

### Support Information

1. This experiment results was used as comparative experiments to illustrate the contribution of interfacial performance to improved thermal conductivity, and which was added as Table S1 in support information.

Table S1. Thermal conductivity, thermal diffusivity and specific heat of BN/CE composites

Sample	Thermal	Thermal	Specific
	conductivity/W(m*K)-1	diffusivity/(mm <sup>2</sup> /s)	heat/(J/g/K)
CE	0.197	0.134	1.218
BN15 /CE	0.358	0.249	1.136
BN25/CE	0.637	0.453	1.053
BN38/CE	1.072	0.747	0.991

2. Dielectric constant of the BN-HBP/CE composites at different frequencies is added as table S2 in Support Information.

Table S2. Dielectric constant of the BN-HBP/CE composites at different frequencies

Sample	Frequency/Hz			
	10 <sup>2</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>
CE	3.11	2.97	2.92	2.87
BN-HBP15/CE	3.04	3.01	2.99	2.98
BN-HBP20/CE	3.13	3.09	3.07	3.05
BN-HBP25/CE	3.34	3.30	3.28	3.27
BN-HBP32/CE	3.36	3.32	3.30	3.29
BN-HBP35/CE	3.39	3.36	3.34	3.33