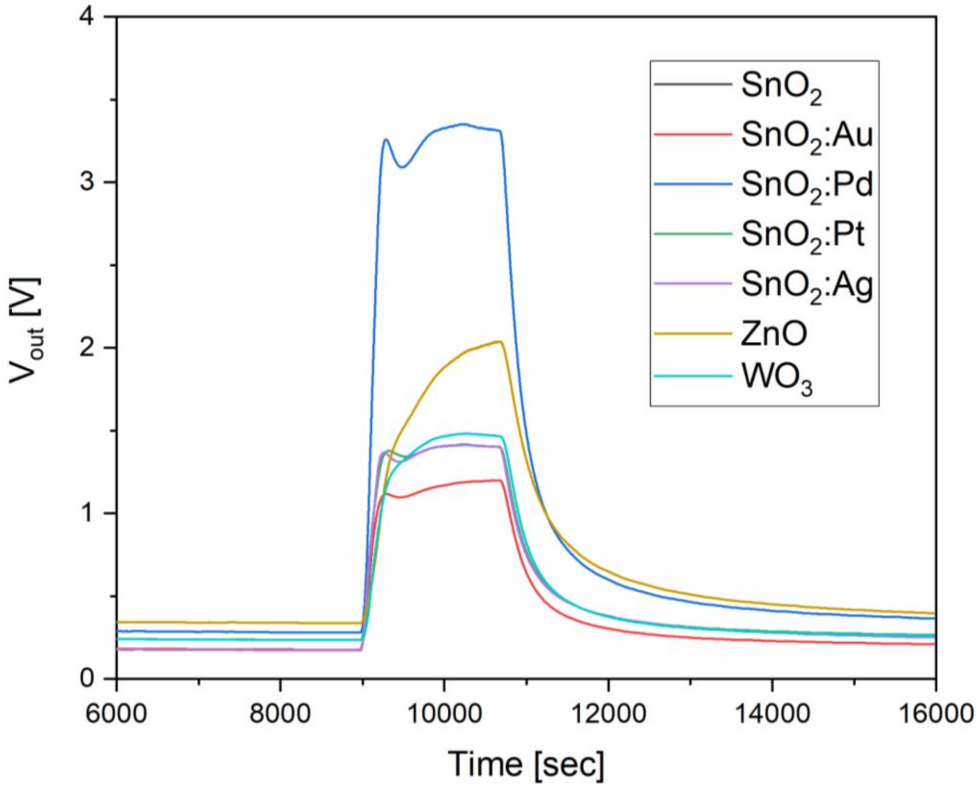

Figure S4. V_{out} response vs. 0.25 ppm of DMDS.

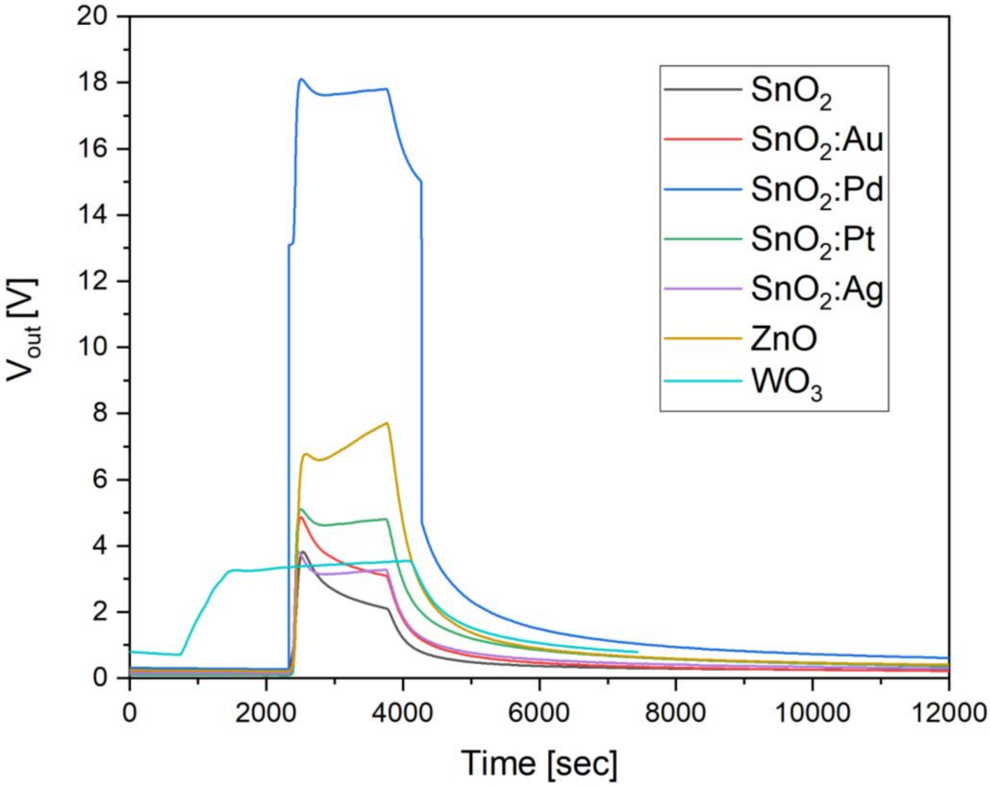

Figure S5. V_{out} response vs. 5 ppm of ethanol. In the case of WO_3, the injection of the gas was different due to a different day of measurement.

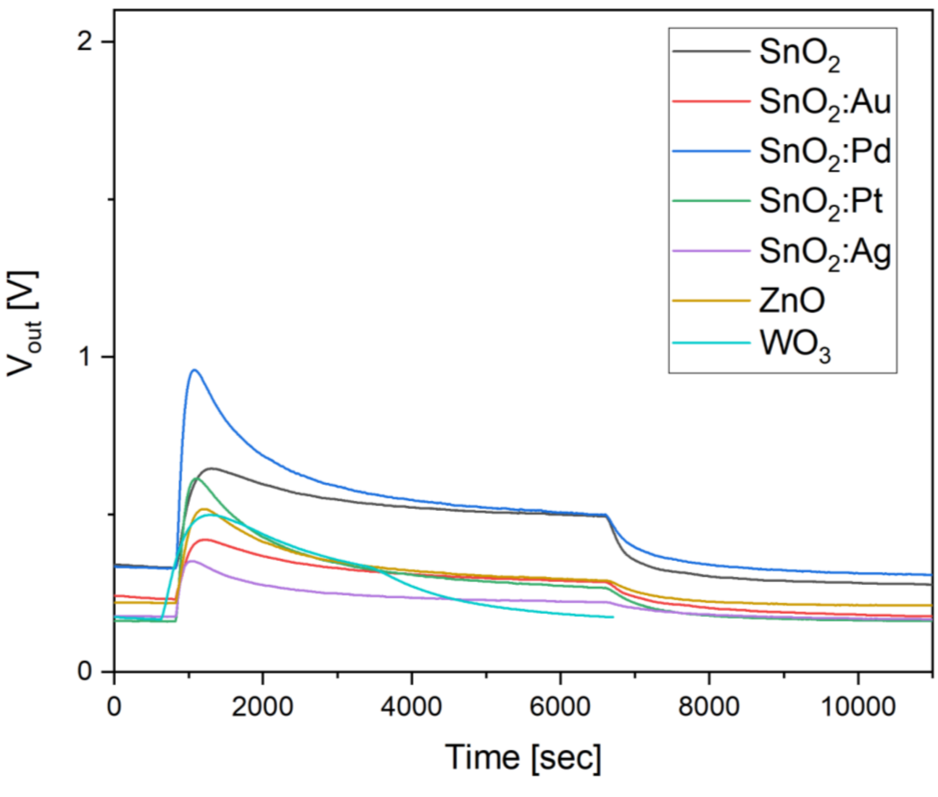

Figure S6. V_{out} response vs. 5000 ppm of CO_2. In the case of WO_3, the injection of the gas was different due to a different day of measurement.

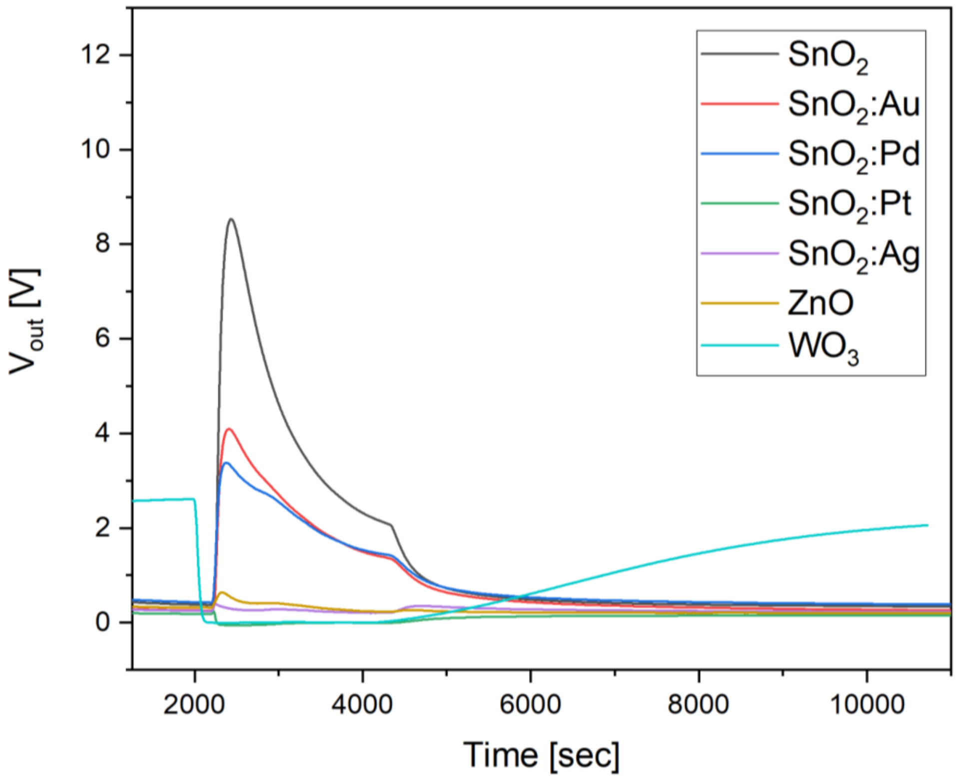

Figure S7. V_{out} response vs. 3 ppm of NO_2. In the case of WO_3, the injection of the gas was different due to a different day of measurement.

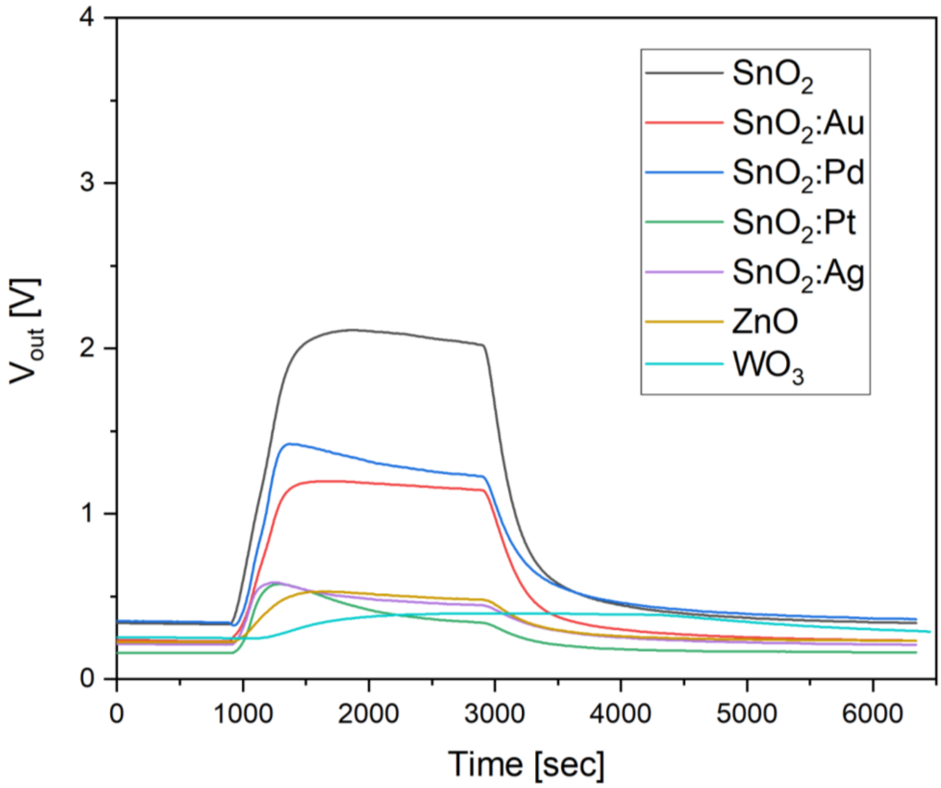

Figure S8. V_{out} response vs. 0.5 ppm of benzene. In the case of WO_3, the injection of the gas was different due to a different day of measurement.

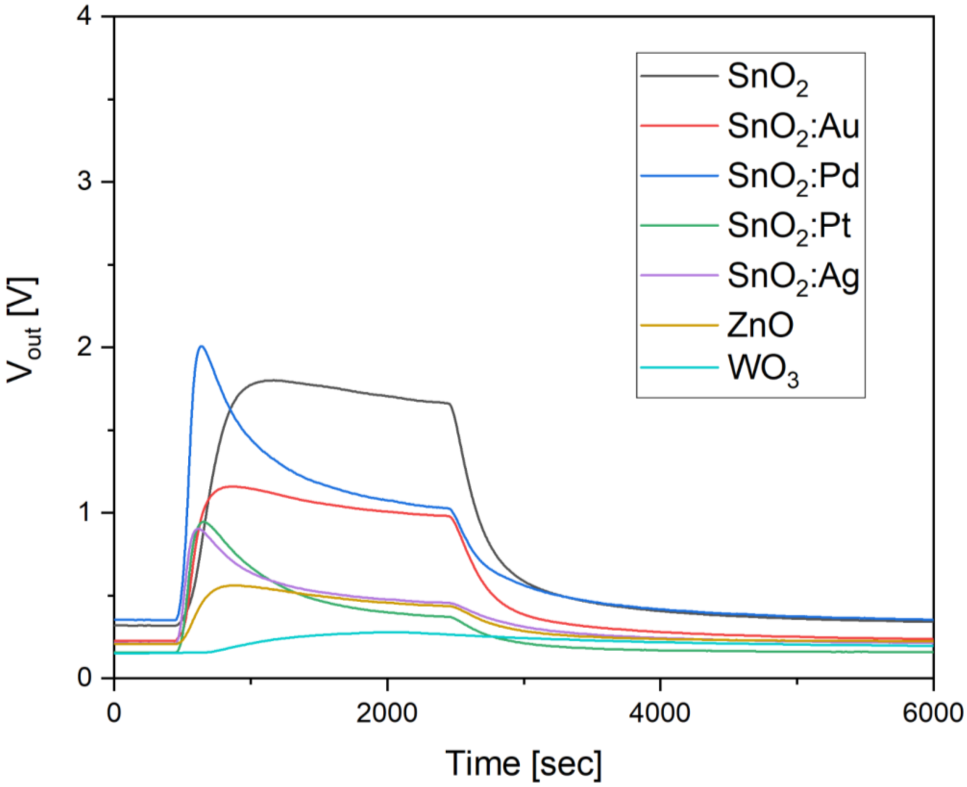

Figure S9. V_{out} response vs. 25 ppm of CO. In the case of WO_3, the injection of the gas was different due to a different day of measurement.

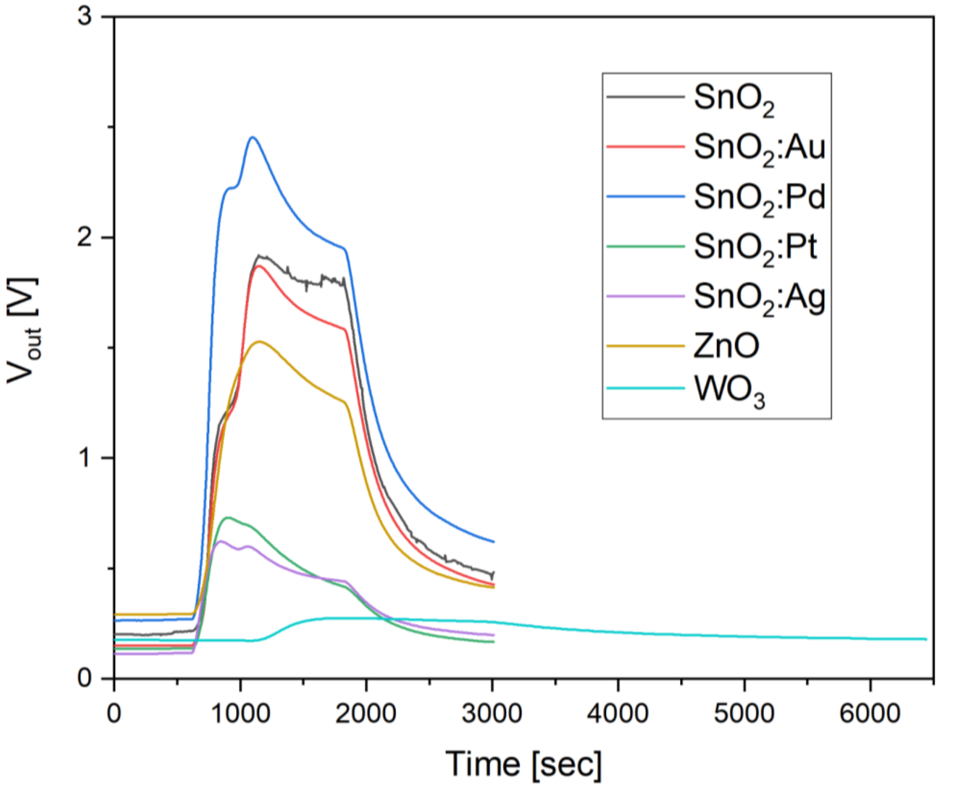

Figure S10. V_{out} response vs. 5 ppm of SO_2. In the case of WO_3, the injection of the gas was different due to a different day of measurement.