Supporting Information *for*

Engineering asymmetric multifunctional phase change composites for improved electromagnetic interference shielding and wireless personal thermal therapy

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Supplementary Figures and Tables

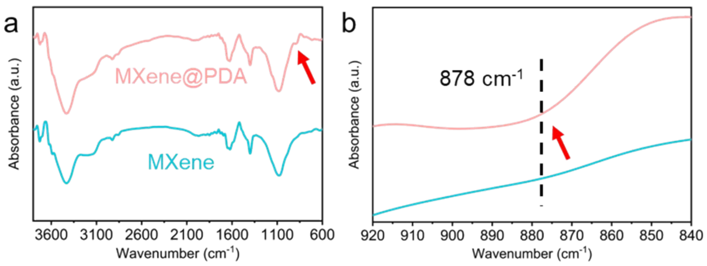

Figure S1. (a) FTIR of MXene and MXene@polydopamine (MXene@PDA). (b) The magnification of (a).

The FTIR spectra of the MXene@PDA exhibited a new signal at 878 cm^{-1}, which corresponds to the stretching vibration of the aromatic ring. As the MXene does not consist of any aromatic ring structure. The PDA was demonstrated to be coated on the MXene.

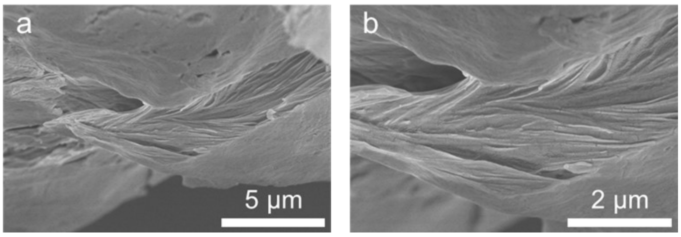

Figure S2. (a) SEM images of parallel MXene nanosheets. (b) Magnification of (a).

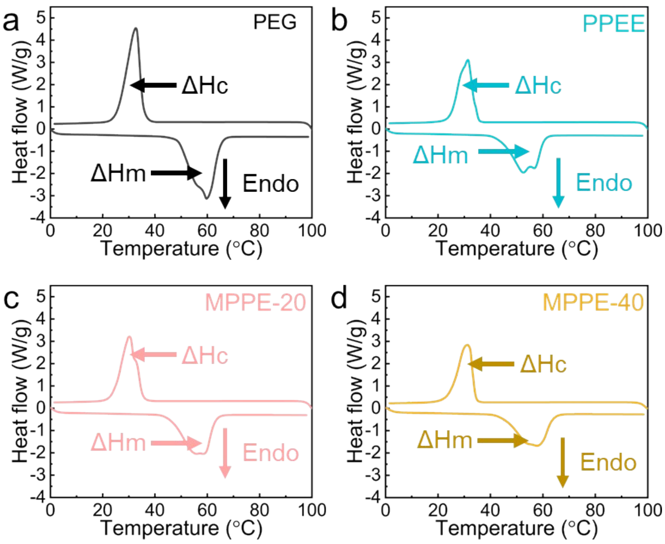

Figure S3. DSC curves of (a) PEG; (b) PPEE; (c) MPPE-20; (d) MPPE-40.

Table S1 Phase change parameters of PCCs.

Composites	ΔH_m (J/g)	ΔH_c (J/g)
PEG	168.4	161.6
PPEE	114.9	109.8
MPPE-20	111.9	106.5
MPPE-40	106.3	100.6

Table S2. Comparison for EMI shielding performances of different MXene-based EMI shielding films at X-band.

Filler	Matrix	Content (wt %)	SE/dB	Ref
MXene	ANF	91	34.7	[1]
MXene	CNF	44	39.6	[2]
MXene	ANF	40	24.5	[3]
MXene	PEDOT:PSS	88	42.1	[4]
MXene/CF	Epoxy	25	14.06	[5]
MXene	chitosan	75	34.7	[6]
MXene	PI/ANF	35	48.9	[7]
MXene/CNT	CNF	80	23.4	[8]
MXene	TOCNF	50	39.6	[9]
MXene	r-CNFs	70	42.7	[10]
MXene	SA	90	43.9	[11]
MXene	CNF	80	25.8	[12]
MXene	PVA	40	40	[13]
MXene/Fe_3O_4/CNTs	-----	100	49	[14]
MXene/EG	EPDM/PW	9	54.5	This work

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