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Electronic supplementary information Scalable Production of High-Quality Boron Nitride Nanosheets via a

Recyclable Salt-Templated Method

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Fig. S1 Purification process of h-BNNSs through a simple washing process of raw product in water. (a) As-prepared NaCl@h-BNNSs. (b) 30 s later after washing. (c) 15 min later after washing.



Fig. S2 The EDX characterization of products obtained at 750°C, which demostrates the NaCl@h-BNNSs core-shell structures, confirming that melted B₂O₃ reacts with NH₃ to form h-BNNSs on NaCl crystals prior to the melting of NaCl. (a, b) SEM and (c-f) corresponding energy dispersive X-ray spectrum (EDX) mapping images of h-BNNSs formed on NaCl tempalate.



Fig. S3 The SEM images of the h-BNNSs grown at 700 °C, which confirms the formation of h-BNNSs prior to the melting of NaCl template. (a) As-grown BNNS coated on NaCl crystals. (b, c) Purified h-BNNSs after washing in water.



Fig. S4 The SEM images of the h-BNNSs grown on spherical NaCl crystals as template. (a, b) pristine spherical NaCl, and (c, d) hollow h-BNNSs after purification.



Fig. S5 The SEM images of the h-BNNSs grown on KCl crystals as template. (a) pristine KCl crystals, and (b) as-grown KCl@h-BNNSs.



Fig. S6 Related structures during the possible reaction routes.



Fig. S7 (a, b) The SEM images of the h-BNNSs after intense ultrasonic dispersion in IPA, from which we can observe that the pristine cubic morphology partially collapsed due to the sonication disperse process. (c) TEM image shows the lattice fringes of (002) face with about 19 layers.



Fig. S8 The SEM images of the cross-section of h-BNNSs/PVA composite materials. The h-BNNSs were labled in red box. We can see that the pristine cubic morphology collapsed due to the

sonication dispersing process.

Polymer	Filling fraction	Thermal conductivity	Enhancement	Ref.
		(W/mK)	(100%)	
PVA	50 wt%	30	_	1
Epoxy	40 wt%	6	14	2
PMMA	23 wt%	2.6	17	3
PVA	90 wt%	120	~120	4
Epoxy	9.6 wt%	3.13	14	5
Epoxy	9.29 vol%	2.85	16	6
Epoxy	2 vol%	1.17	4.09	7
TPU	95wt%	50.3	264	8
PVA	15.85wt%	8.35	42	This work

Table S1 The thermal conductivity made from h-BNNSs.

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