

Supplementary Materials for

**Hosta-Inspired Hierarchical Metamaterials for Electromagnetic
Absorption: Synergistic Design of Composition and Structure**

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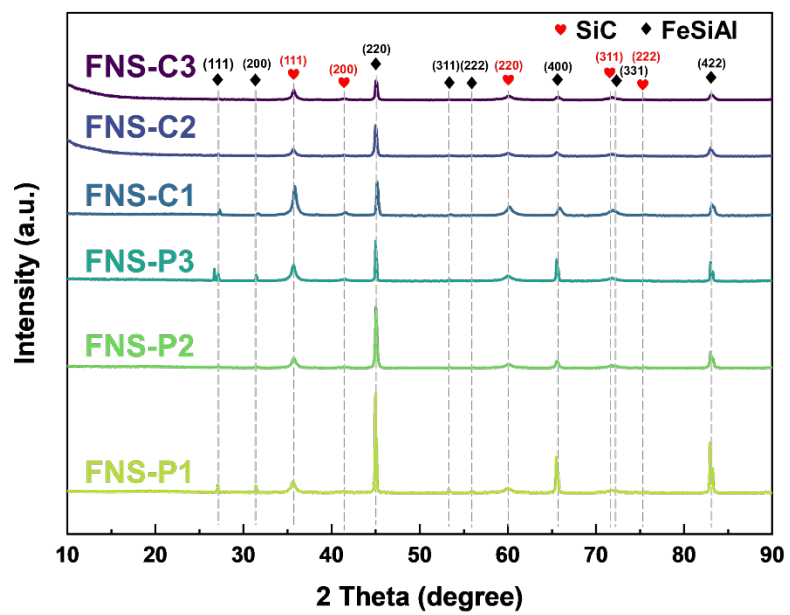


Fig. S1 XRD patterns of FNS samples with different ratios before and after pyrolysis.

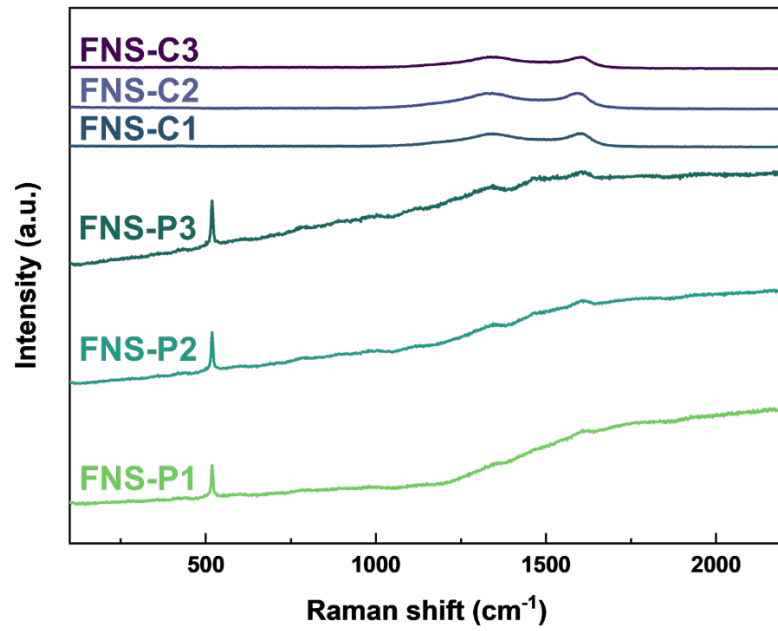


Fig. S2 Raman spectra of FNS samples with different ratios before and after pyrolysis.

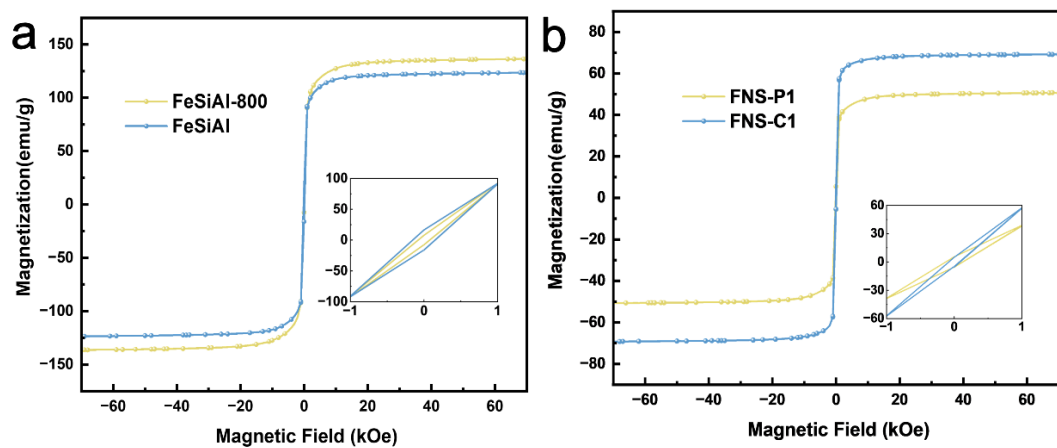


Fig. S3 a Comparison of hysteresis loops of FeSiAl powder before and after pyrolysis. b Comparison of hysteresis loops of FNS samples before and after pyrolysis.

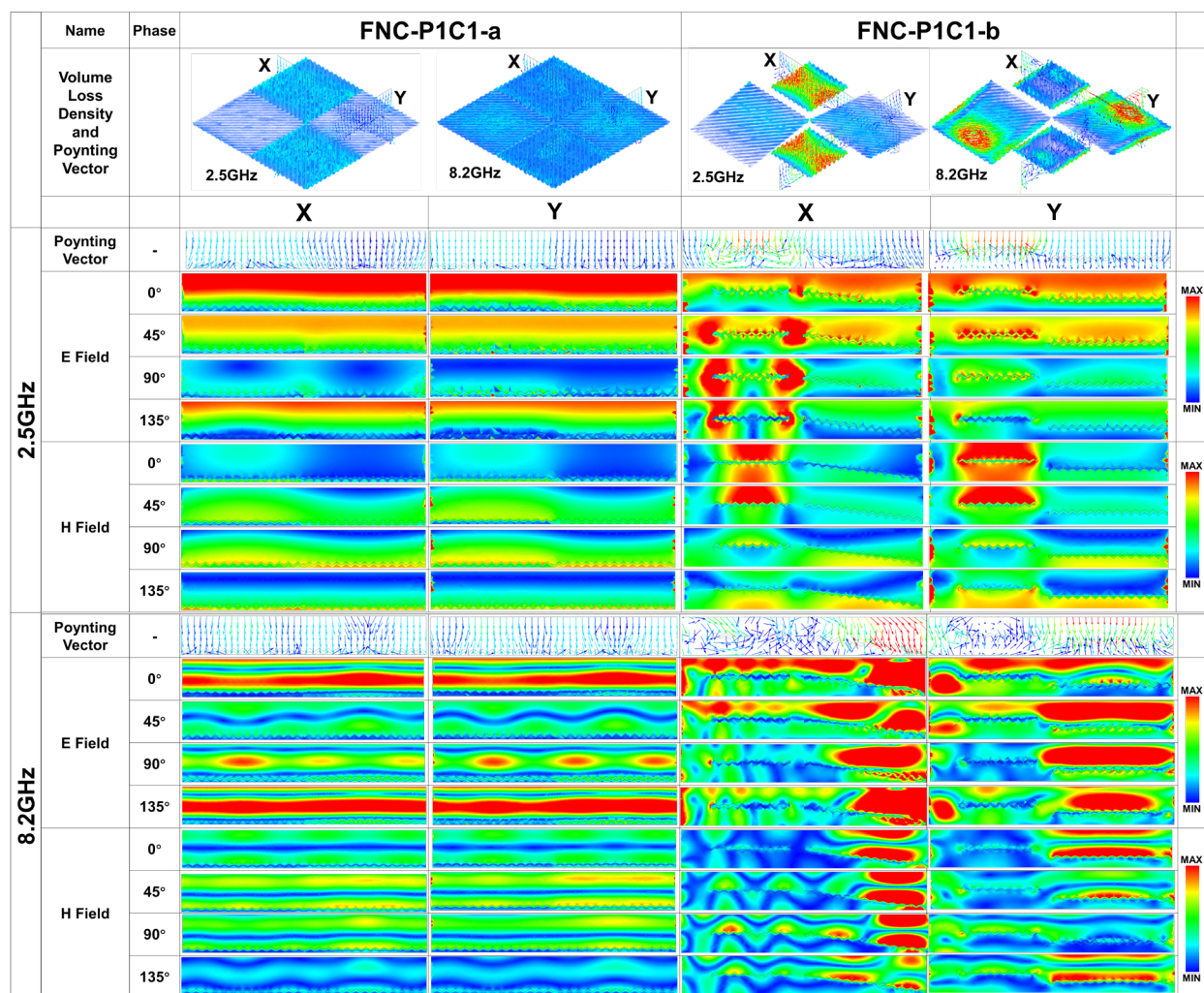


Figure S4 Comparison of volumetric loss density, Poynting vector under different phases, and electromagnetic field distribution diagrams between FNS-P1C1-a and FNS-P1C1-b at 2.5 GHz and 8.2 GHz.

Table S1 Comparison with other works in recent years

	Thickness (mm)	EAB (GHz)	Frequency Band (GHz)	Density(g/ cm ³)	Areal Density (g/cm ²)	$\lambda_{max}/$ Thickness	Ref.
FNS-P1C1	15	39	1-40	0.064	0.096	0.05	This work
sheet-gyroid structure	15	37.7	2.3-40	-	-	0.115	1
NFG/Fe3Si/SiCnw	21	14.45	3.55-18	-	-	0.249	2
morphable conductors	18	15.36	2.64-18	-	-	0.158	3
gradient porous structure	20	14.5	1-18	-	-	0.067	4
2D/2D coupled MOF/Fe composite metamaterials	9.3	38	2-40	0.89	0.828	0.062	5
modular microwave absorbing metastructure	12.4	22.2	3.5-25.7	0.419	0.52	0.145	6
square-hole structure	20	15.82	1-18	-	-	0.067	7
bioinspired helical metamaterial	10	33.7	3.5-40 (3.5-5.1, 7.9-40)	-	-	0.117	8
resonant cavity structural design of carbon-based intrinsic metamaterial	8	12.26	5.74-18	-	-	0.153	9
scattering enhanced prism-honeycomb nested structure	7	14.92	3.08-18	-	-	0.072	10
CB/PP	10	6.6	3.4-10	0.333333	0.22	0.22	11
Carbon/ABS	9.37	8.1	3.9-12	0.679012	0.55	0.25299	12
PMI foam-filled FR-4 SHS	22.4	12.24	5.2-17.44	0.40	0.4896	0.91392	13
DHHC	4.25	11.27	6.73-18	0.205856	0.232	0.159658	14
ITO/PEEK	3.97	14.15	5.7-19.85	0.5	0.7075	0.187252	15
DFMA	4	12.2	5.8-18	0.301639	0.368	0.162667	16
TiO2/CNTs	6	12.7	5.3-18	0.186614	0.237	0.254	17
SCNF036-9.6	9.6	2.1	2.9-5	0.171429	0.036	0.0672	18
SCNF036-3.2	3.2	10	8-18	0.108	0.108	0.106667	18

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