

Supporting Information

Fast response and highly sensitive flexible humidity sensor based on nanocomposite film of MoS₂ and graphene oxide

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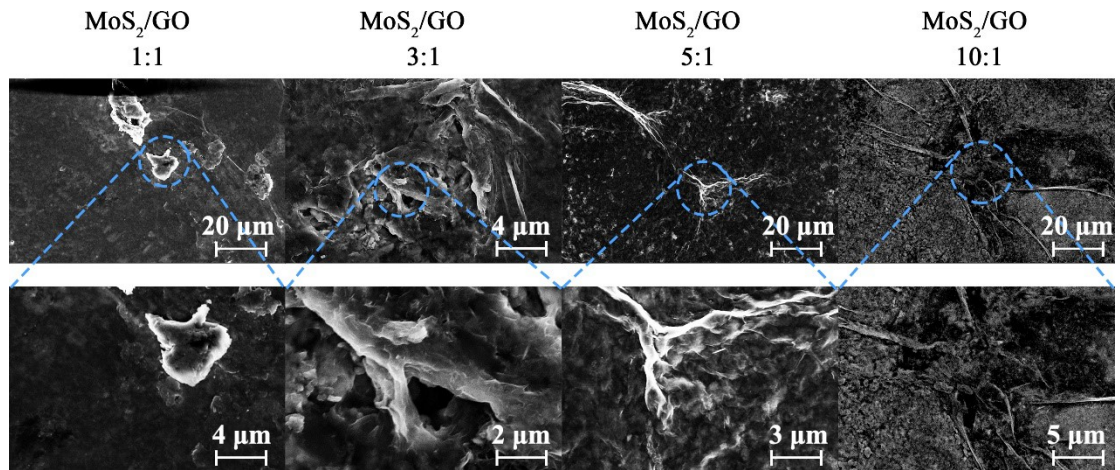


Figure S1. SEM images of the prepared MoS₂/GO composite films using 0.1 mL dispersion with different volume ratios of MoS₂/GO.

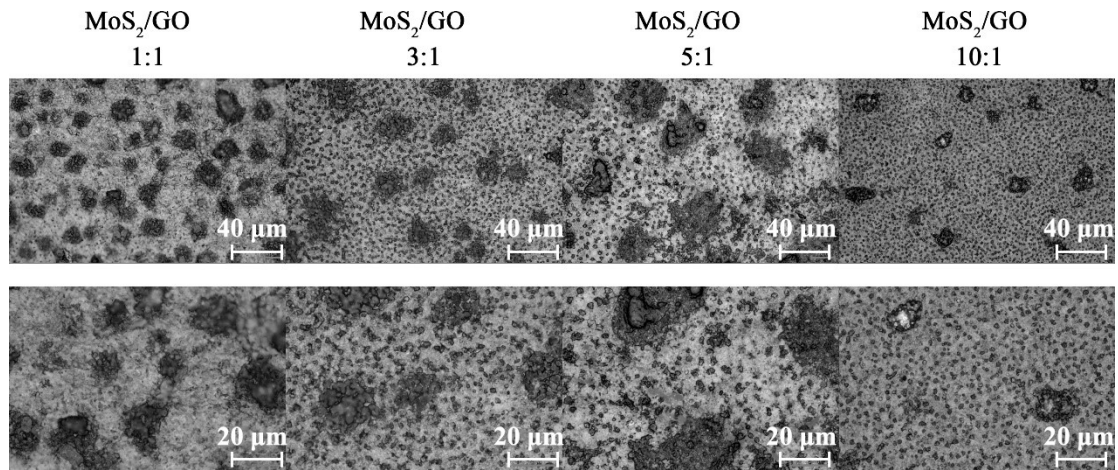


Figure S2. Optical microscope images of the prepared MoS₂/GO composite films using 0.05 mL dispersion with different volume ratios of MoS₂/GO. The MoS₂ and GO can be distinguished from the prepared MoS₂/GO composite films, in which dark agglomerations with large area were GO due to agglomeration effect while scattered granular structures were MoS₂.

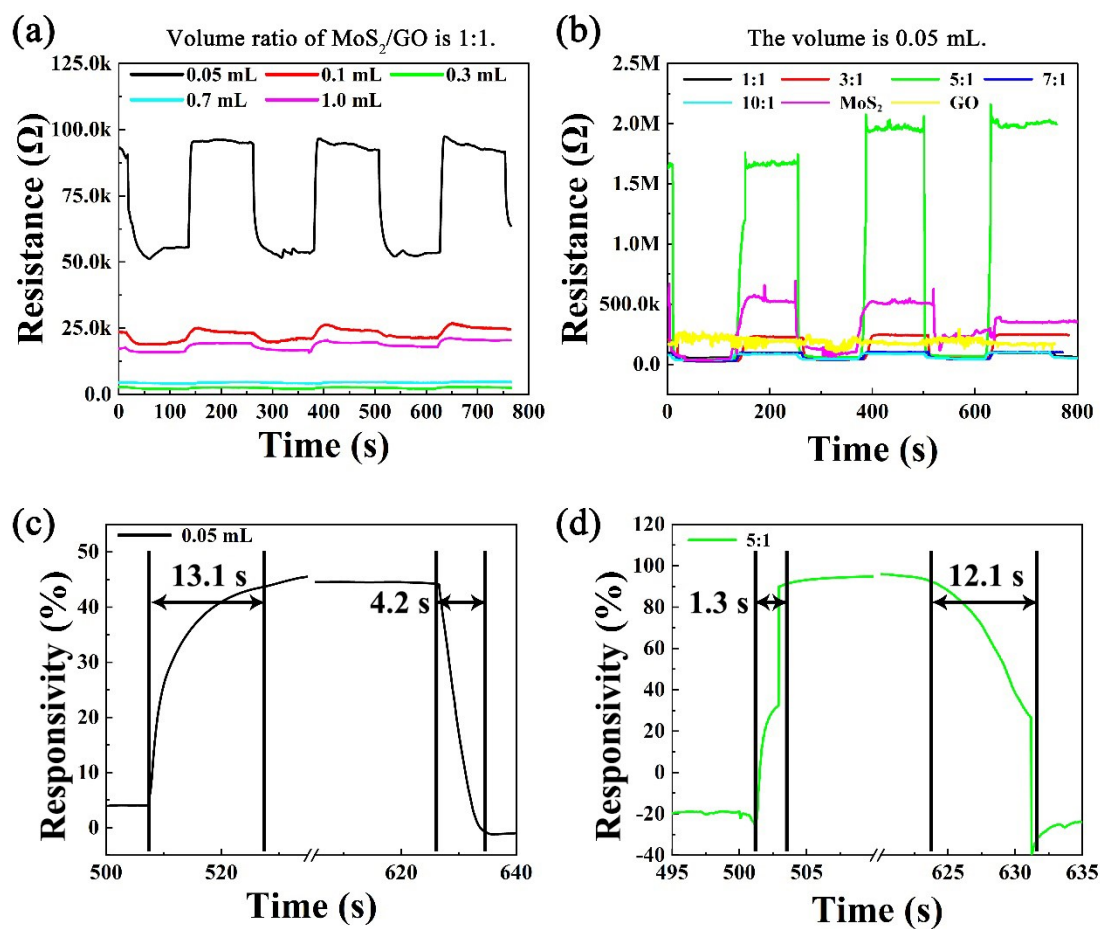


Figure S3. Humidity measurements. (a) Several cycles of humidity measurements of humidity sensors that were prepared by using different volumes of MoS_2/GO dispersions with volume ratio of 1:1, showing the absolute resistance of the prepared humidity sensors changed with the time. The relative humidity was changed between 11%RH and 98%RH. (b) Several cycles of humidity measurements of humidity sensors that were prepared by using 0.05 mL pure MoS_2 dispersion, 0.05 mL pure GO dispersion and 0.05 mL MoS_2/GO dispersions with different volume ratios, showing the absolute resistance of the prepared humidity sensors changed with the time. The relative humidity was changed between 1%RH and 98%RH. (c) Part of curves in (a) about humidity measurements of the humidity sensor that was prepared by using 0.05 mL MoS_2/GO dispersion with volume ratio of 1:1, showing the measurements of the response time and recovery time in detail. (d) Part of curves in (b) about humidity measurements of the humidity sensor that was prepared by using 0.05 mL MoS_2/GO

dispersion with volume ratio of 5:1, showing the measurements of the response time and recovery time in detail.

Table S1. The resistance values of the humidity sensors that were prepared by using different volumes of MoS₂/GO dispersions with the volume ratio of 1:1 at 11% RH and 98% RH.

Volume (mL)	Resistance (Ω) at 11% RH	Resistance (Ω) at 98% RH
0.05	93106	51312
0.1	23546	18820
0.3	2708	2145
0.5	2913	2557
0.7	4476	4082
1.0	17205	16124

Table S2. The resistance values of the humidity sensors that were prepared by using 0.05 mL pure GO dispersion, 0.05 mL pure MoS₂ dispersion, and 0.05 mL MoS₂/GO dispersion with different volume ratios at 11% RH and 98% RH.

Volume ratio of MoS ₂ /GO	Resistance (Ω) at 11% RH	Resistance (Ω) at 98% RH
Pure GO	165403	-
1:1	93106	51312
3:1	220952	45619
5:1	1651733	33839
7:1	93362	42644
10:1	83832	40012
Pure MoS ₂	501613	36869