Electronic Supplementary Material (ESI) for Nanoscale.
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Flexible Transparent Colorimetric Wrist Strap Sensor

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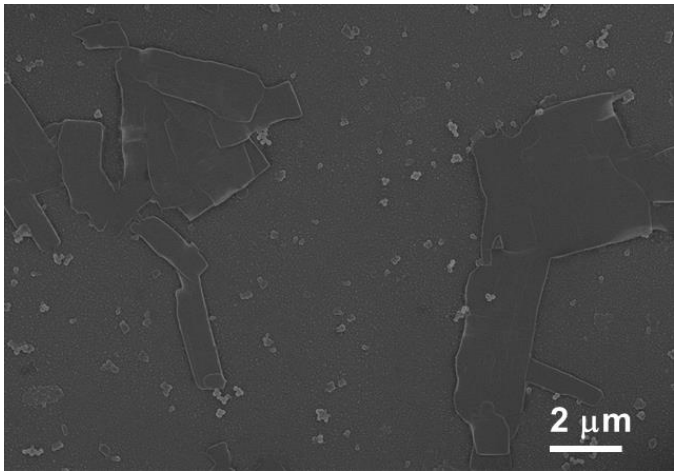

Fig. S1 SEM image of PDA film on PET.

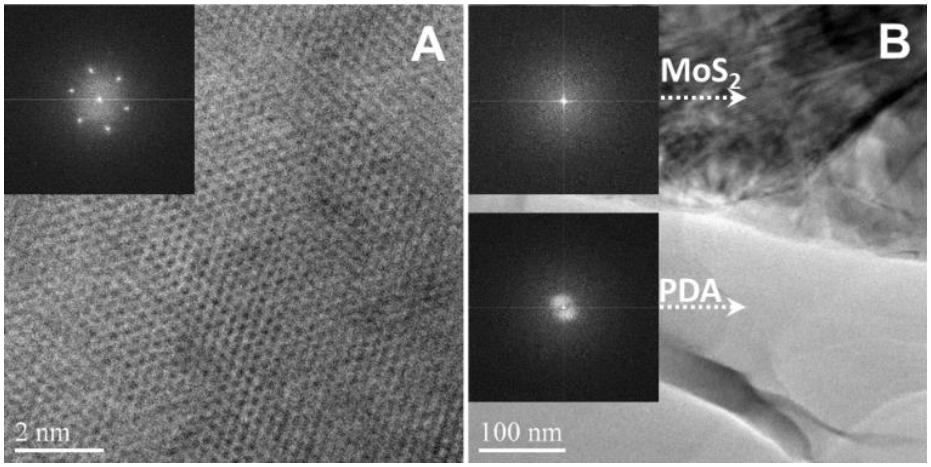

Fig. S2 The HRTEM and FFT pattern images of MoS_2 nanosheets (A) and PDA/MoS_2 (B).

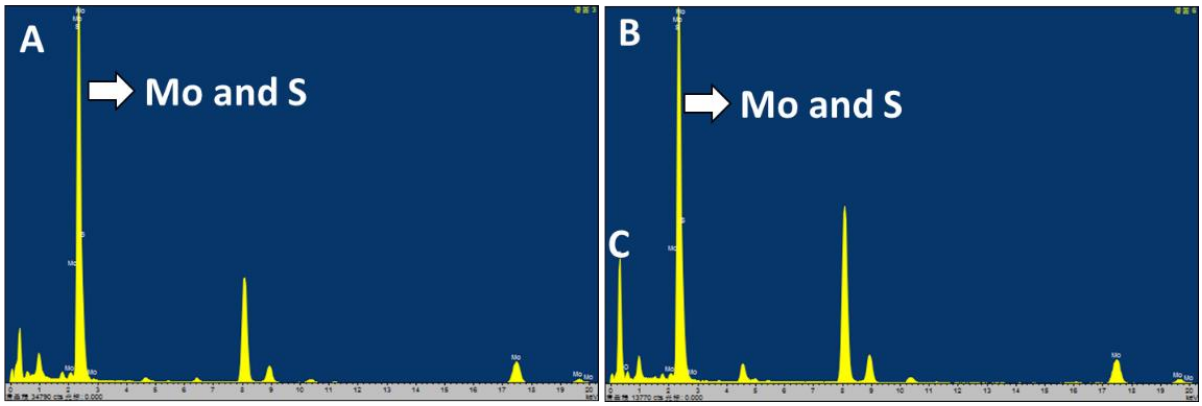

Fig. S3 EDS spectra of MoS_2 (A) and PDA/MoS_2 (B).

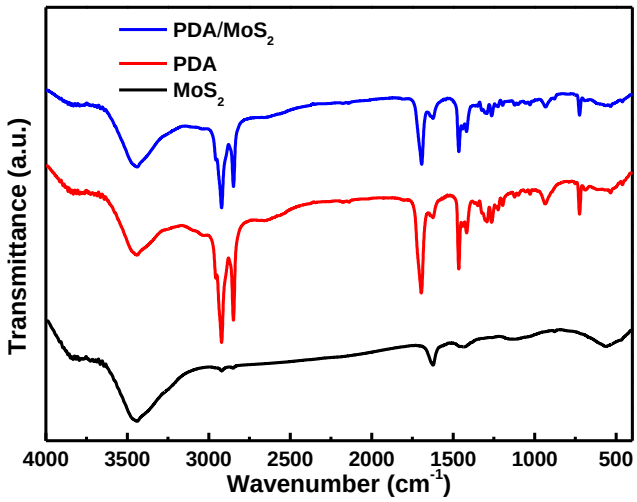

Fig. S4 FTIR of MoS_2, PDA, and PDA/MoS_2 composite.

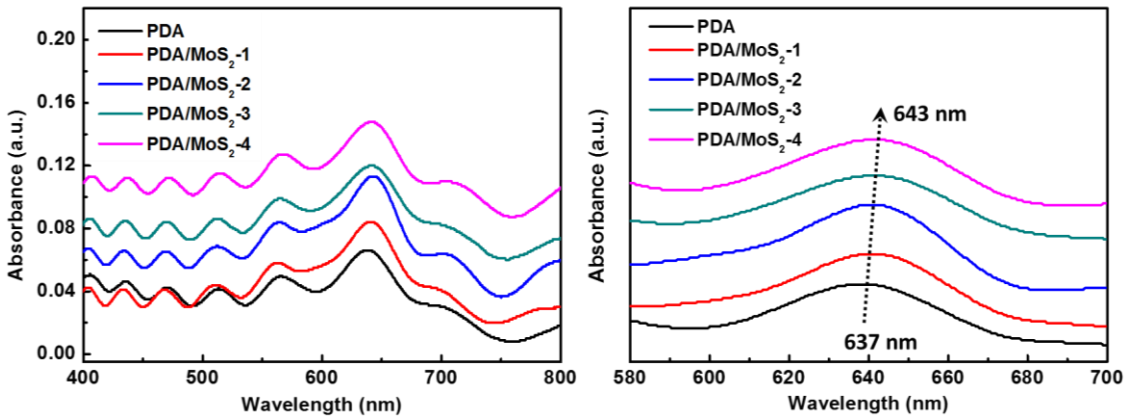

Fig. S5 UV-vis spectra of PDA, and PDA/MoS_2 films.

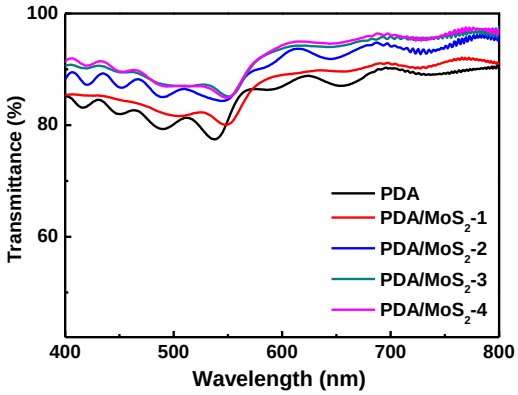

Fig. S6 Transmittance spectra of PDA, PDA/MoS_2-1, PDA/MoS_2-2, PDA/MoS_2-3, and PDA/MoS_2-4 films after exposed to DMF vapor.

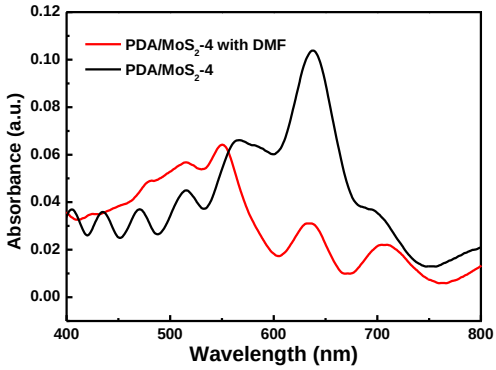

Fig. S7 UV-vis spectra of PDA/MoS_2-4 in the absence and presence of DMF vapor.

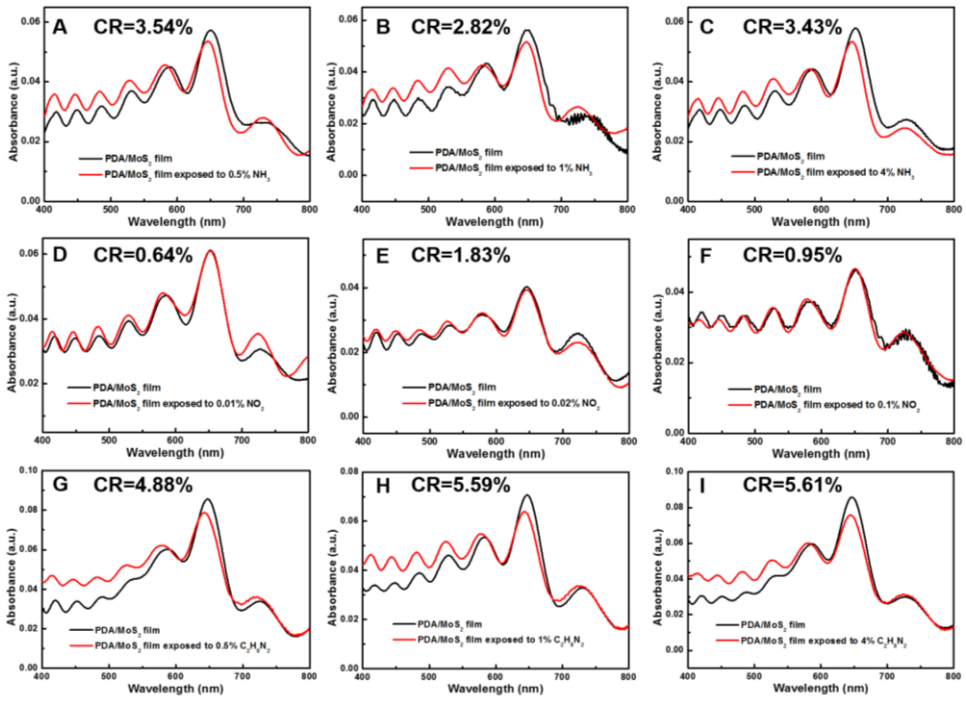

Fig. S8. UV-vis spectra of PDA/MoS_2 film exposed to NH_3 (A, B, C), NO_2 (D, E, F), and

$C_2H_8N_2$ (Ethylenediamine) (G, H, I). The concentrations of NH_3 and $C_2H_8N_2$ were 0.5%, 1%, and 4%. The concentrations of NO_2 were 0.01%, 0.02%, and 0.1%.

We have conducted the detection of N-containing gas species including NH_3, NO_2, $C_2H_8N_2$ (Ethylenediamine) using PDA/MoS_2 film sensor. The detecting procedures were the same with that for DMF vapor. It was found that no obvious color changes were observed. The UV-vis spectra of PDA/MoS_2 film before and after exposed to gases were collected. Figure S8 indicated that PDA/MoS_2 film showed *CR* value less than 6% for NH_3, NO_2, and $C_2H_8N_2$. As proven by previous research, the colorimetric transition of PDA was generally ascribed to the deformation of PDA side chains by the interaction with suitable organic solvents (Davis, B. W.; Burris, A. J.; Niamnont, N.; Hare, C. D.; Chen, C.-Y.; Sukwattanasinitt, M.; Cheng, Q., Langmuir 2014, 30, 9616-9622). For NH_3, NO_2 gases, and $C_2H_8N_2$, despite of their affinity to MoS_2, their weak interaction with PDA failed to induce the color change of PDA.