

**Thermal conversion of wheat-like metal organic frameworks
to achieve MgO/carbon composites with tunable morphology
and microwave response ability**

Bin Quan, Xiaohui Liang, Heng Yi, Yutian Chen, Junxian Xiang, Guoyue Xu,
Guangbin Ji*

*College of Materials Science and Technology, Nanjing University of Aeronautics and
Astronautics, Nanjing 211100, P. R. China.*

*Corresponding Author:

Prof. Dr. Guangbin Ji.

Tel: +86-25-52112902; Fax: +86-25-52112626

E-mail: gbjj@nuaa.edu.cn

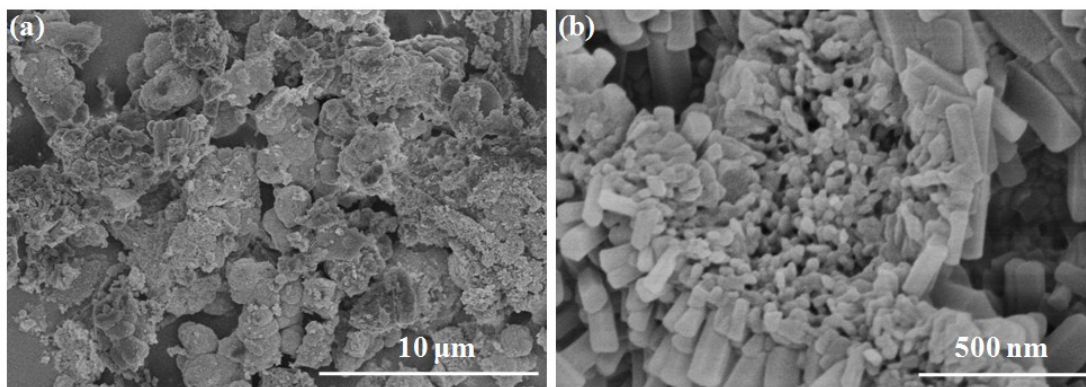


Figure S1. SEM images of wheat-like CPO-27-Mg precursor.

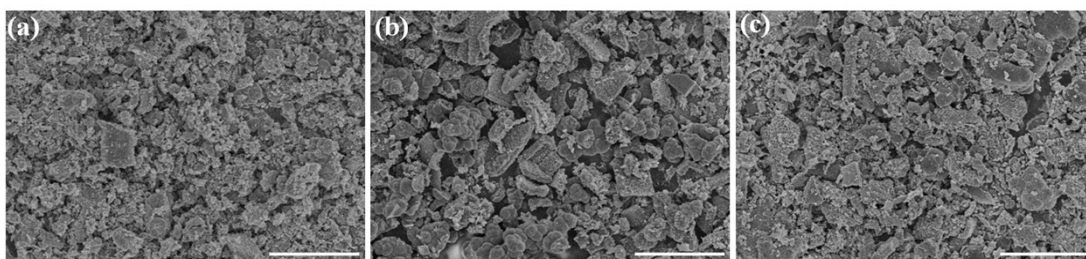


Figure S2. SEM images of BNPC/MgO-T composites. (Scale bar: 1 μ m)

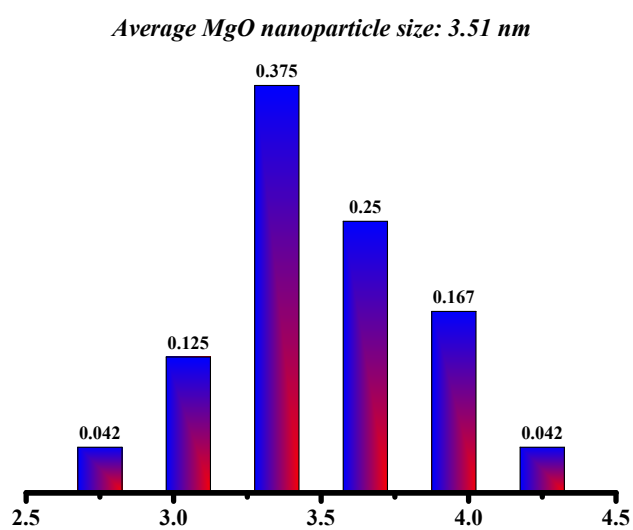


Figure S3. Histogram of the diameter for nano-bar.

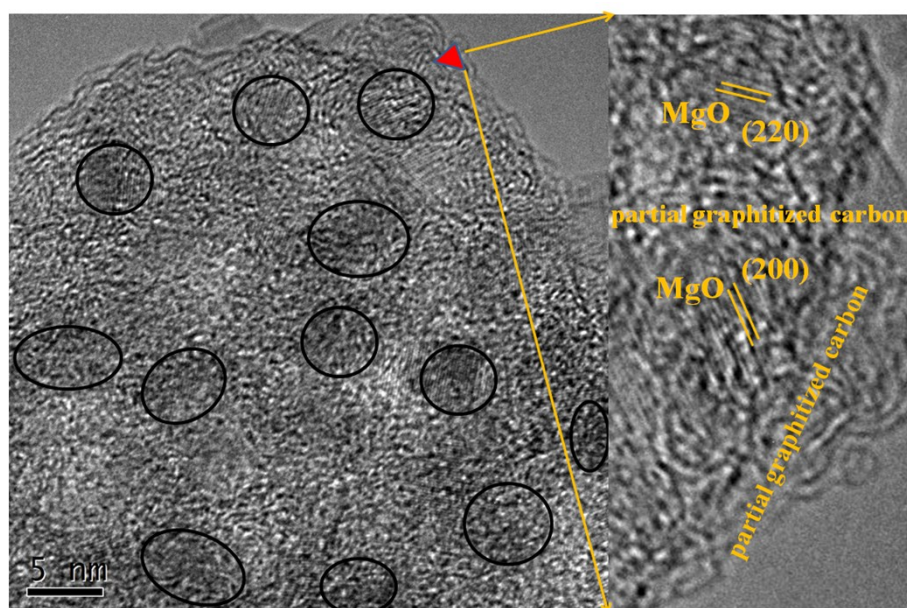


Figure S4. HRTEM image of BNPC/MgO-800 composites.

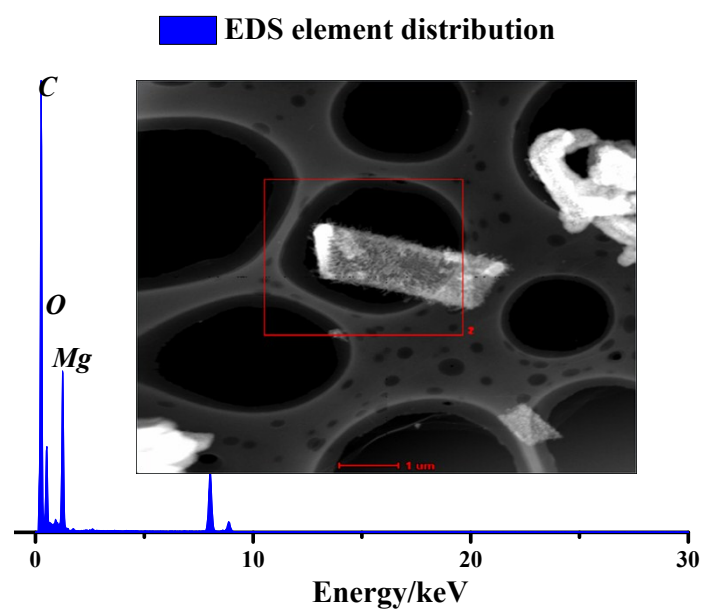


Figure S5. EDS element distribution of BNPC/MgO-800 composites.

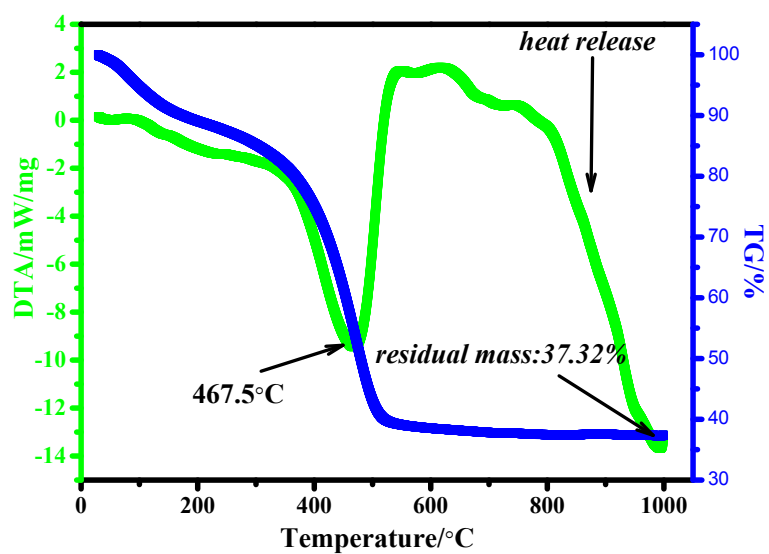


Figure S6. TG and DTA curves of BNPC/MgO-800 composites. (Air atmosphere, heating rate 10°C/min)

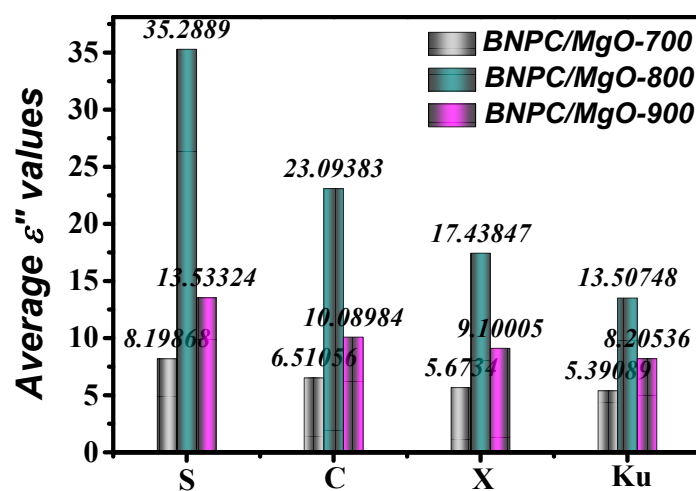


Figure S7. Average ε'' values of BNPC/MgO-700, BNPC/MgO-800 and BNPC/MgO-900.

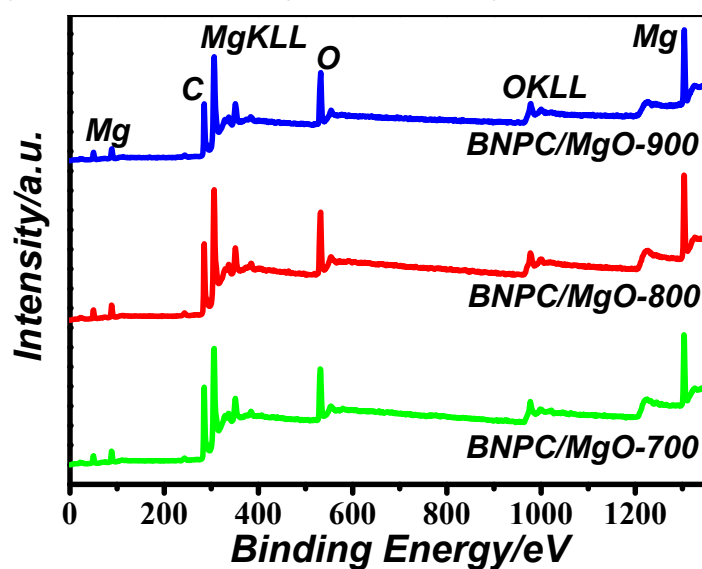


Figure S8. XPS survey scan of BNPC/MgO-700, BNPC/MgO-800 and BNPC/MgO-900.

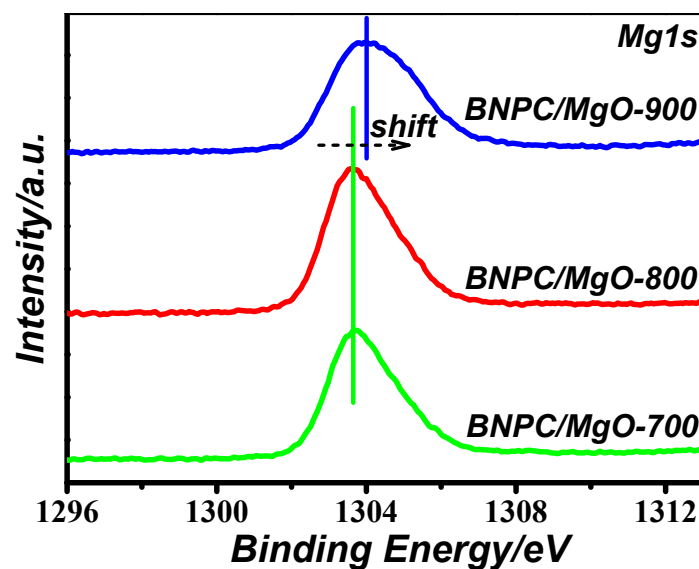


Figure S9. Mg 1s spectra of BNPC/MgO-700, BNPC/MgO-800 and BNPC/MgO-900.

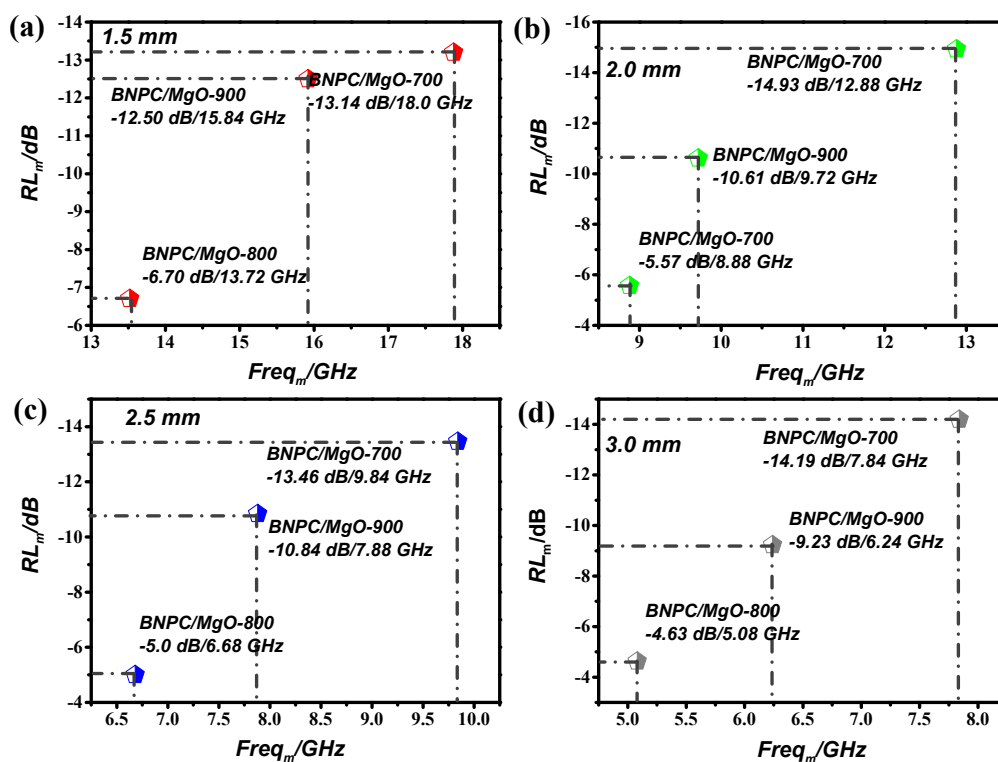


Figure S10. Frequency related maximum RL values for BNPC/MgO-T at 1.5 mm (a), 2.0 mm (b), 2.5 mm (c) and 3.0 mm (d), respectively.

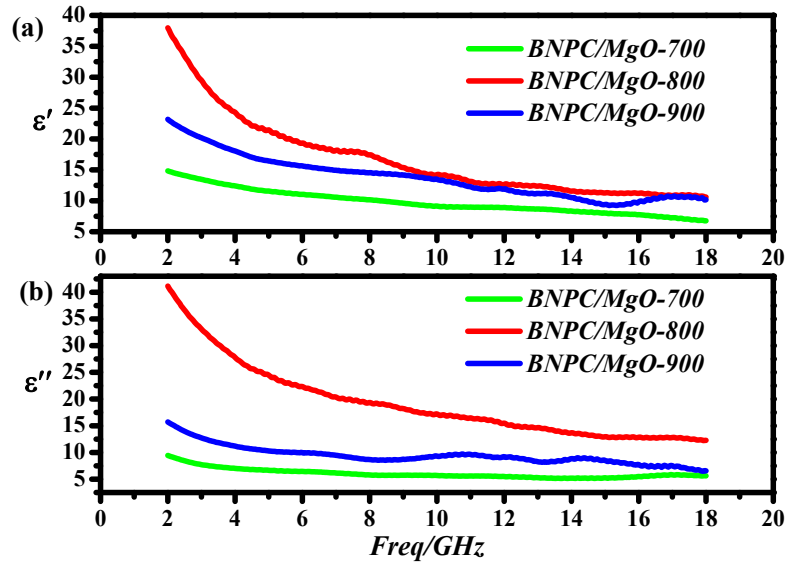


Figure S11. Dielectric constant (a, real part of permittivity; b, imaginary part of permittivity) of BNPC/MgO-T composites.

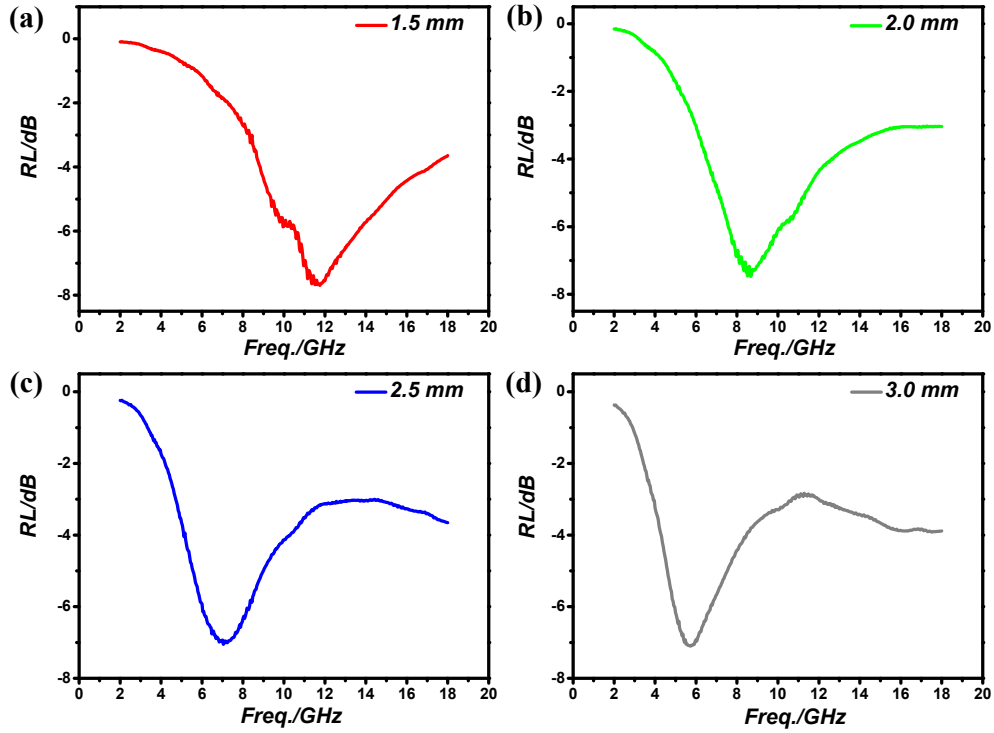


Figure S12. RL values of carbon bar at 1.5 mm (a), 2.0 mm (b), 2.5 mm (c), 3.0 mm (d).

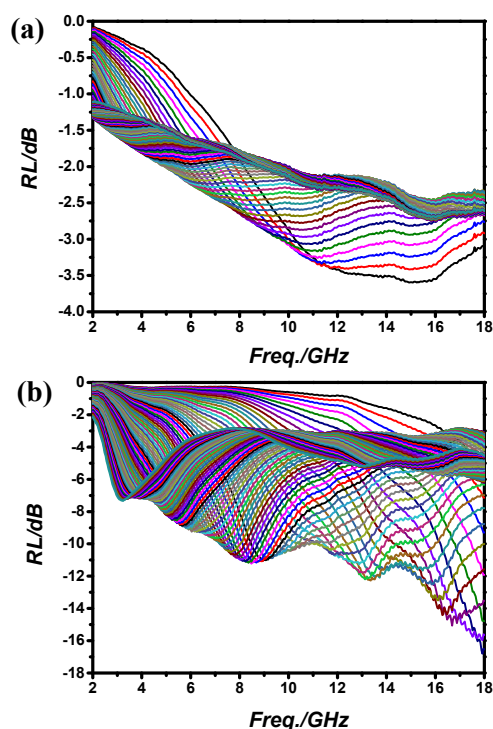


Figure S13. Reflection loss of BNPC/MgO-900/paraffin composites at 1.0-5.0 mm with loading content of 50 wt% (a) and 30 wt% (b). (The thickness interval from 1.0-5.0 mm is 0.05 mm, that is, 1.0 mm, 1.05mm, 1.1 mm, 1.15mm,...4.95 mm, 5.0 mm)

Table S1. Detailed data of weight ratio, atomic ratio for EDS spectra.

Element	Weight %	Atomic %	Uncert. %	Detector Correction	k-Factor
C	80.07	86.72	0.37	0.26	3.940
Mg	9.40	7.64	0.09	0.49	1.974
O	10.51	5.62	0.07	0.88	1.046

Table S2. Specific Areas, total pore volumes and pore size of BNPC/MgO-T composites

Sample	S_{BET} (m^2/g)	Pore Volume (cm^3/g)	Pore Size (nm)
NPC/MgO-700	404.4	0.57	5.66
NPC/MgO-800	524.8	0.81	6.21
NPC/MgO-900	419.1	0.32	3.10