

## Electronic Supplementary Information (ESI)

### Sensing and electrocatalytic activity of tungsten disulphide thin films fabricated via metalorganic chemical vapour deposition

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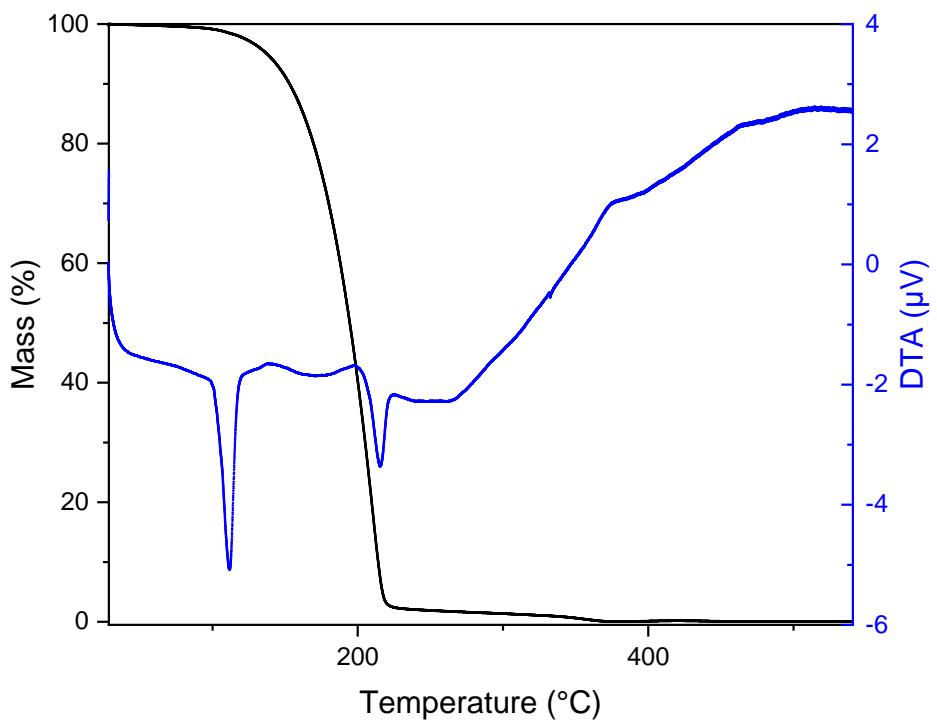
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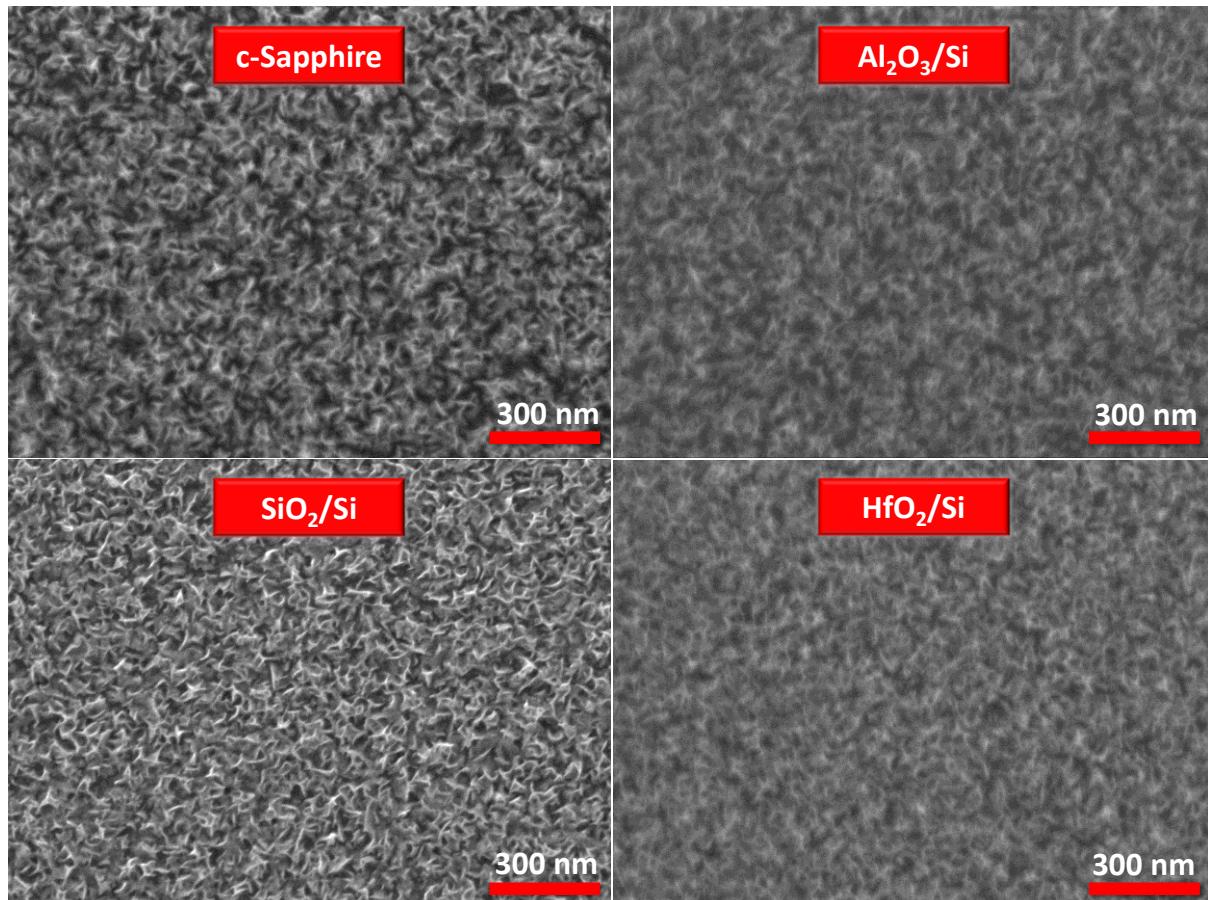
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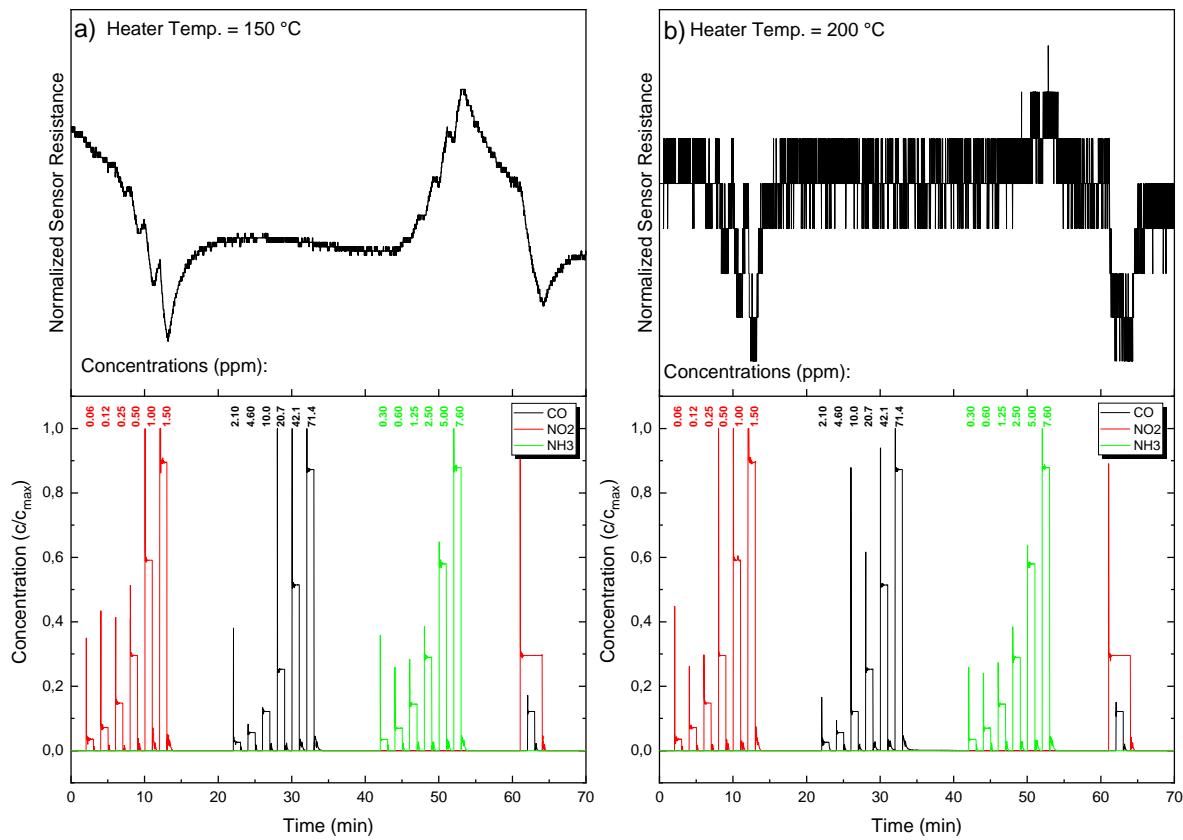
<sup>e</sup>RUBION, Ruhr University Bochum, Universitätsstr. 150, 44801 Bochum, Germany.



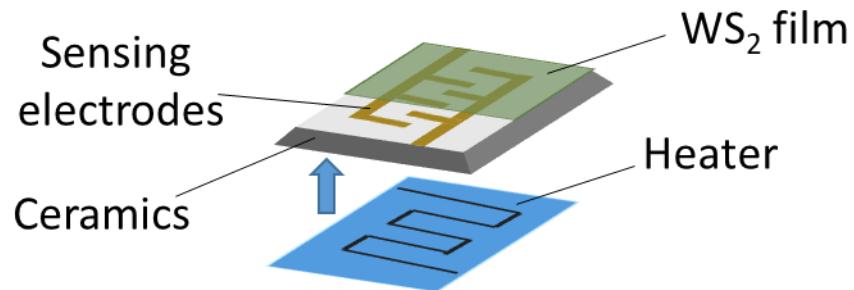
**Figure S1.** Thermogravimetric analysis (TGA) curve (black) and differential thermal analysis (DTA) curve (blue) of  $[W(N^tBu)_2(N^tPr_2)_2]$ .



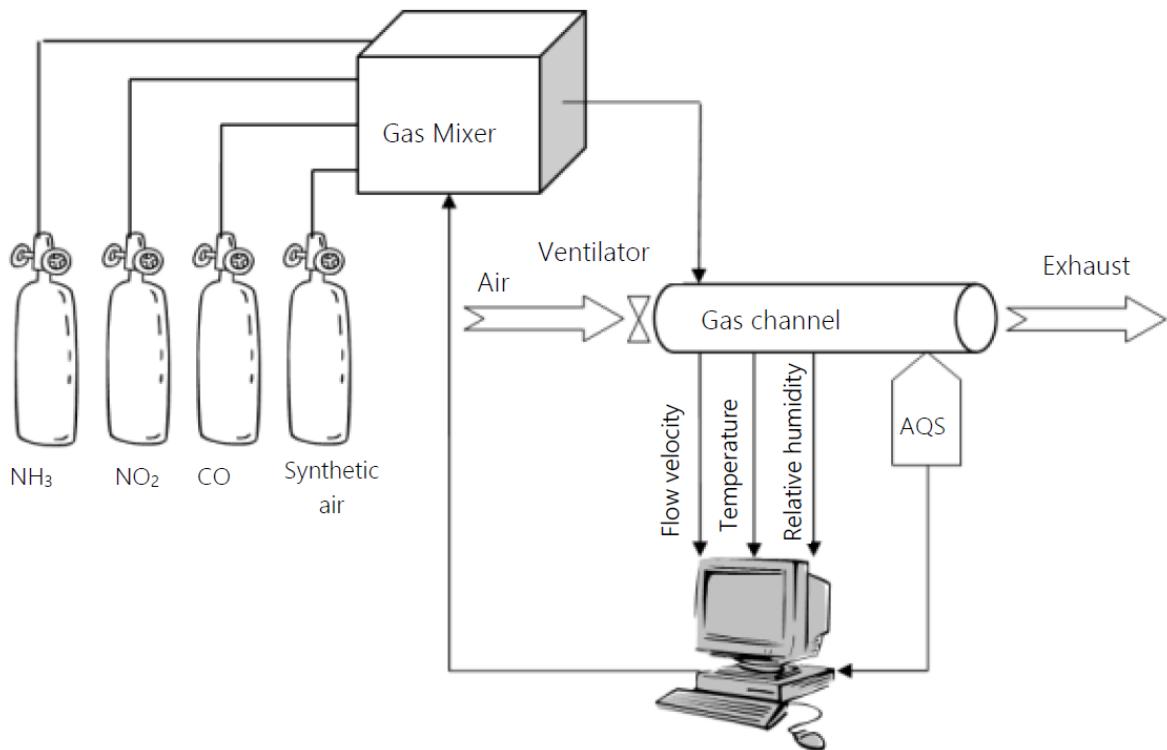
**Figure S2.** Top-view SEM images of  $WS_2$  films deposited on  $Si(100)$  for 10 min on different substrates at 600 °C.



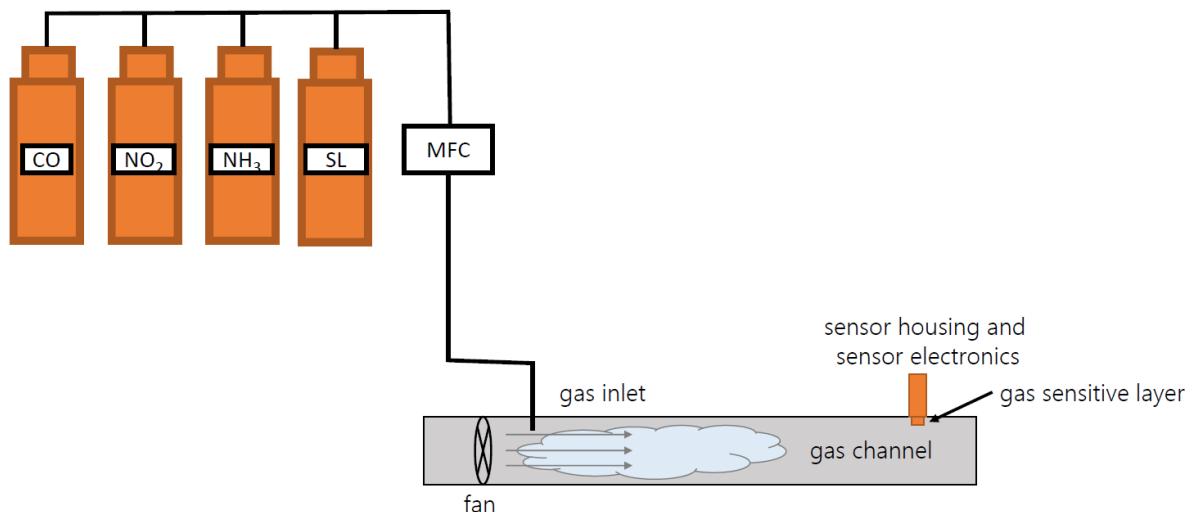
**Figure S3** Normalized sensor resistance of a  $\text{WS}_2$  sensor chip (top) in dependence of the respective gas profiles and concentrations (bottom) at heater temperatures of (a) 150 °C and (b) 200 °C.



**Figure S4** Schematic sensor element. The heater is attached at the bottom of the ceramic substrate with the Pt sensing electrodes and the sensing film deposited on top of the substrates.



**Figure S5** Schematic setup for the gas sensor measurements. The respective gases are mixed with synthetic air in a gas mixer and delivered to the gas channel. The resistivity of the sensor element is measured in dependence on the temperature. The scheme was previously published by Mai et al.<sup>1</sup>



**Figure S6** Schematic illustration of the gas channel with the sensor housing and elements attached to it.

## References

- 1 L. Mai, F. Mitschker, C. Bock, A. Niesen, E. Ciftyurek, D. Rogalla, J. Mickler, M. Erig, Z. Li, P. Awakowicz, K. Schierbaum, A. Devi, *Small*, 2020, **16**, 1907506.