Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Highly Selective Gas Sensor Based on WO_3/WS_2 Van Der Waals Heterojunction for 2-chloroethyl ethyl sulfide (2-CEES) Sensing Application

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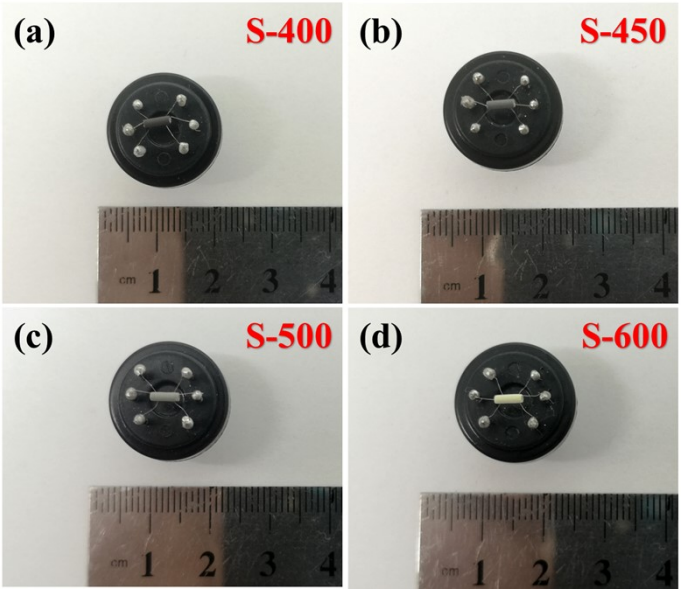

Figure S1. The digital photographs of the four sensors based on (a) S-400, (b) S-450, (c) S-500 and (d) S-600.

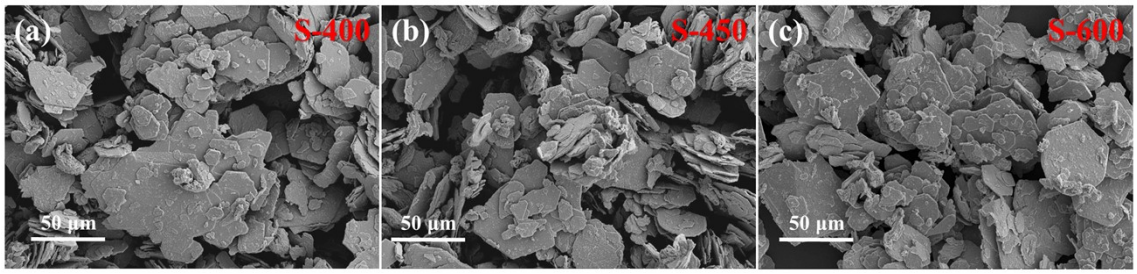

Figure S2. The SEM images of (a) S-400, (b) S-450 and (c) S-600.

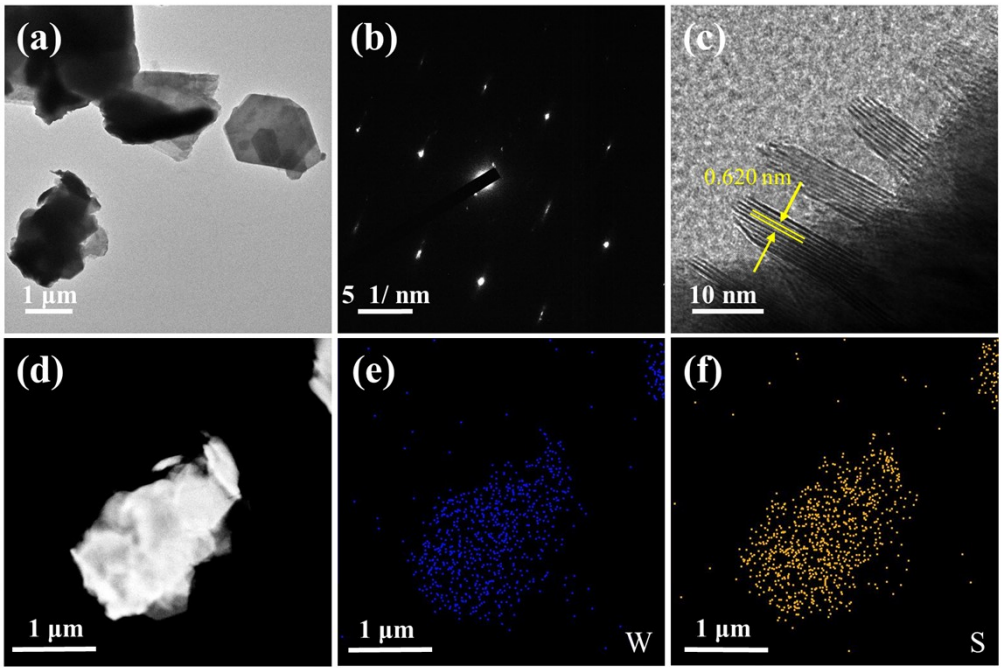

Figure S3. The characterization of WS_2 raw material. (a) TEM image, (b) SAED, (c) HRTEM image and (d-f) STEM image and corresponding elemental mapping images of the WS_2 raw material.

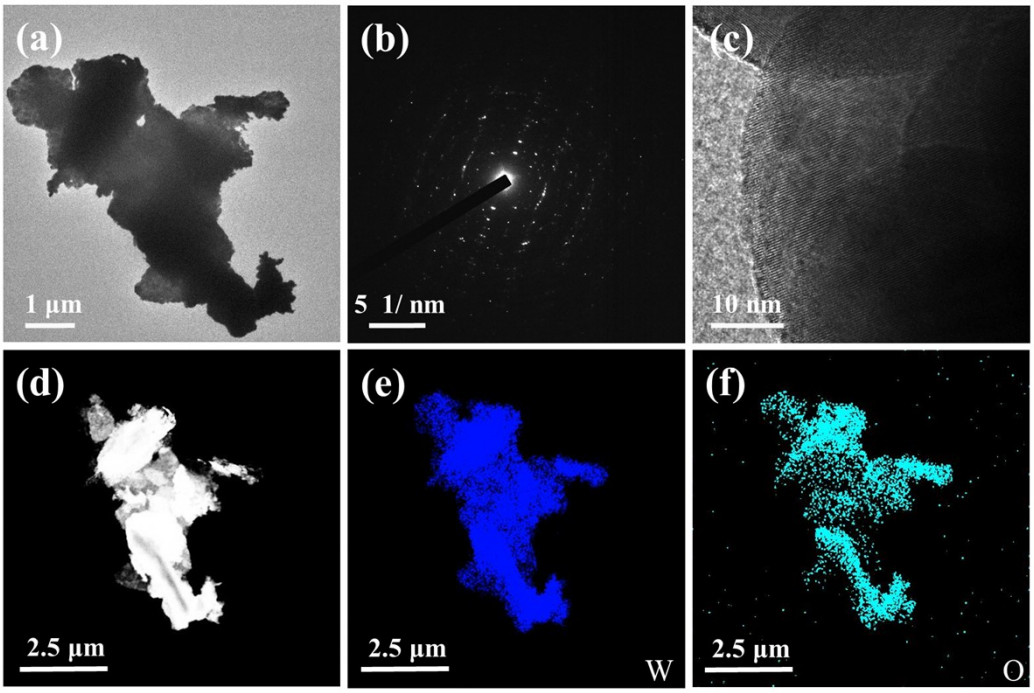

Figure S4. The characterization of S-600. (a) TEM image, (b) SAED, (c) HRTEM image and (d-f) STEM image and corresponding elemental mapping images of S-600.

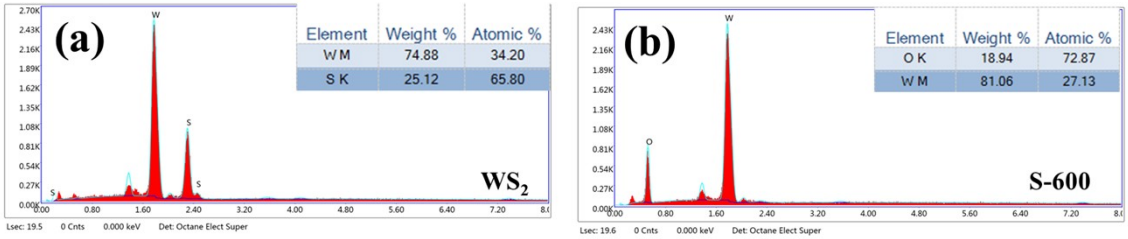

Figure S5. The EDX spectrum of (a) WS_2 raw material and (b) S-600.

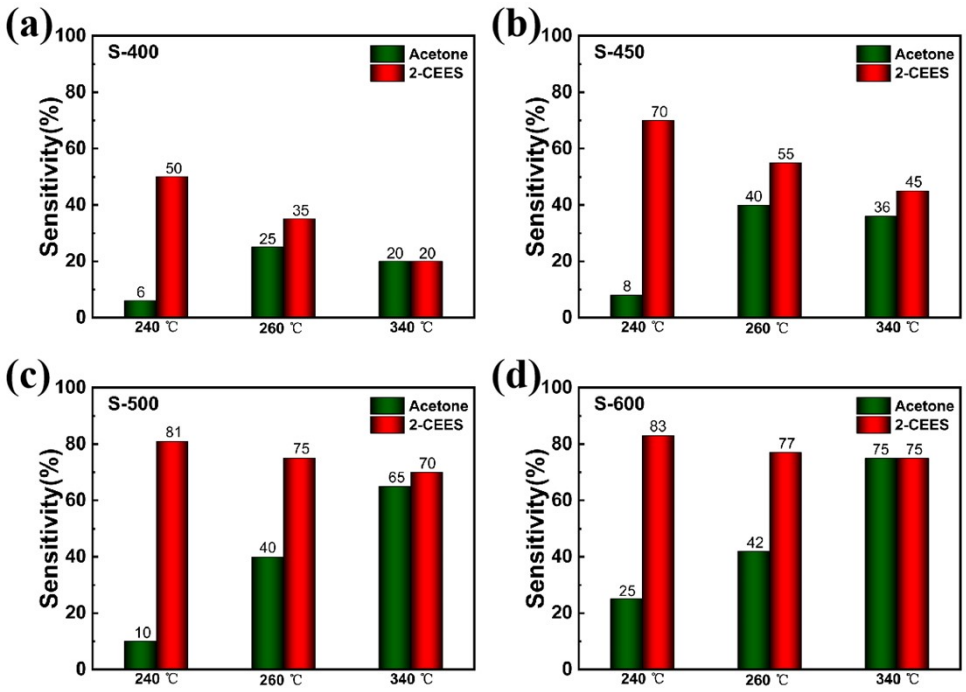

Figure S6. The response of sensors based on (a) S-400, (b) S-450, (c) S-500 and (d) S-600 to 5.7 ppm 2-CEES and acetone at different operating temperatures.

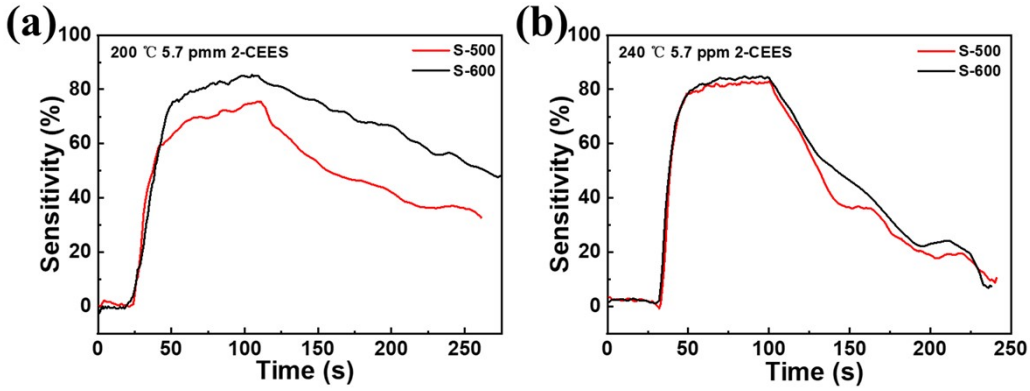

Figure S7. The dynamic transient response curves of sensors based on S-500 and S-600 to 5.7 ppm 2-CEES at operating temperature of (a) 200 ℃ and (b) 240 ℃.

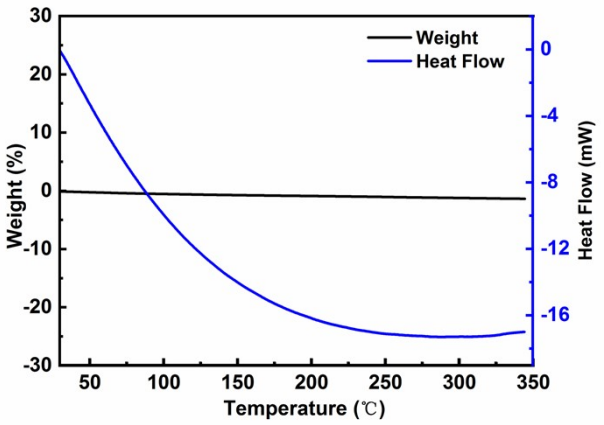

Figure S8. The thermal behavior of the prepared synthesized material (S-500).

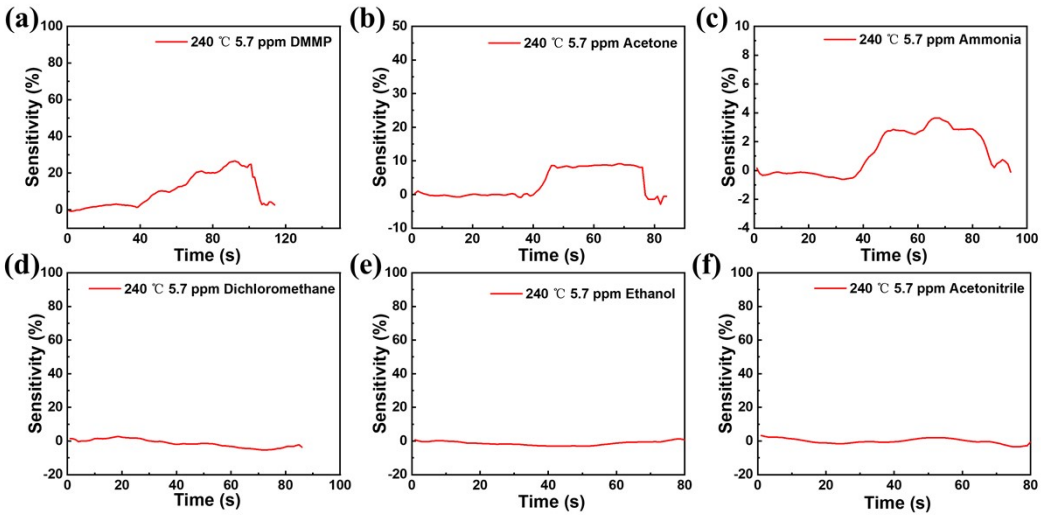

Figure S9. The dynamic transient response curve of sensor to (a) DMMP, (b) acetone, (c) ammonia, (d) dichloromethane, (e) ethanol, and (f) acetonitrile with concentration of 5.7 ppm.