

## Supporting information

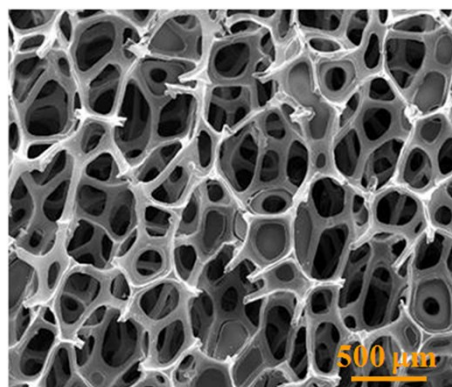
### **Strong contribution of in-situ grown nanowires to enhance thermostabilities and microwave absorption properties of porous graphene foams under different atmosphere**

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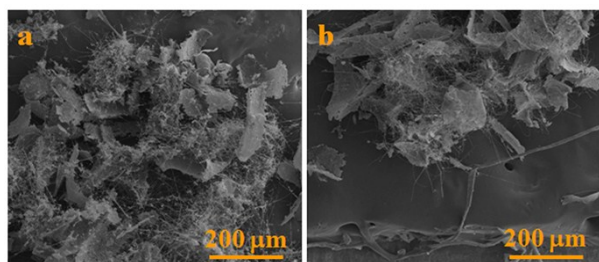
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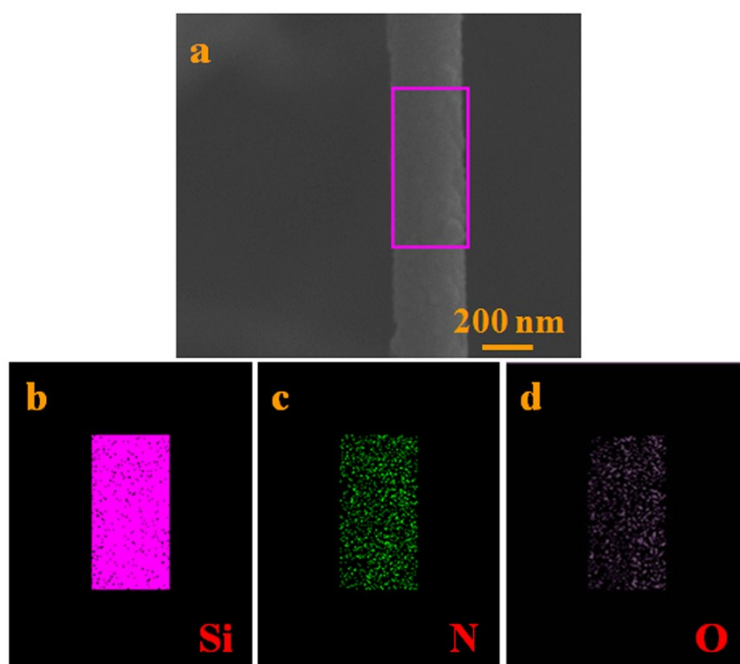
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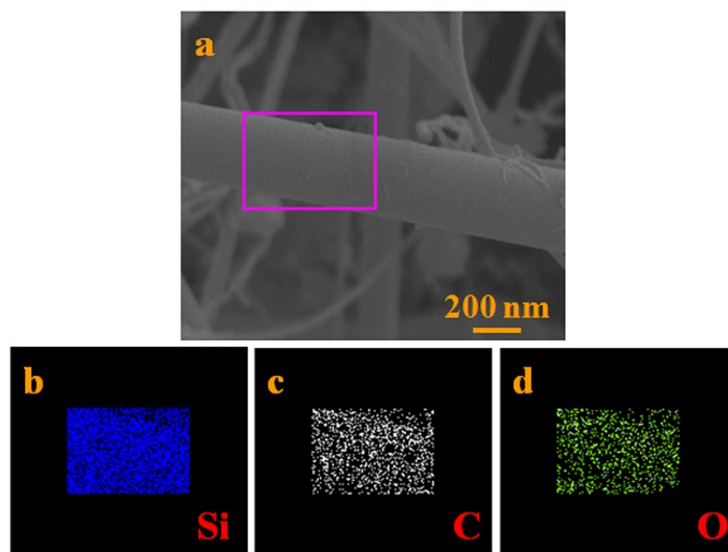
**Fig.S1** SEM image of as-prepared pristine porous GF.



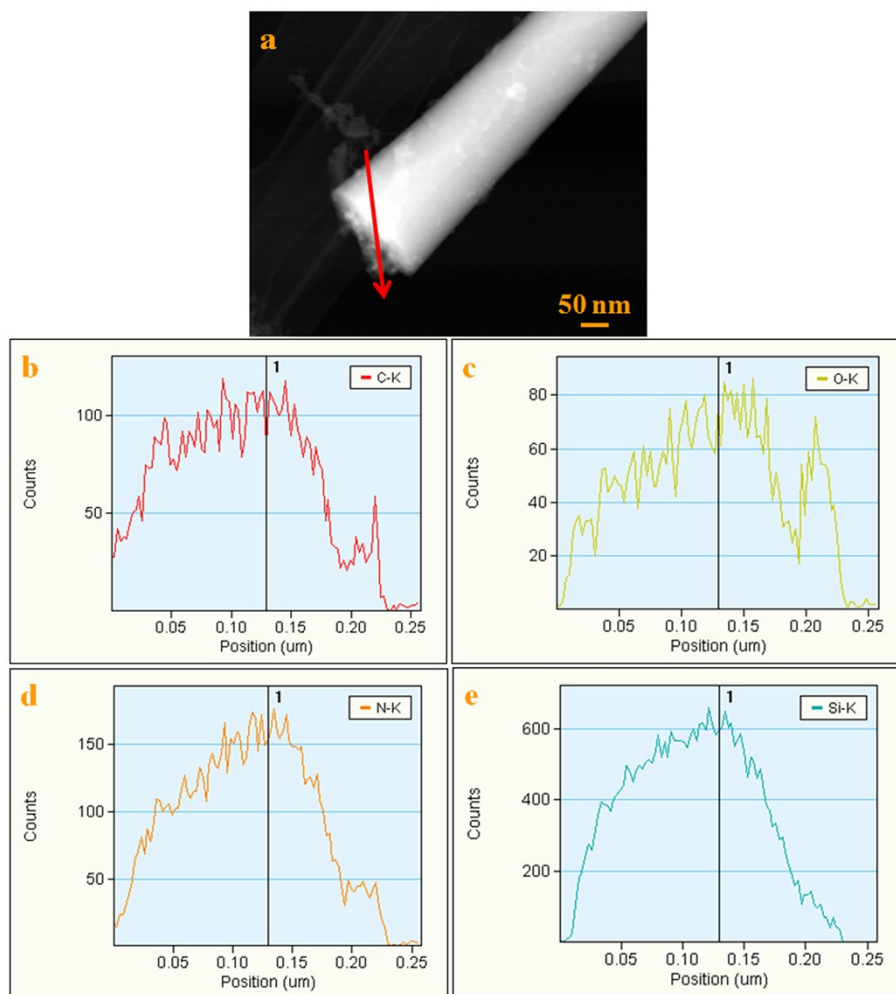
**Fig. S2** Typical SEM figures of S-Ar and S-N<sub>2</sub> under lower magnification.



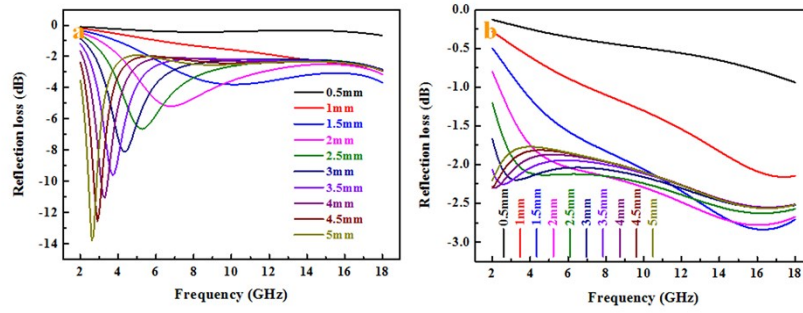
**Fig. S3** The elemental area scanning of  $\text{Si}_3\text{N}_4$  NW.



**Fig. S4** The elemental area scanning of SiC NW.



**Fig. S5** (a) HADF Scanning TEM image, and EDS line-scan for (b) C, (c) O, (d) N and (e) Si along the red line.



**Fig. S6** EM wave reflection losses of as-prepared pure GFs annealed at 1400 °C under N<sub>2</sub> and Ar in the frequency range of 2–18 GHz, respectively.

**Table S1** Comparison of EM wave absorption performance of different EM absorbers in recent literatures.

Absorber	Matrix	Minimum RL (dB)	Optimum thickness (mm)	Maximum EAB (GHz)	Literature
GF	-	-27	10	>4.2	1
CF	Paraffin	-5.58	3.0	5.4	2
SiC <sub>nws</sub>	Paraffin	-31.7	4.6	3.7	3
SiC <sub>nws</sub> -rGO	PDMS	-40.7	3	>4.2	4
SiC <sub>nws</sub> -CF	Epoxy	-49.1	3.3	>4.2	5
SiC <sub>nws</sub> -Cf	Silicone	-21.5	2.0	2.5	6
PANI nanorods-rGO	PANI	-52.5	2	~4	7
ZnO <sub>nws</sub> -rGO	PDMS	-31.1	4.8	>4.2	8
GF (1400-N <sub>2</sub> )	Paraffin	-13.8	5	0.3	This work
GF (1400-Ar)	Paraffin	-2.87	1.5	-	This work
Si <sub>3</sub> N <sub>4</sub> <sub>nws</sub> -GF	Paraffin	-48.8	2.36	1.8	This work
SiC <sub>nws</sub> -GF	Paraffin	-67.8	2.6	5.4	This work



## REFERENCES

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