Supporting information

$SnSe_2/Ag_2Se$ heterostructures with an accumulation layer for rapid and sensitive detection of NO_2

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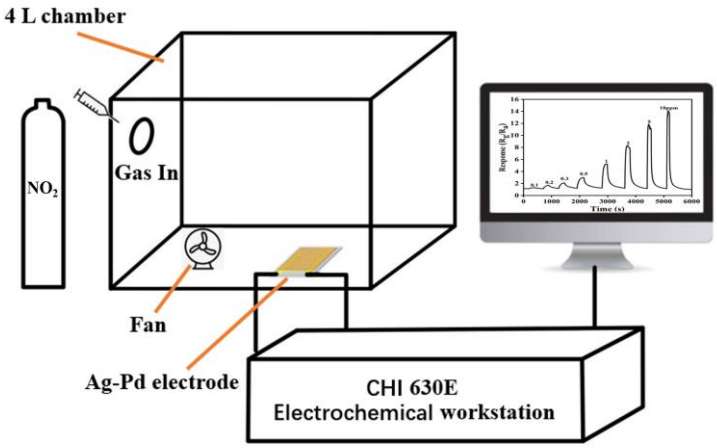

Fig. S1 Schematic diagram of the sensor measurement.

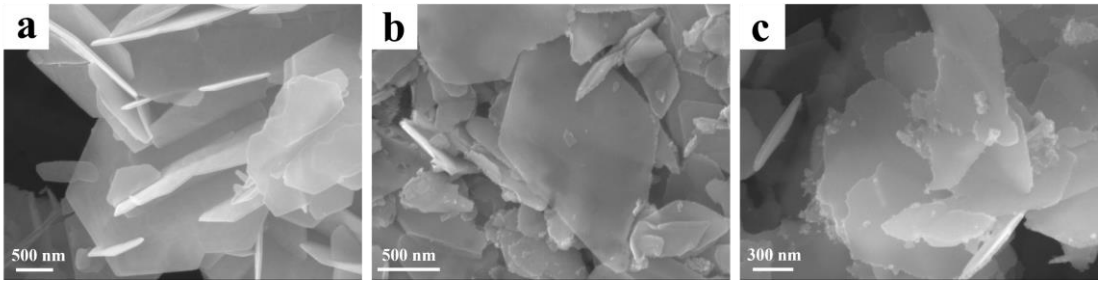

Fig. S2 SEM images of (a) pristine $SnSe_2$ nanosheets, (b) 3% $SnSe_2/Ag_2Se$ heterostructures, and (c) 9% $SnSe_2/Ag_2Se$ heterostructures.

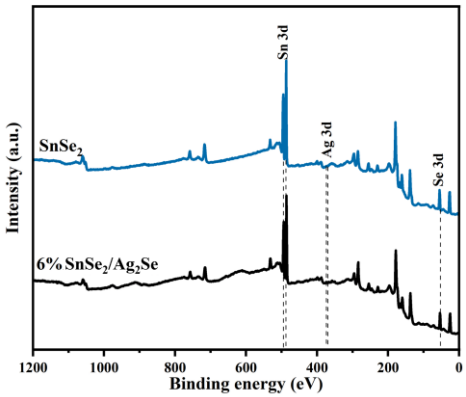

Fig. S3 The full XPS survey spectra of pure $SnSe_2$ and 6% $SnSe_2/Ag_2Se$.

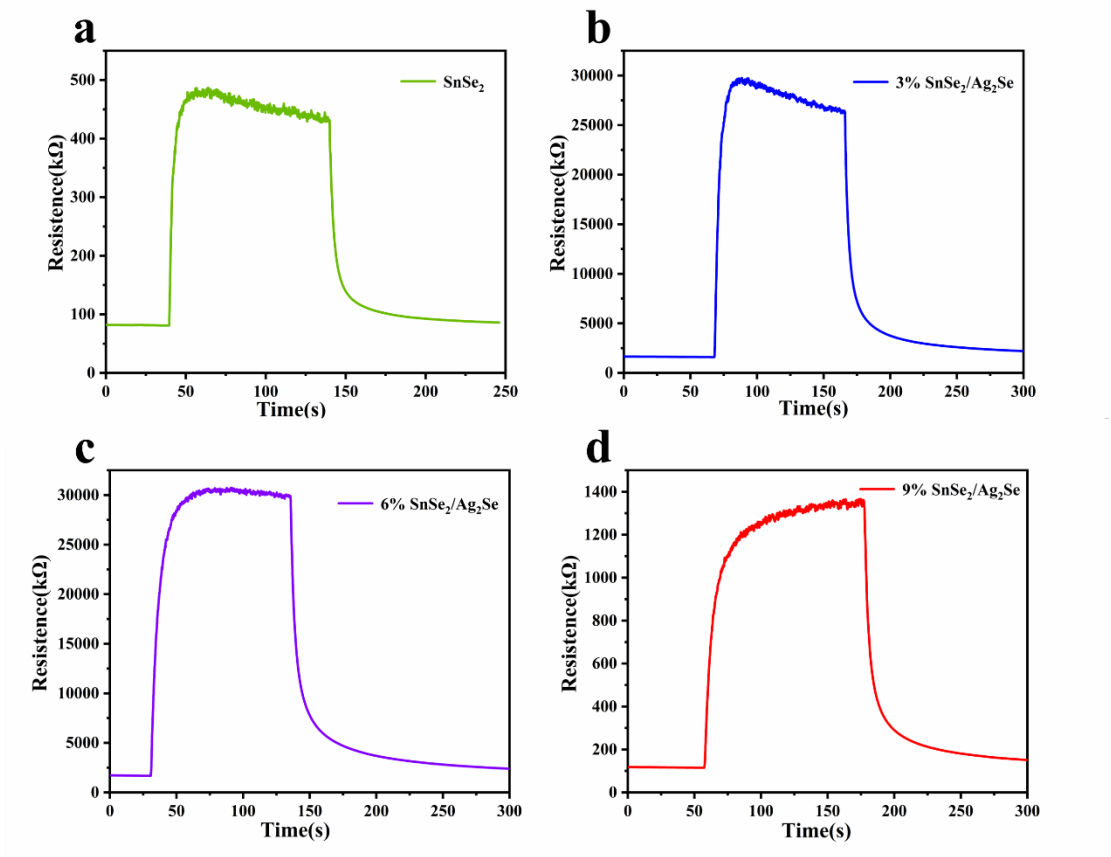

Fig. S4 Resistance variations to 5 ppm NO_2 of (a) $SnSe_2$, (b) 3% $SnSe_2/Ag_2Se$, (c) 6% $SnSe_2/Ag_2Se$, and (d) 9% $SnSe_2/Ag_2Se$.

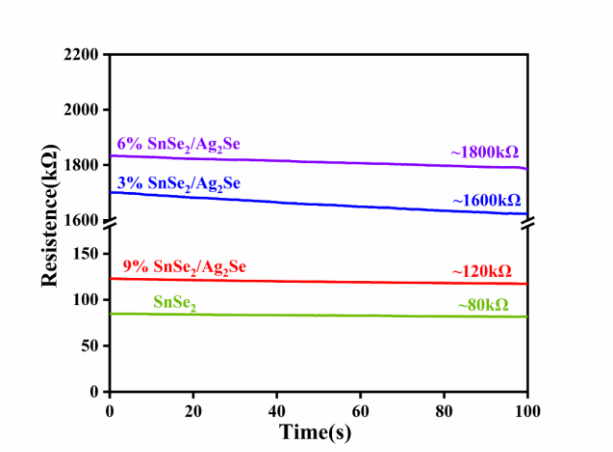

Fig. S5 Resistances of the pure $SnSe_2$ and $SnSe_2/Ag_2Se$ heterostructures.

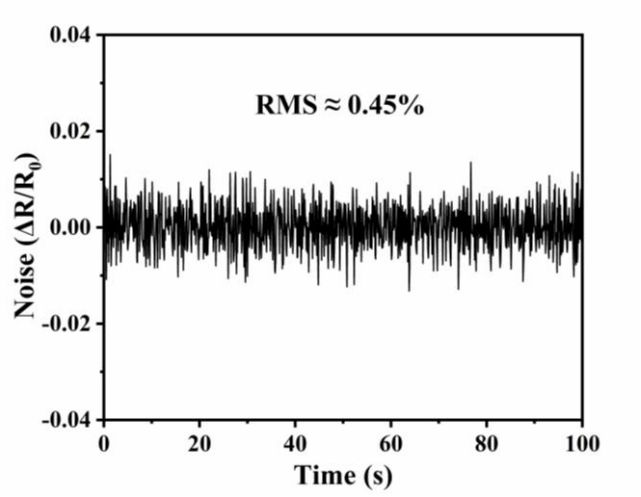

Fig. S6 Experimentally recorded noise of response for the 6% $SnSe_2/Ag_2Se$ sensor. The result indicates that the root-mean-square (RMS) value of background noise is about 0.45%.

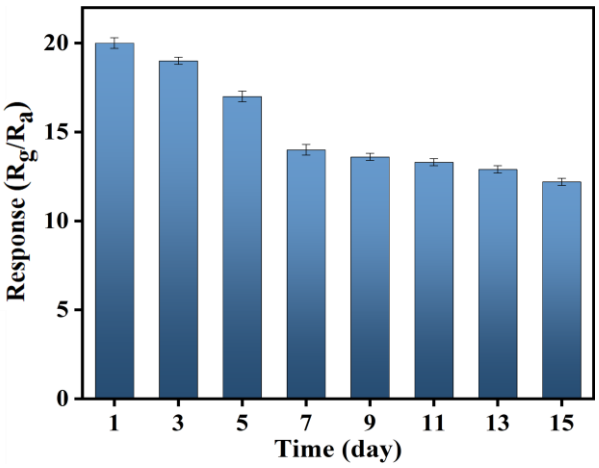

Fig. S7 Long-term stability test toward 5 ppm NO_2 for 15 days.