Electronic Supplementary Material (ESI) for Nanoscale.

Electronic Supplementary Information

Low-Temperature Synthesis of 2D MoS_2 on a Plastic Substrate for a Flexible Gas Sensor

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A. Optical microscope images for CVD MoS_2

Fig. S1 OM images of CVD MoS_2 grown on SiO_2 substrate for 10 min, 15 min and 20 min of process time

B. Raman and PL for the synthesized MoS_2

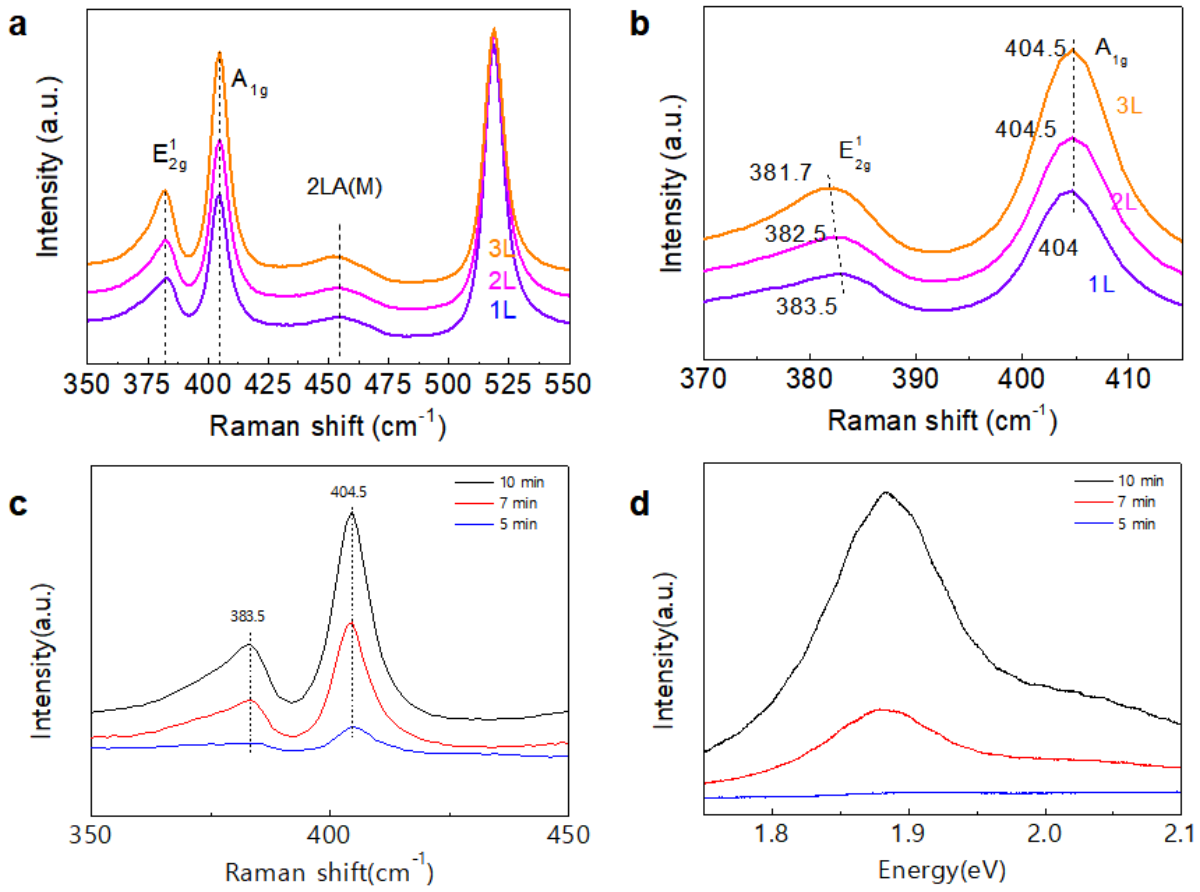

Fig. S2 (a-b) Different x-axis scale Raman spectrum for the synthesized 2D MoS_2 for 10 min, 15 min, 20 min. (c) Raman and (d) PL measurements for the synthesized 2D MoS_2 for 5 min, 7 min, 10 min.

C. Raman and PL mapping of MoS_2

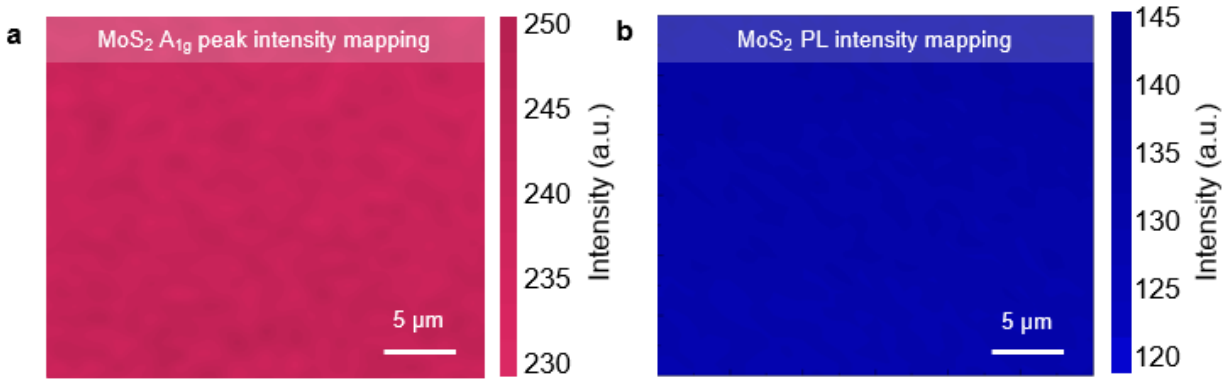

Fig. S3 (a) Raman intensity mapping and (b) PL intensity mapping of CVD MoS_2 grown on SiO_2 substrate for 10 min.

D. MoS_2 transferred from PI to SiO_2

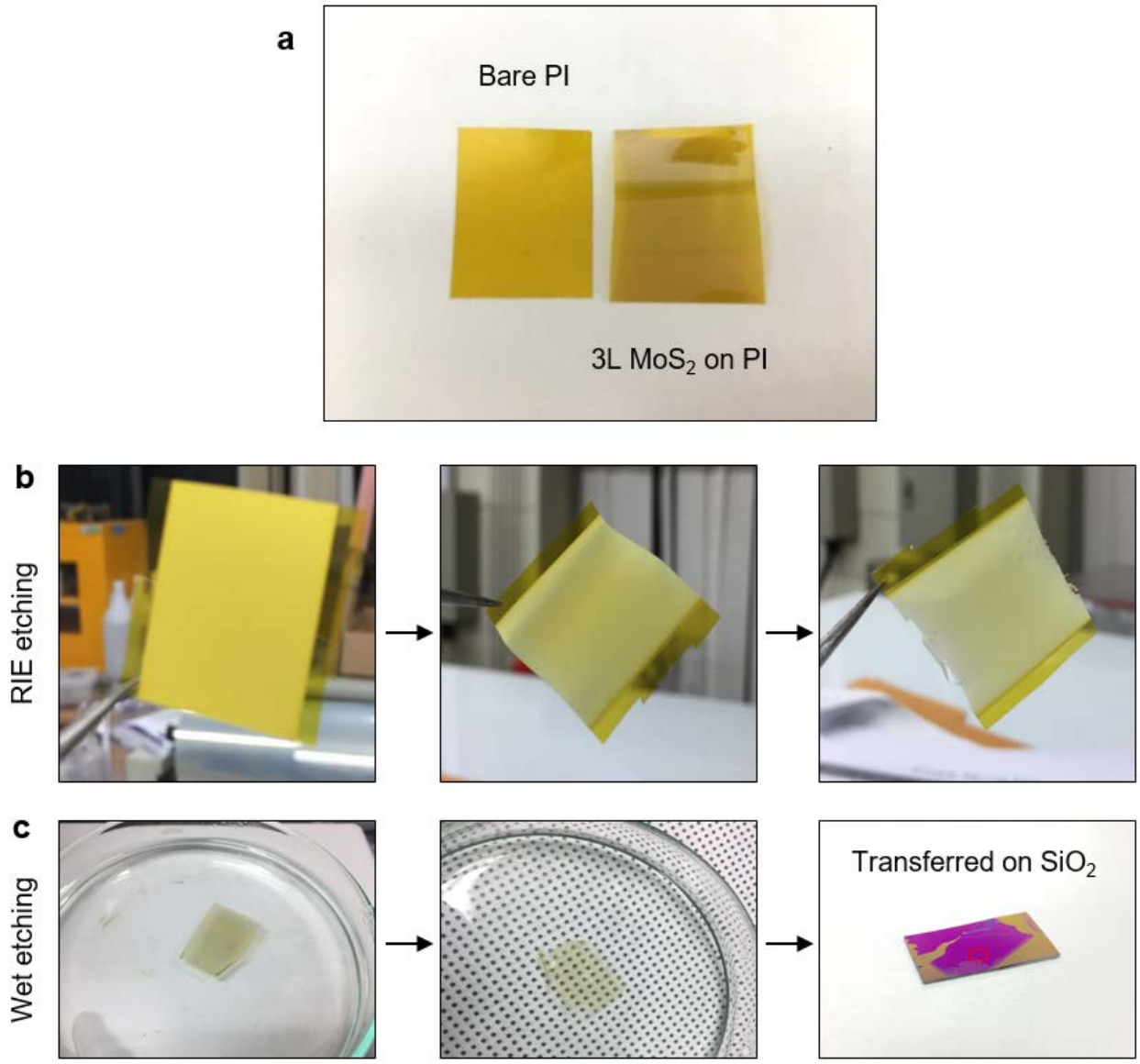

Fig. S4 (a) Optical image of bare PI and deposited with 3L MoS_2.(b) RIE etching (c) Wet etching during 2D MoS_2 transferred from PI to SiO_2.

E. Characteristics of the 2D MoS_2 based flexible gas sensor

The sensors show rapid current changes upon exposure to the low concentration of NO_2 or NH_3 gas in the beginning, but then quasi-saturation behaviors are observed when gas concentrations became higher.

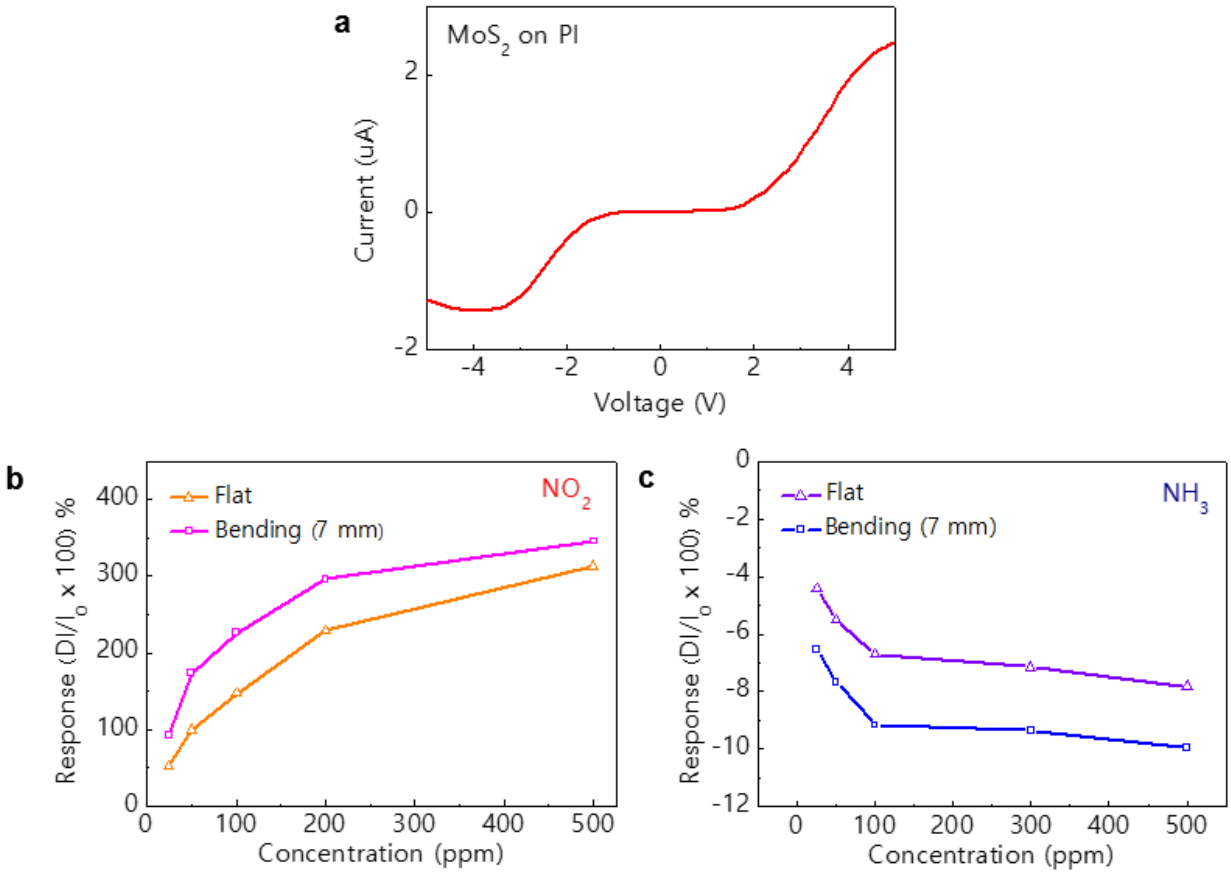

Fig. S5 (a) I-V characteristics of the 2D MoS_2 based flexible gas sensor. (b) Response versus NO_2 concentration (25, 50, 100, 200, 500 ppm). (c) Response versus NH_3 concentration (25, 50, 100, 200, 500 ppm).