

### Electronic Supplementary Information

#### The magnetic enhanced high-efficiency electromagnetic wave absorbing MXene/Fe<sub>3</sub>O<sub>4</sub> composite absorber in 2-40 GHz

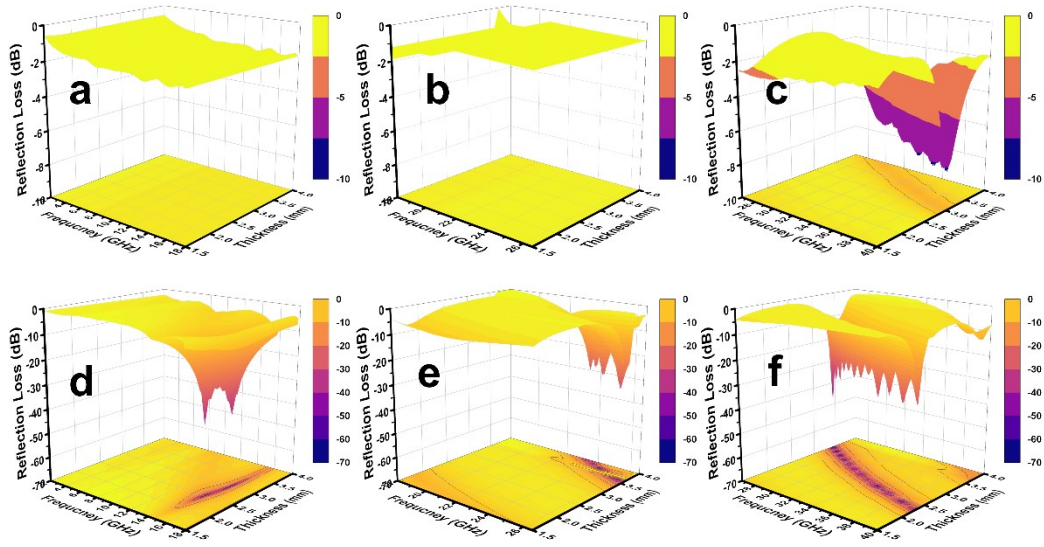
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**Table S1** The magnetic parameters for the MF composites.

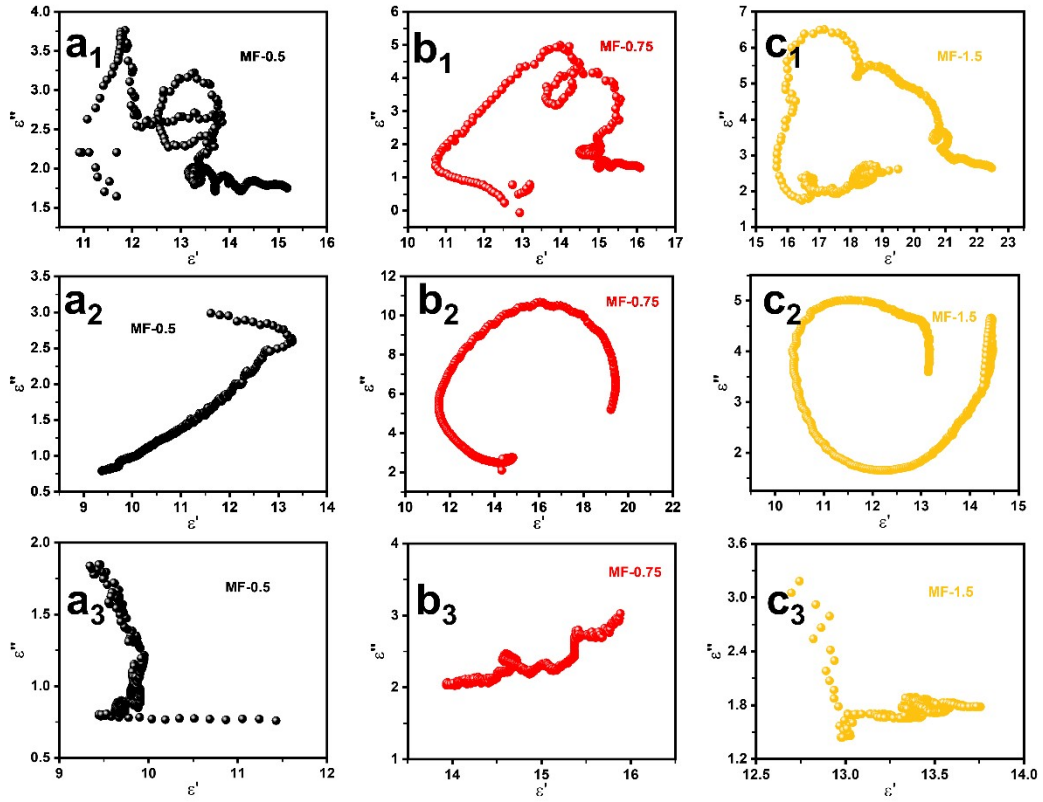
Sample	Ms/(emu/g)	Hc/(Oe)
MF-0	69.50	6.61
MF-0.5	60.92	11.40
MF-0.75	50.55	32.15
MF-1.5	37.67	12.08



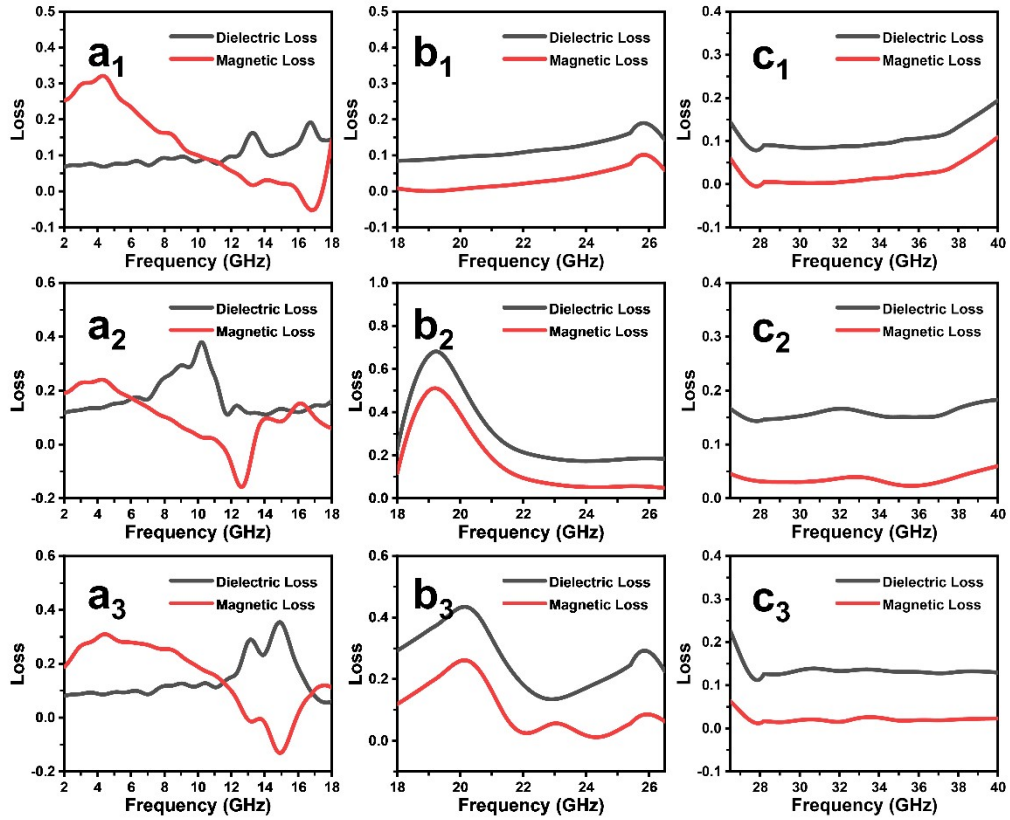
**Fig. S1** The 3D color mapping surface diagram with the projection of RL of MXene (a-c), and MF-0 (d-f) in 2-40 GHz.

**Table S2** EMW absorption performance of the MF composites.

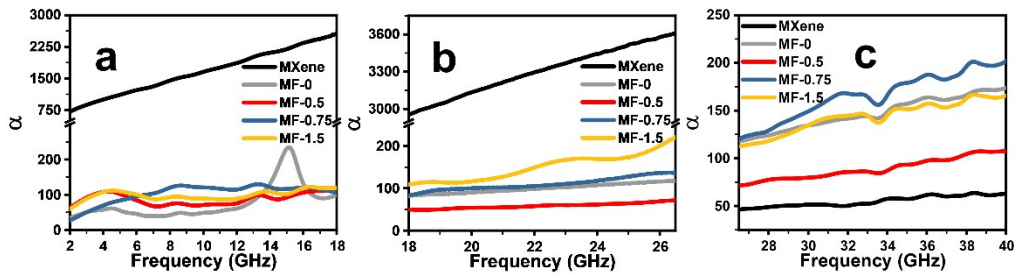
	Samples	RL <sub>min</sub> (dB)	Relative frequency (GHz)	EAB (GHz)	Thickness (mm)
2-18 GHz	MF-0.5	-60.2	6.57	3.10	3.4
	MF-0.75	-56.4	12.78	3.10	1.6
	MF-1.5	-66.3	6.53	2.48	3.4
18-26.5 GHz	MF-0.5	-32.4	23.36	3.09	4.0
	MF-0.75	-46.5	19.47	1.45	2.2
	MF-1.5	-23.5	21.08	1.57	3.0
26.5-40 GHz	MF-0.5	-65.5	36.95	2.30	2.4
	MF-0.75	-41.7	28.83	2.30	2.0
	MF-1.5	-41.4	30.42	2.63	2.0



**Fig. S2** Cole-Cole semicircles ( $\epsilon'$  versus  $\epsilon''$ ) of MF composites in 2-18 GHz ( $a_1$ - $c_1$ );  
 18-26.5 GHz ( $a_2$ - $c_2$ ); 26.5-40 GHz ( $a_3$ - $c_3$ ).



**Fig. S3** Loss mechanism of MF-0.5 in 2-18 GHz ( $a_1$ - $a_3$ ); loss mechanism of MF-0.75 in 18-26.5 GHz ( $b_1$ - $b_3$ ); loss mechanism of MF-1.5 in 26.5-40 GHz ( $c_1$ - $c_3$ ).



**Fig. S4** Attenuation constants ( $\alpha$ ) of MXene and MF composites in 2-18 GHz (a), 18-26.5 GHz (b), and 26.5-40 GHz (c).