

## Supporting Information

**Pt-decorated hierarchical SiC nanofibers constructed by intertwined SiC nanorods for high-temperature ammonia gas sensing**

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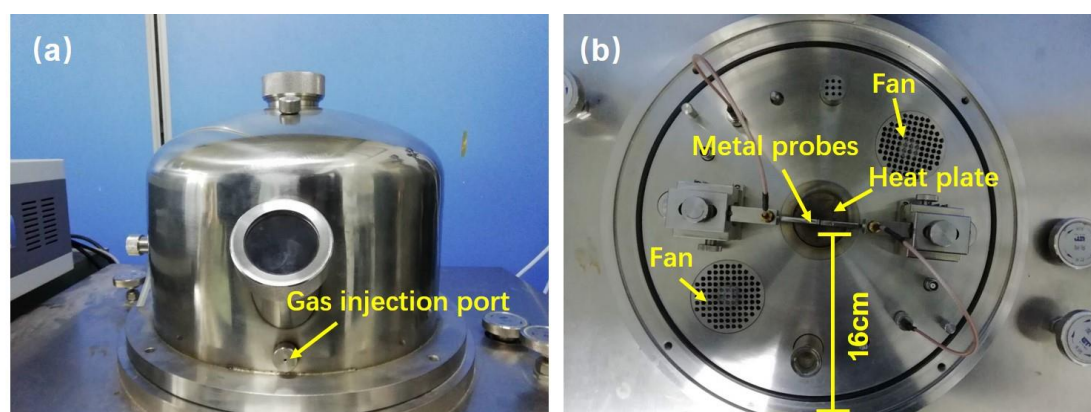


Fig. S1. Photographs of the gas sensing testing equipment in this work.

The structure of the chamber was shown as following. The gas injection port was at the bottom of the chamber. The distance between gas injection port and the sensing electrode is about 15 cm. Two fans were used to disperse the injected gas quickly and uniformly. The sensing electrode was fixed onto the heat plate by two metal probes.

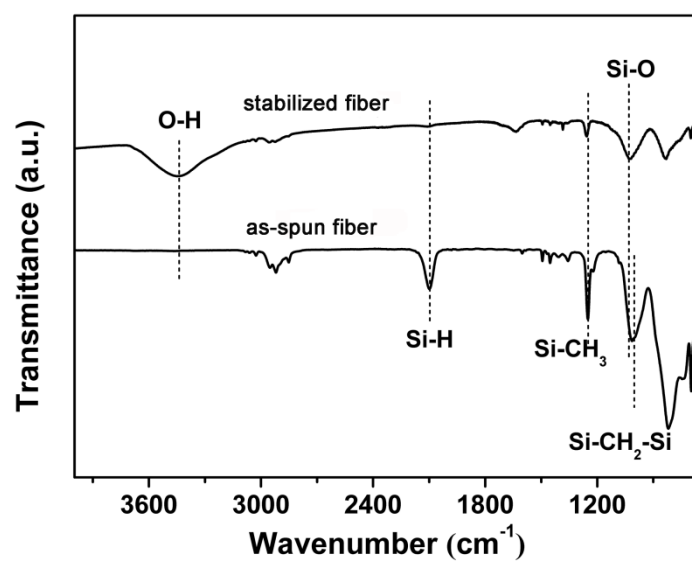


Fig. S2. FTIR spectra of as-spun nanofibers and the stabilized nanofibers.

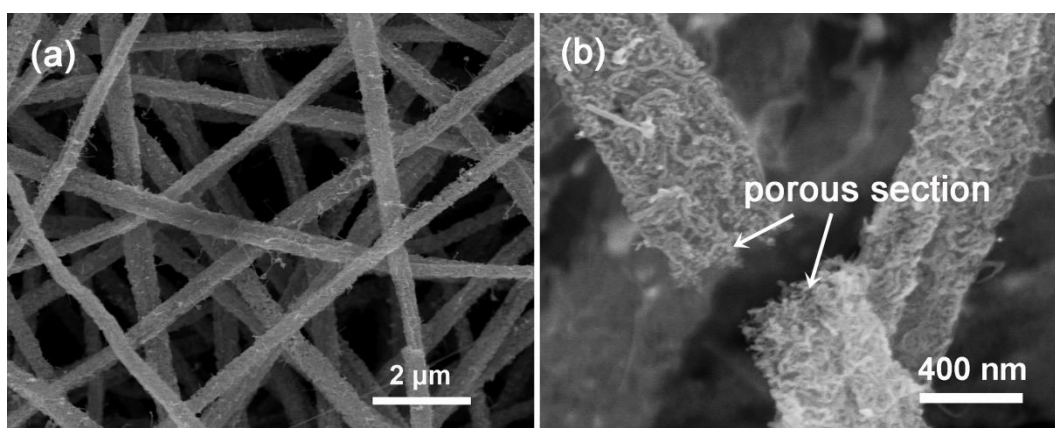


Fig. S3. SEM images of hierarchical SiC nanofibers.

(a) Low magnification SEM image; (b) Cross-sectional SEM image.

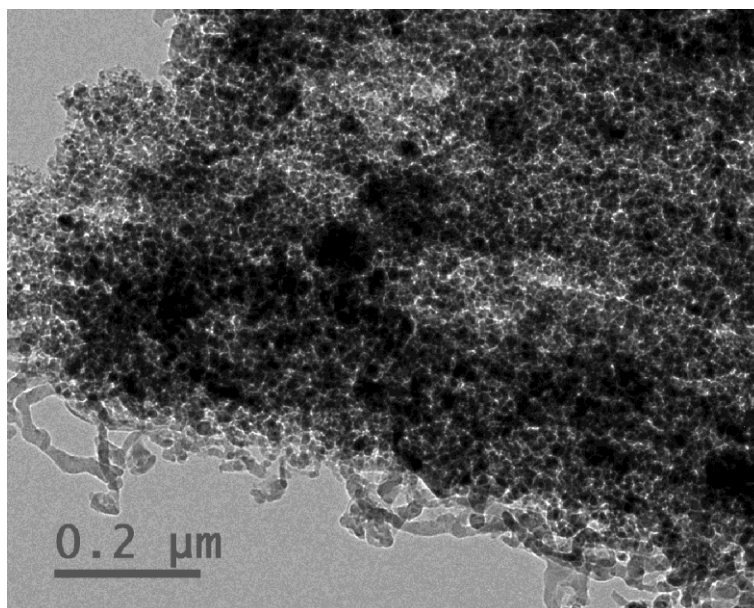


Fig. S4. TEM image of HSiC pyrolyzed at 1400 °C.

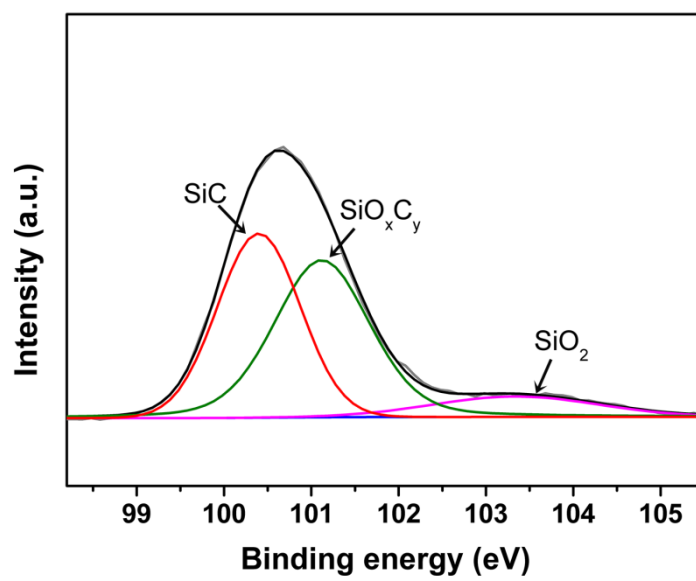


Fig. S5. High-resolution XPS spectrum of Si 2p on the surface of HSiC.

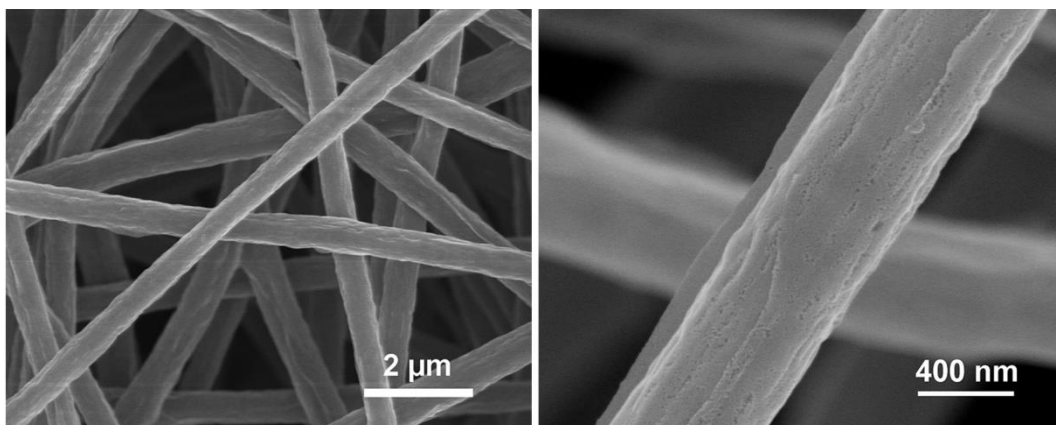


Fig. S6. SEM images of SiC nanofibers pyrolyzed at 1400 °C without the addition of Ni(acac)<sub>2</sub>.

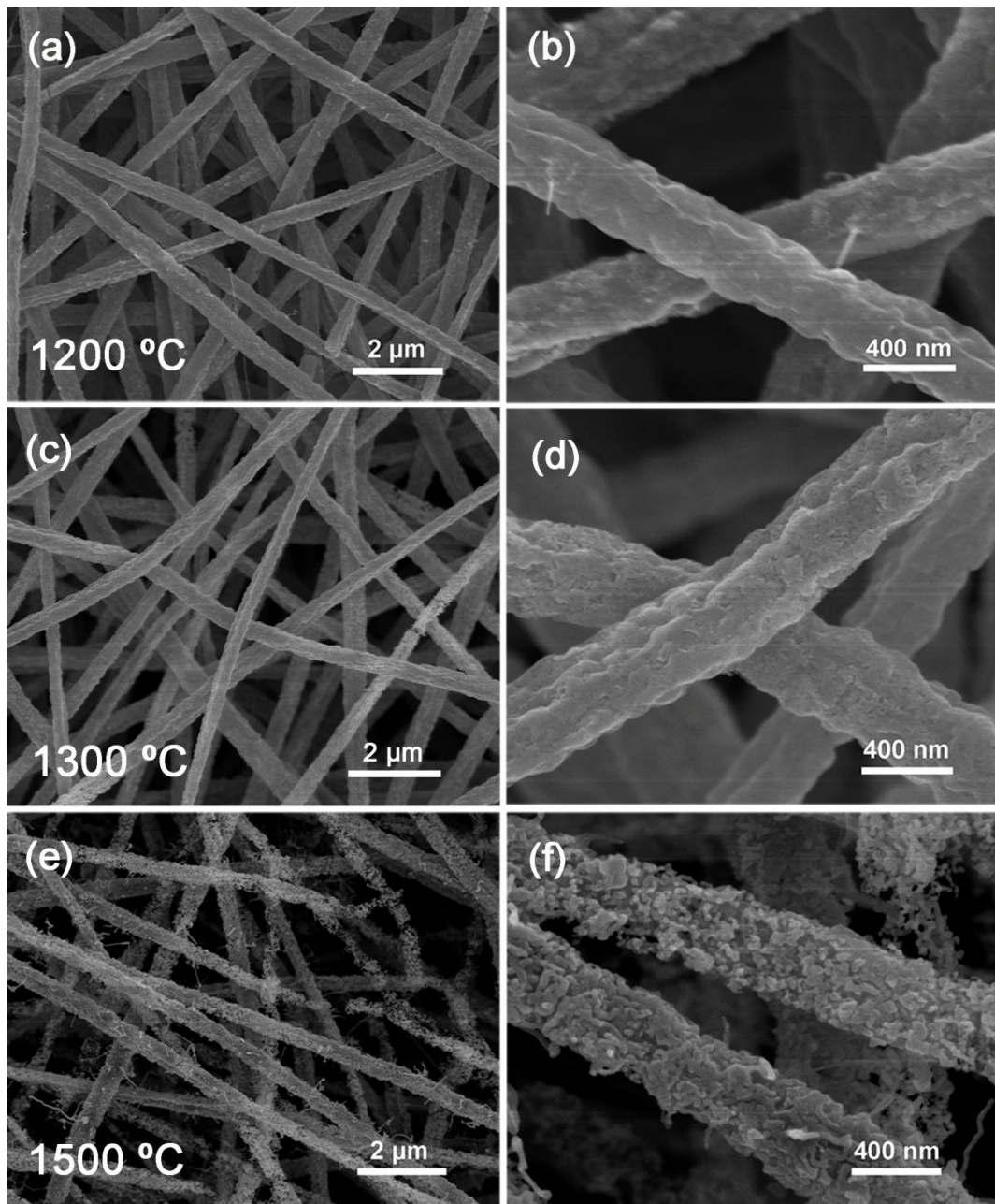


Fig. S7. SEM images of the nickel-contained nanofibers pyrolyzed at different temperature (a, b) 1200 °C; (c, d) 1300 °C; (e, f) 1500 °C.

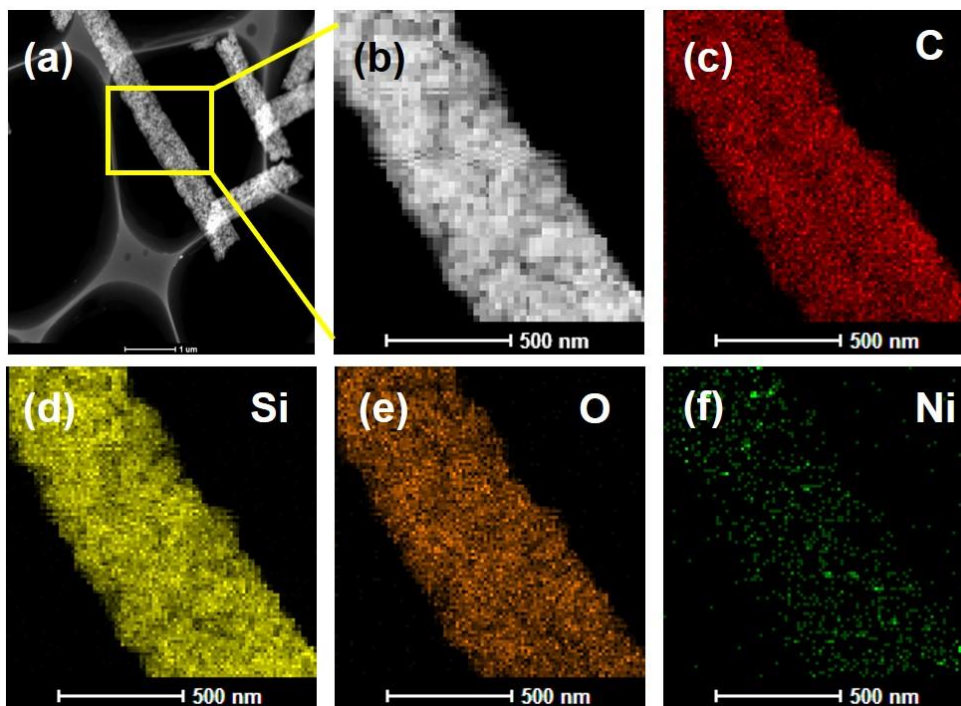


Fig. S8. (a,b) Scanning TEM image and the corresponding elemental mapping images of (c) C, (d) Si, (e) O and (f) Ni.

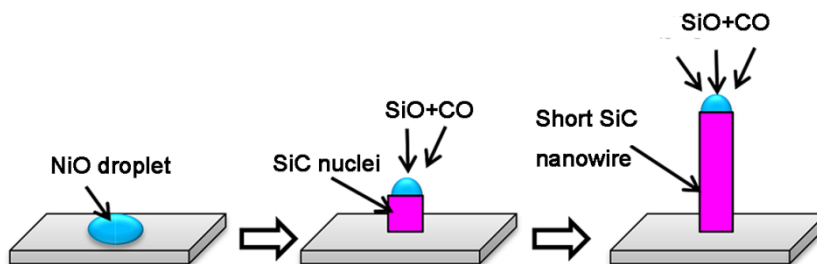


Fig. S9. Formation mechanism of short SiC nanorods.

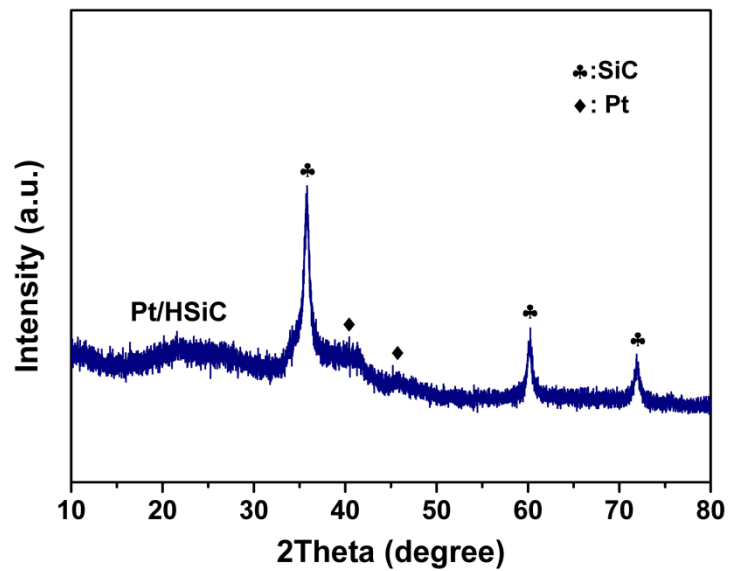


Fig. S10. XRD pattern of Pt/HSiC.

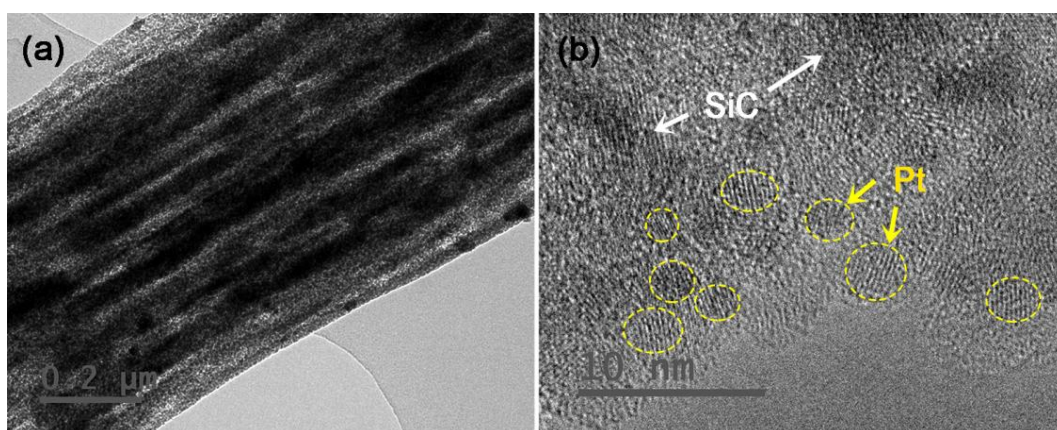


Fig. S11. (a) TEM and (b) HRTEM images of Pt/SiC.

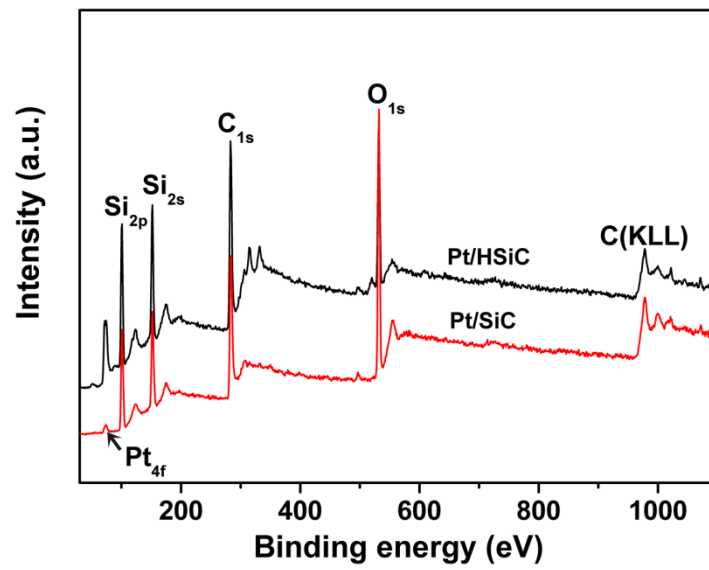


Fig. S12. XPS survey spectra of Pt/SiC and Pt/HSiC.

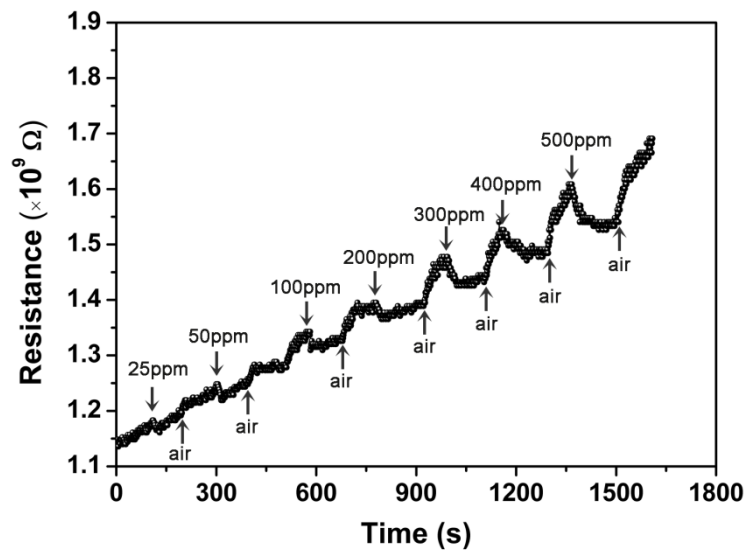


Fig. S13. Dynamic signal response of Pt/SiC under different concentration of  $\text{NH}_3$  at 500 °C.



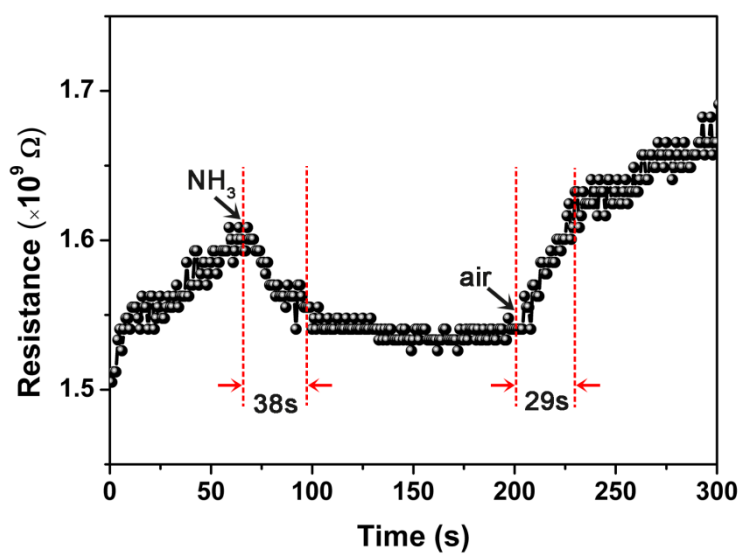


Fig. S14. Response and recovery curves of Pt/SiC with respect to 500 ppm of  $\text{NH}_3$  at 500 °C.

Table S1. Structure parameters of solid SiC nanofibers and HSiC.

Samples	BET surface area	BJH Pore	Average pore size
	( $\text{m}^2 \text{g}^{-1}$ )	volume ( $\text{cm}^3 \text{g}^{-1}$ )	(nm)
SiC	63.7	0.11	6.6
HSiC	108.7	0.46	16.2