Supporting information

Growing bimetallic CoNi-MOF derivatives between MXene layers with hierarchically coral-like interfaces for enhanced electromagnetic wave absorption

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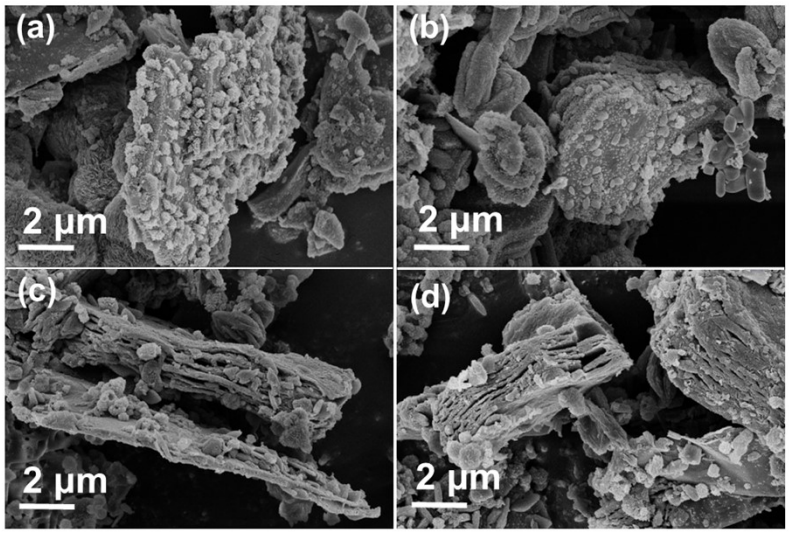


Fig. S1. The SEM images of (a) 3MXene/CoNi-MOF, (b) 4MXene/CoNi-MOF, (c) 5MXene/CoNi-MOF, and (d) 6MXene/CoNi-MOF composites.

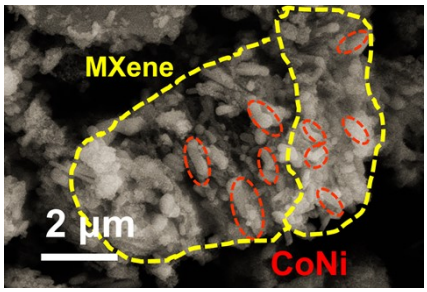


Fig. S2. SEM image of 5MXene/CoNi@C before EDS sweeping.

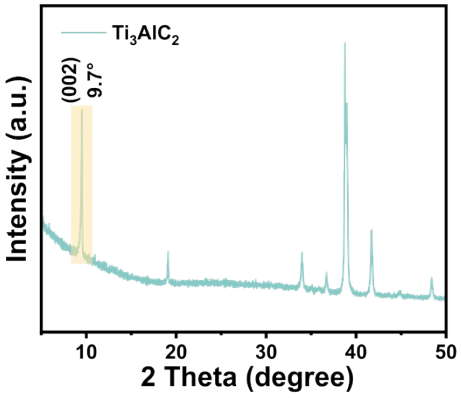


Fig. S3. XRD pattern of Ti_3AlC_2.

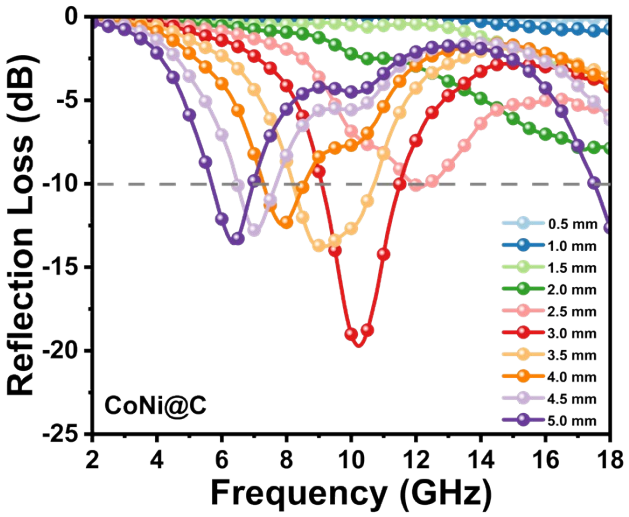


Fig. S4. The RL values of CoNi@C.

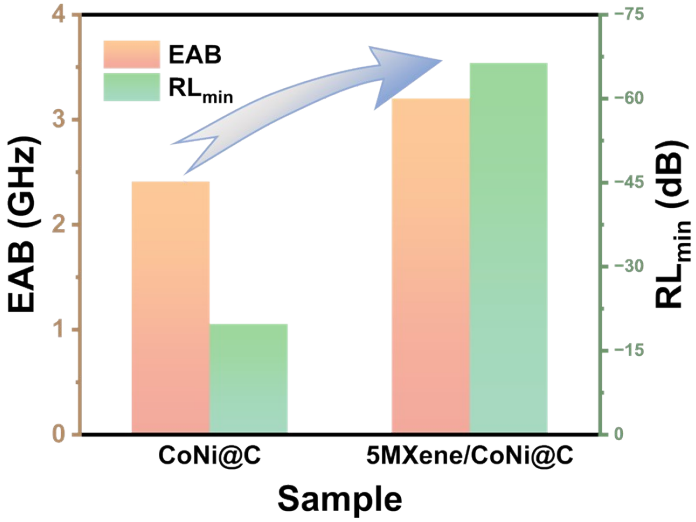
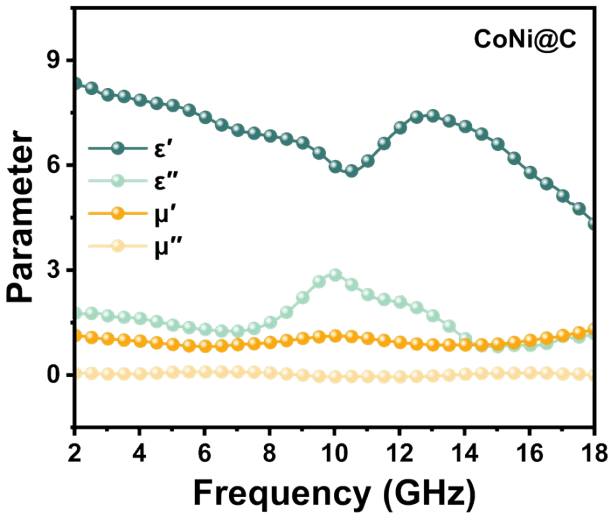


Fig. S5. The RL_{min} values and maximum EAB of CoNi@C and 5MXene/CoNi@C.



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34 **Fig. S6.** The permittivity and permeability versus frequency of CoNi@C.

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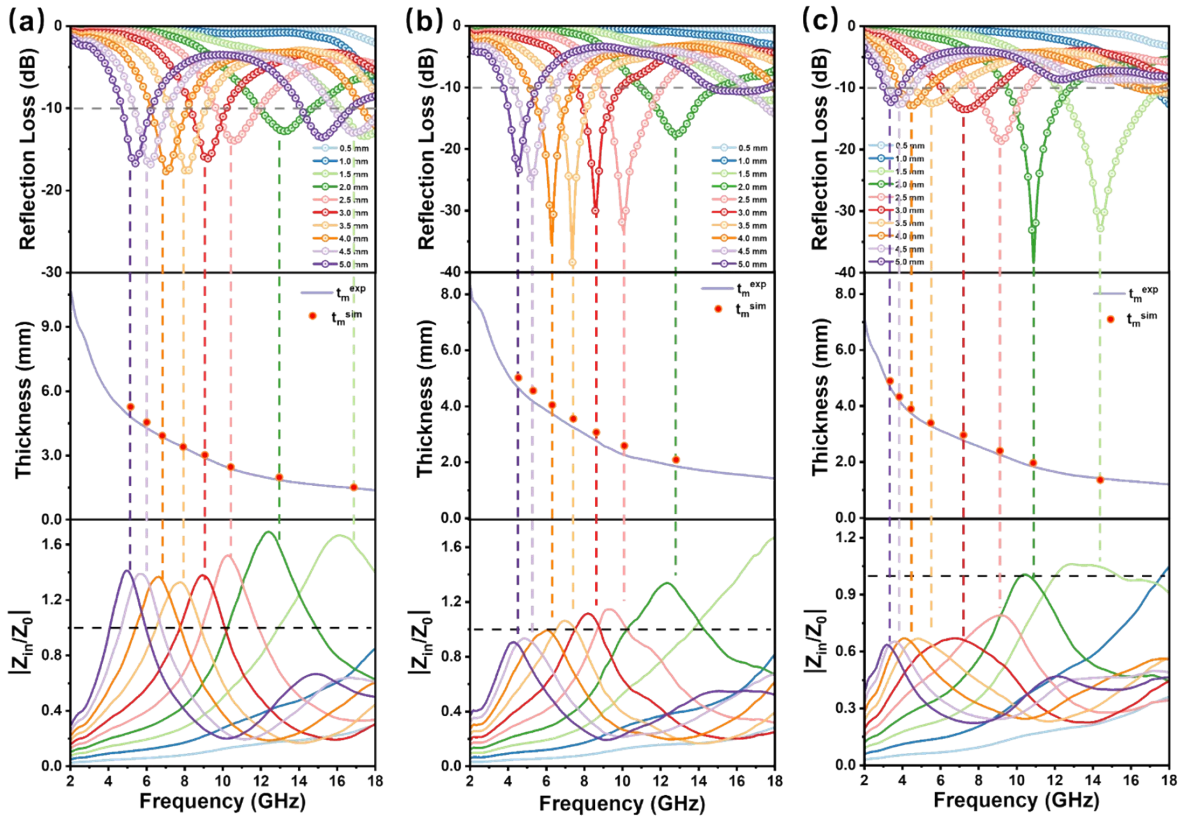

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37 **Fig. S7.** The *RL* values at various thicknesses and theoretical matching thickness curves of (a)

38 3MXene/CoNi@C, (b) 4MXene/CoNi@C, and (c) 6MXene/CoNi@C at different frequencies.

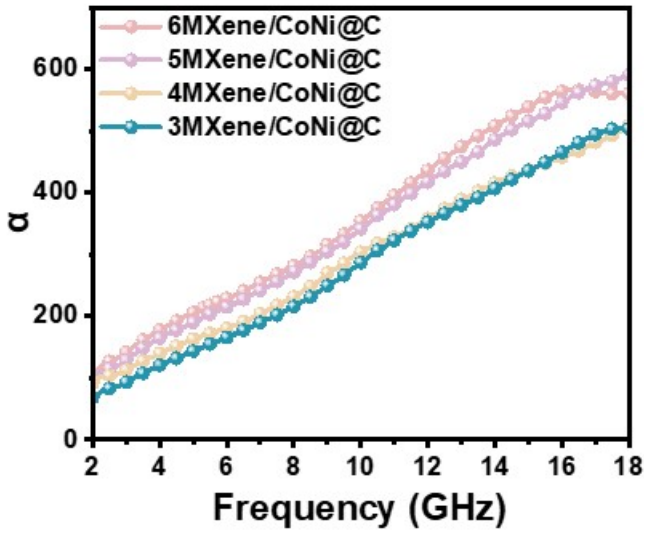

Fig. S8. The attenuation constants of MXene/CoNi@C.

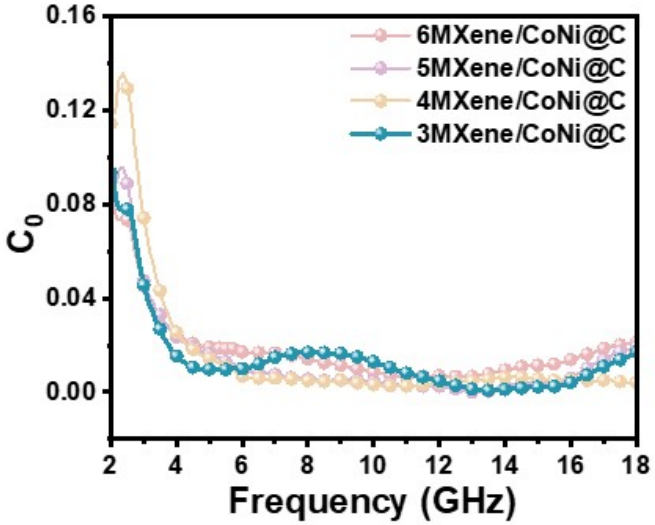

Fig. S9. The C_0 values of MXene/CoNi@C.

Table S1. Comparison of the EWA properties of 5MXene/CoNi@C and other reported materials.

Materials	Thickness (mm)	RL_{min} (dB)	EAB (GHz)	Ref.
M-CN	2.20	-42.5	3.20	1
$Ti_3C_2T_x/Ni_{0.5}Zn_{0.5}Fe_2O_4$	6.50	-42.5	3.00	2
$Ti_3C_2T_x/ZnO$	4.00	-26.3	1.40	3
CNT/Ti_3C_2	3.95	-24.4	4.20	4
$CoFe_2O_4$@CNT	2.50	-34.6	7.10	5
$Fe_3O_4@Ti_3C_2T_x$	4.20	-57.2	1.40	6
$Ti_3C_2T_x@NiCo_2O_4$	2.20	-51.0	1.00	7
MXene/Co	1.00	-46.5	3.00	8
WS_2/NiO	4.30	-53.3	2.00	9
MMC	2.90	-53.7	3.00	10
CoNi/N-CNTs	3.80	-52.6	3.12	11
$RGO/CoFe_2O_4/ZnS$	1.80	-43.2	5.50	12
TiO_2@C-Ni/CNT	1.60	-32.3	5.50	13
$Na_2Ti_3O_7$/MQDs	2.60	-48.3	6.40	14
$MXene/TiO_2$/NCNTs	1.65	-55.8	5.90	15
5MXene/CoNi@C	2.50	-68.1	3.20	**This work**

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