

**Improved dielectric stability of epoxy composites with ultralow
boron nitride loading**

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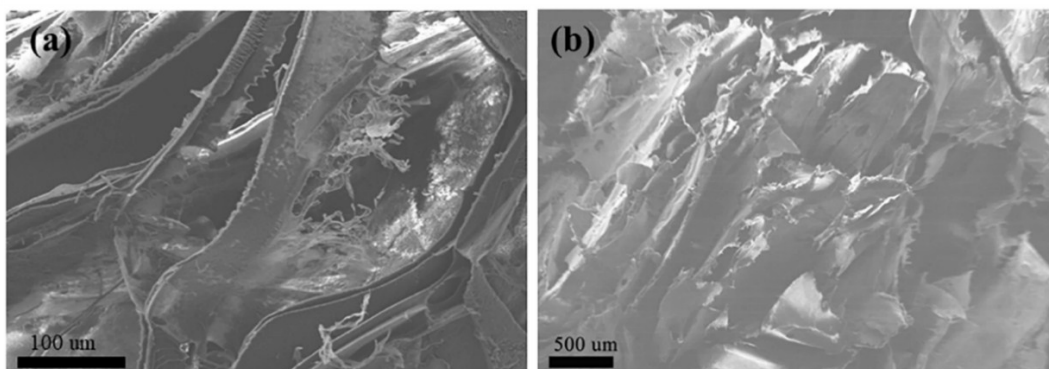


Fig. S1 the SEM image of the pristine PA66 aerogel

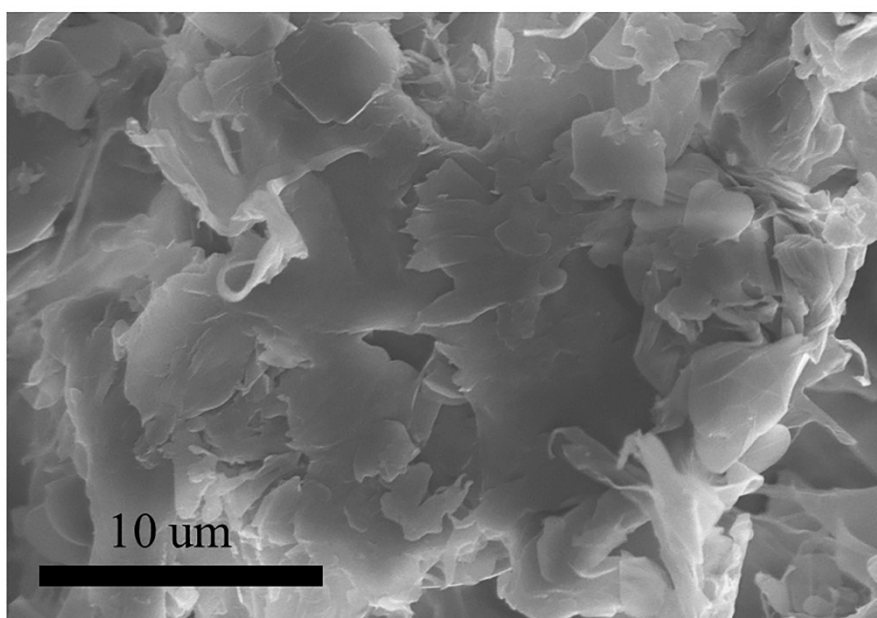


Fig. S2 the SEM image of the BN/PA66 aerogel

The BN microplatelets adhere to PA66 aerogel sheets to form a thermal conduction network.

Table S1. The conversion of volume fraction and volume fraction of the BN microplatelets in the whole composite.

Sample	Volume fraction (vol%)	Mass fraction (wt%)
3D BN/PA66-10-1	1	2.3
3D BN/PA66-20-2.5	2.5	5
3D BN/PA66-30-4	4	7.4
3D BN/PA66-40-6	6	11.5

Table.S2 the specific value of thermal conductivity ($W m^{-1}K^{-1}$) of the neat epoxy, random BN/EP-4 composite and 3D PA66/BN composites over the temperature range 25-200°C

	25°C	50°C	75°C	100°C	125°C	150°C	175°C	200°C
neat epoxy	0.130	0.124	0.106	0.08	0.075	0.073	0.070	0.069
random BN/EP-4	0.191	0.198	0.216	0.194	0.188	0.187	0.187	0.189
3D BN/PA66-0-0	0.154	0.136	0.132	0.115	0.09	0.089	0.088	0.087
3D BN/PA66-10-1	0.313	0.316	0.330	0.316	0.297	0.286	0.280	0.280
3D BN/PA66-20-2.5	0.327	0.356	0.388	0.352	0.330	0.318	0.314	0.317
3D BN/PA66-30-4	0.596	0.639	0.656	0.631	0.578	0.555	0.538	0.530
3D BN/PA66-40-6	0.623	0.659	0.663	0.648	0.613	0.583	0.565	0.555

Table.S3 The specific value of dielectric constant and dissipation factor of the neat epoxy, random BN/EP-4 composite and 3D PA66/BN composites at 10^4 Hz and room temperature

	Dielectric constant	Dissipation factor
neat epoxy	3.65	0.025
random BN/EP-4	4.16	0.031
3D BN/PA66-0-0	3.75	0.034
3D BN/PA66-10-1	3.83	0.027
3D BN/PA66-20-2.5	4.08	0.029
3D BN/PA66-30-4	4.28	0.027
3D BN/PA66-40-6	4.49	0.030

Table.S4 The specific value of dielectric constant and dissipation factor of neat epoxy, random BN/EP-4 composite and 3D PA66/BN composites at 10^4 Hz and 200°C

	Dielectric constant	Dissipation factor
neat epoxy	5.40	0.141
random BN/EP-4	5.74	0.094
3D BN/PA66-0-0	5.36	0.124
3D BN/PA66-10-1	5.37	0.117
3D BN/PA66-20-2.5	5.59	0.119
3D BN/PA66-30-4	4.54	0.044
3D BN/PA66-40-6	4.71	0.042