

Construction of heterostructured SnS₂/SnS@graphene oxide composite with highly effective microwave absorption

Qianqian Ren,^{a,1} Jing Wang,^{a,1} Yanzhao Hu,^a Wei Li,^a Wu Zhao^{a,*} Han Zhang,^a
Jiangni Yun,^a Junfeng Yan,^a Zhiyong Zhang,^a Yingnan Wang,^{a,*}

^a School of Information Science and Technology, Northwest University, Xi'an, 710127, China

E-mail: zhaowu@nwu.edu.cn, ynwang@nwu.edu.cn

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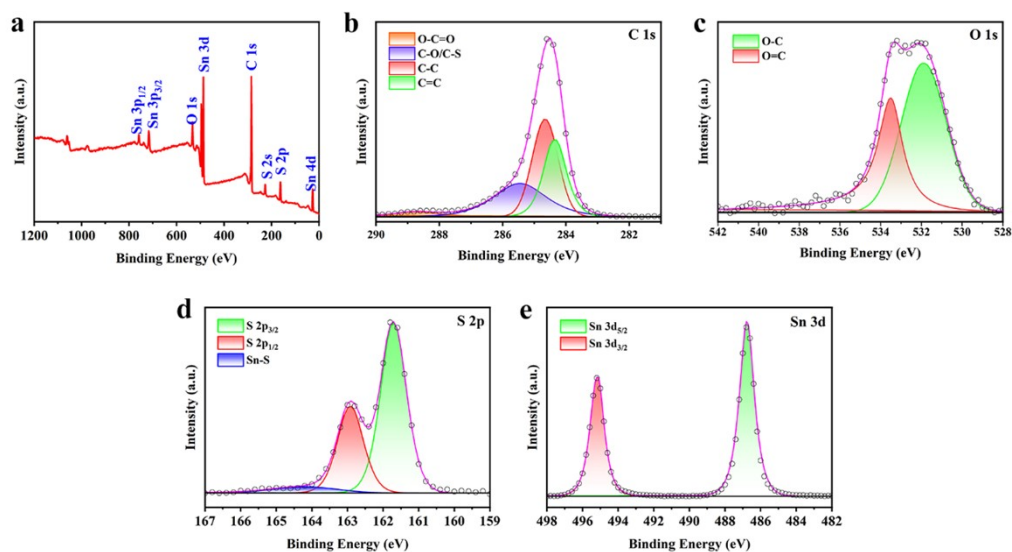


Figure S1.

(a) XPS survey scan spectra, (b) C 1s, (c) O 1s, (d) S 2p and (e) Sn 3d of SG1.

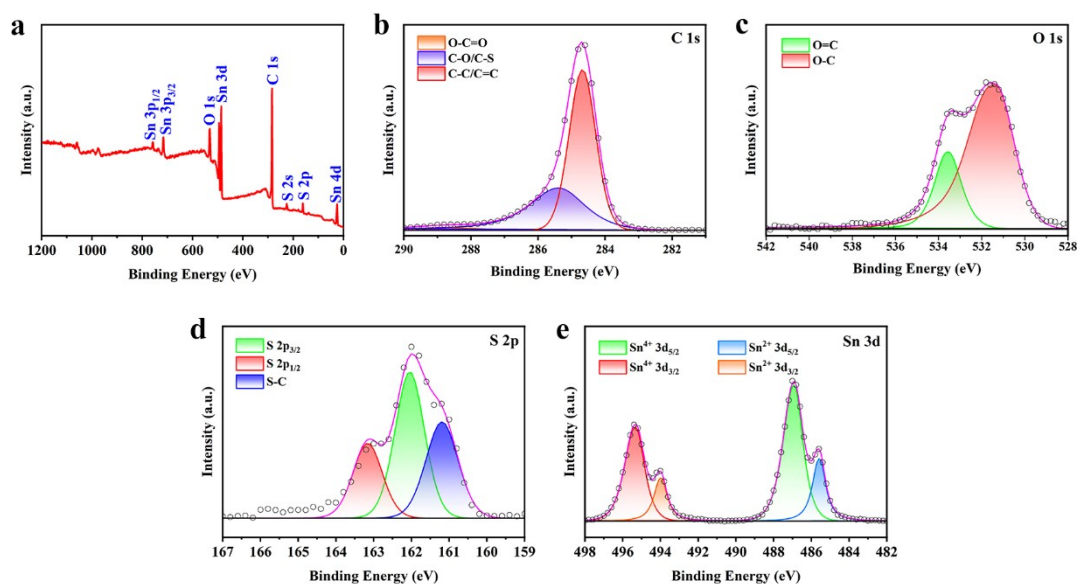


Figure S2. (a) XPS survey scan spectra, (b) C 1s, (c) O 1s, (d) S 2p and (e) Sn 3d of SG2.

Table S1. Preparation conditions for the samples studied.

Num.	Precursor (70 mg)	GO (mg)	Annealing temperature (°C)
SnS	SnS	0	350
SG1-5	SnS	5	350
SG1	SnS	10	350
SG1-15	SnS	15	350

ST1-150	SnS	10	150
ST1-250	SnS	10	250
ST1-450	SnS	10	450
SnS ₂	SnS ₂	0	350
SG2-5	SnS ₂	5	350
SG2	SnS ₂	10	350
SG2-15	SnS ₂	15	350
ST2-150	SnS ₂	10	150
ST2-250	SnS ₂	10	250
ST2-450	SnS ₂	10	450
SnS ₂ /SnS	SnS ₂ /SnS	0	350
SG3-5	SnS ₂ /SnS	5	350
SG3	SnS ₂ /SnS	10	350
SG3-15	SnS ₂ /SnS	15	350
ST3-150	SnS ₂ /SnS	10	150
ST3-250	SnS ₂ /SnS	10	250
ST3-450	SnS ₂ /SnS	10	450

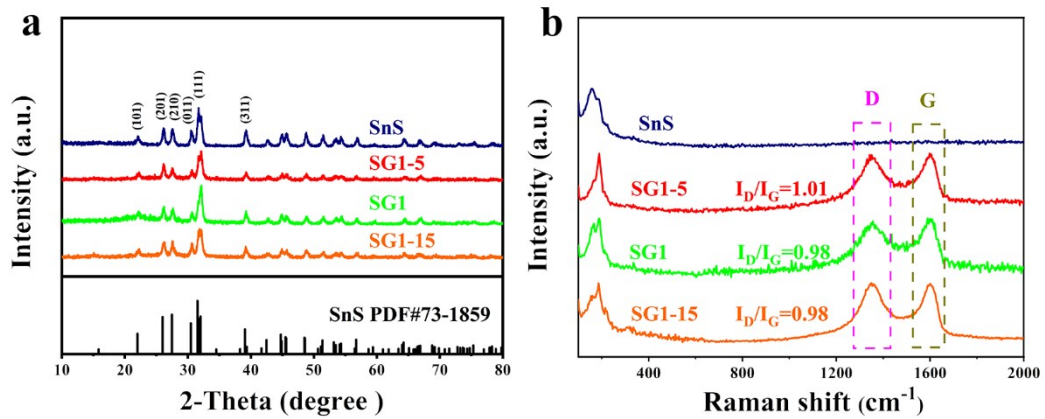


Figure S3. (a) XRD patterns and (b) Raman spectra of SnS, SG1-5, SG1, and SG1-15.

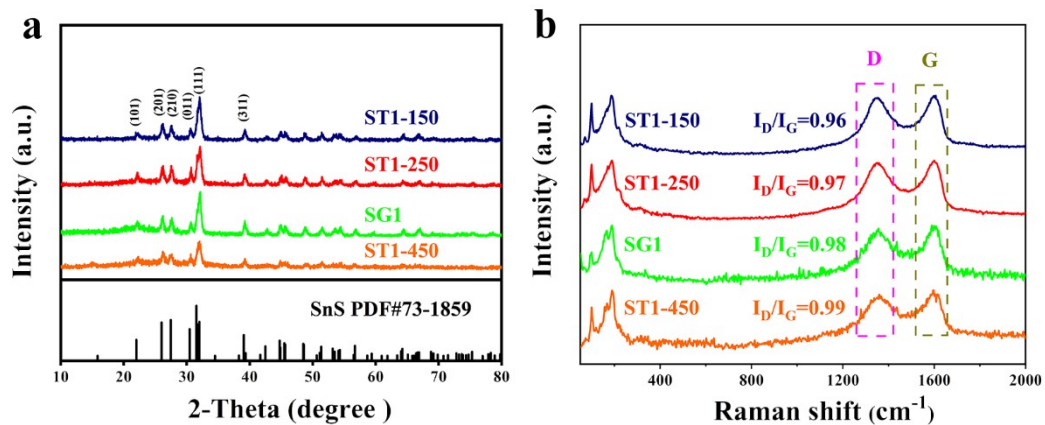


Figure S4. (a) XRD patterns and (b) Raman spectra of ST1-150, ST1-250, SG1, and ST1-450.

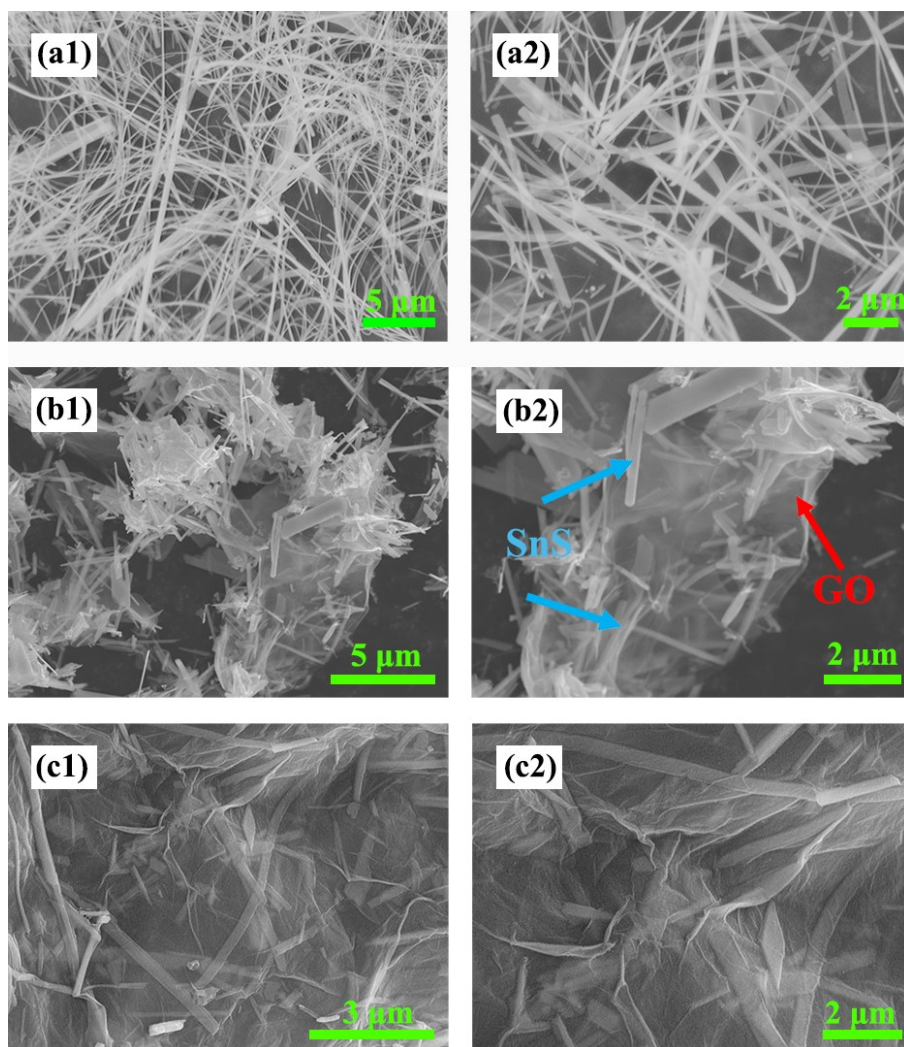


Figure S5. SEM images of (a1, a2) SnS, (b1, b2) SG1-5, and (c1, c2) SG1-15.

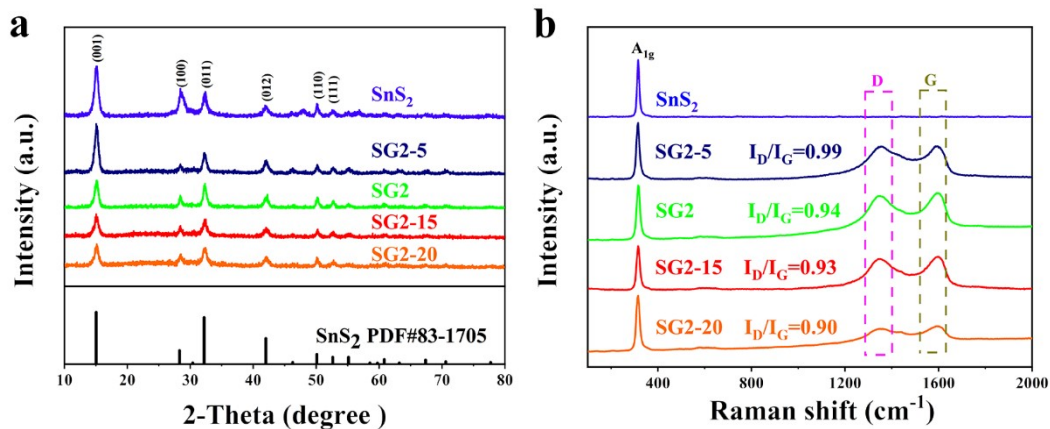


Figure S6. (a) XRD patterns and (b) Raman spectra of SnS₂, SG2-5, SG2, and SG2-15, SG2-20.

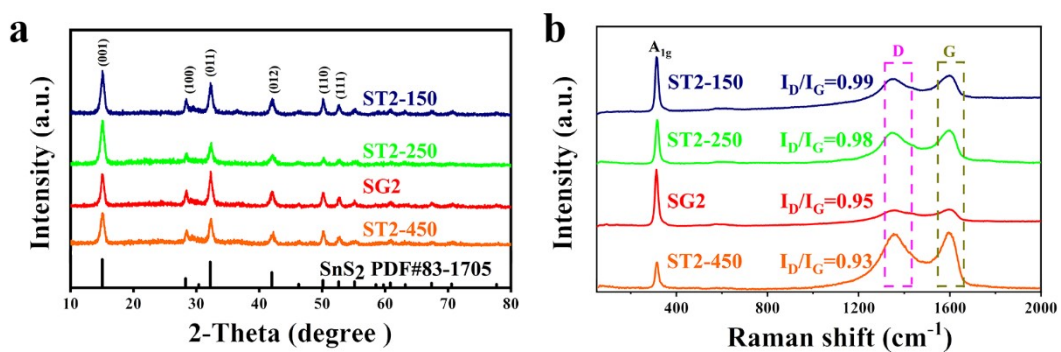


Figure S7. (a) XRD patterns and (b) Raman spectra of ST2-150, ST2-250, SG2, and ST2-450.

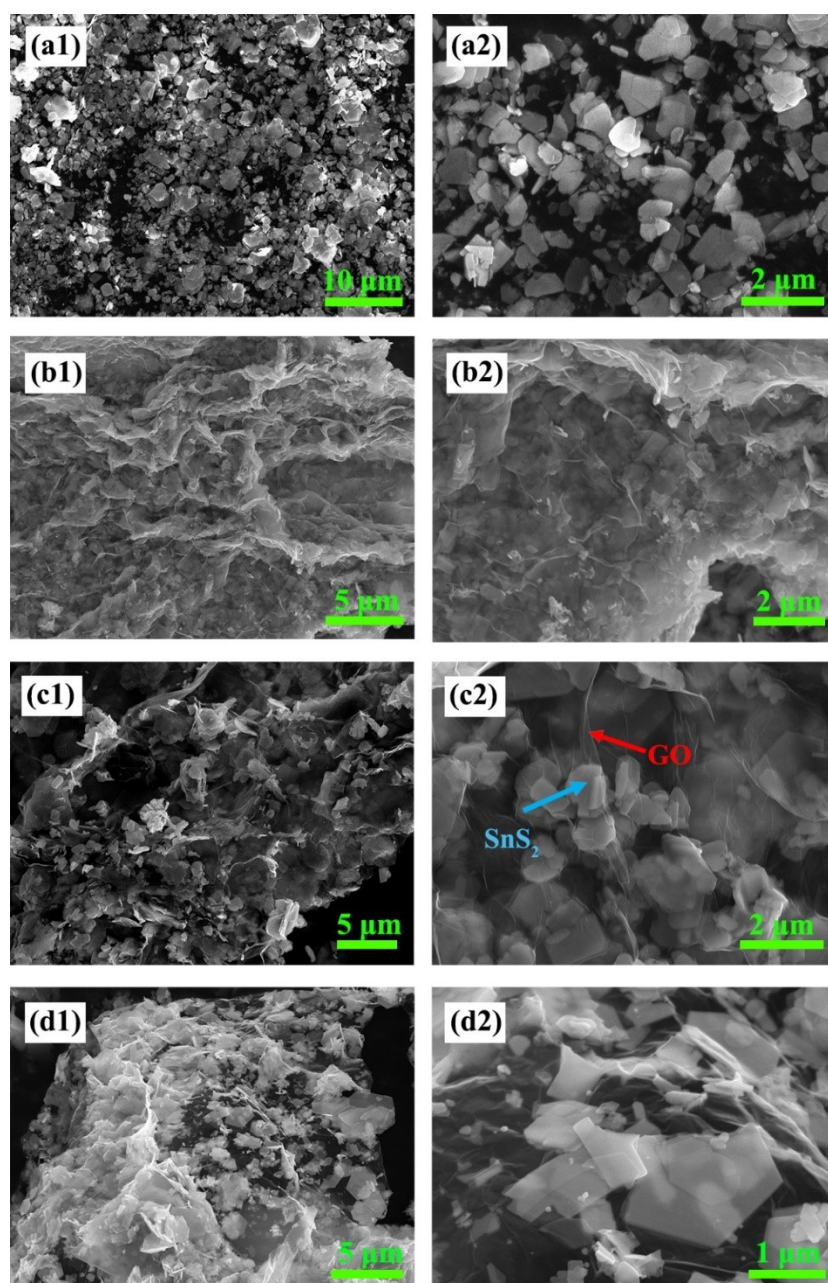


Figure S8. SEM images of (a1, a2) SnS_2 , (b1, b2) SG2-5, (c1, c2) SG2-15, and (d1, d2) SG2-20.

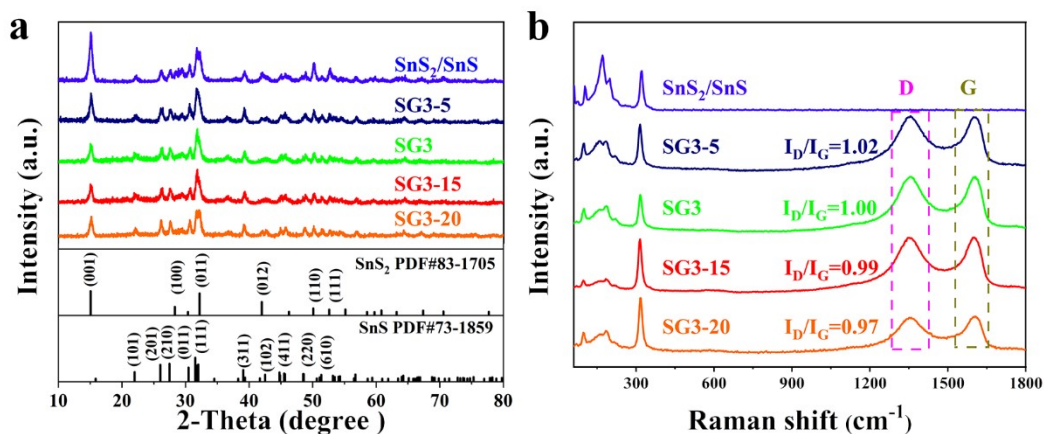


Figure S9. (a) XRD patterns and (b) Raman spectra of SnS₂/SnS, SG3-5, SG3, and SG3-15, SG3-20.

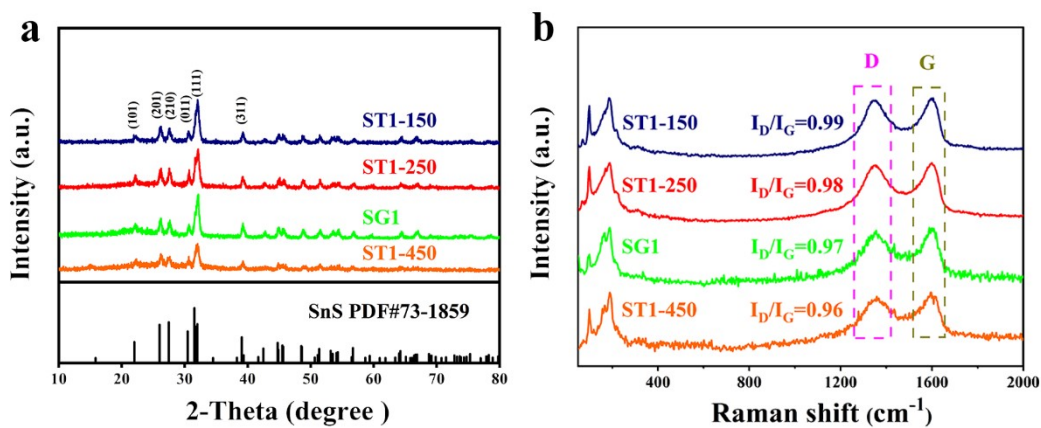


Figure S10. (a) XRD patterns and (b) Raman spectra of ST3-150, ST3-250, SG3, and ST3-450.

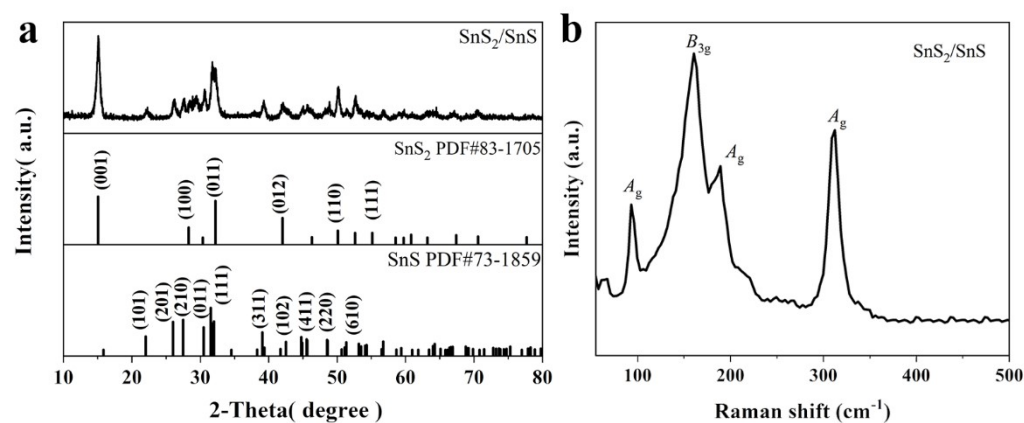


Figure S11. (a) XRD patterns and (b) Raman spectra of SnS₂/SnS.

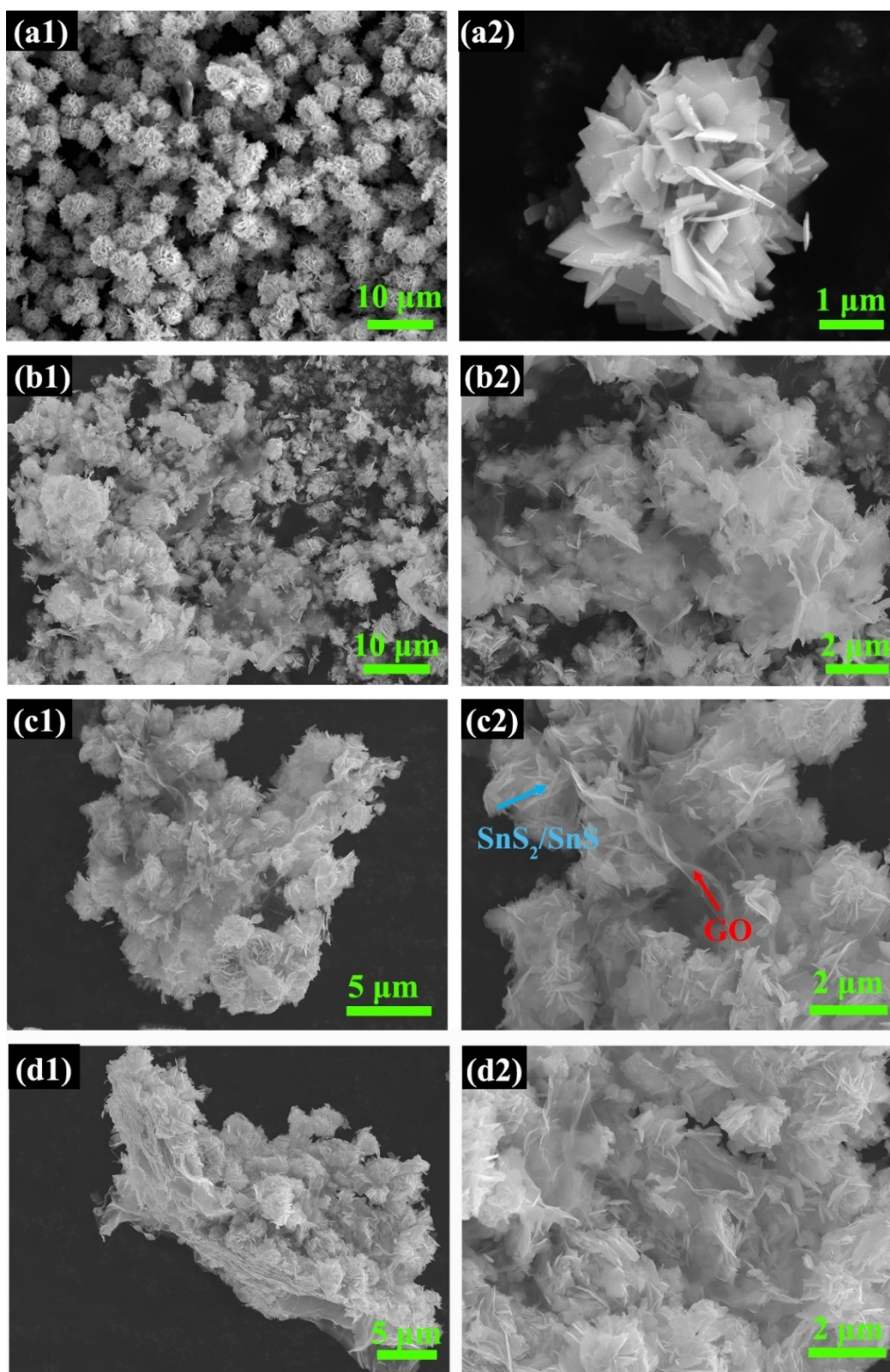


Figure S12. SEM images of (a1, a2) SnS_2/SnS , (b1, b2) SG3-5, (c1, c2) SG3-15, and (d1, d2) SG3-20.

Table S1. Electromagnetic wave absorption properties of obtained absorbers under different experimental parameters.

Num.	Filling ratio (wt%)	$RL_{\min}$ (dB)	EAB (GHz)	d (mm)
SnS	30	-4.27	-	-
SG1-5	30	-20.97	4.67	1.88
SG1	30	-20.14	5.70	1.68
SG1-15	30	-9.01	-	-
ST1-150	30	-62.36	4.31	4.99
ST1-250	30	-54.19	5.61	1.84
SG1	30	-20.14	5.70	1.68
ST1-450	30	-8.33	-	-
SnS ₂	30	-8.53	-	-
SG2-5	30	-73.50	5.75	2.31
SG2	30	-52.79	6.64	2.52
SG2-15	30	-11.31	3.28	1.56
SG2-20	30	-9.44	-	-
SF2-10	10	-11.22	0.76	4.99
SF2-20	20	-63.22	6.60	2.28
SG2	30	-52.79	6.64	2.52
SF2-40	40	-11.70	4.13	1.70
SF2-50	50	-13.59	4.85	1.72
ST2-150	30	-6.19	-	-
ST2-250	30	-57.73	5.88	2.24
SG2	30	-52.79	6.64	2.52
ST2-450	30	-28.41	6.10	1.89
SnS ₂ /SnS	30	-12.91	1.98	4.97
SG3-5	30	-31.77	4.62	2.08
SG3	30	-47.83	7.18	2.00
SG3-15	30	-15.25	5.88	1.78
SG3-20	30	-14.50	5.03	1.61
SF3-10	10	-11.12	1.71	2.77
SF3-20	20	-23.63	5.75	2.22
SG3	30	-47.83	7.18	2.00
SF3-40	40	-14.61	4.98	1.63
SF3-50	50	-8.96	-	-
ST3-150	30	-5.00	-	-
ST3-250	30	-55.40	6.10	2.38
SG3	30	-47.83	7.18	2.00

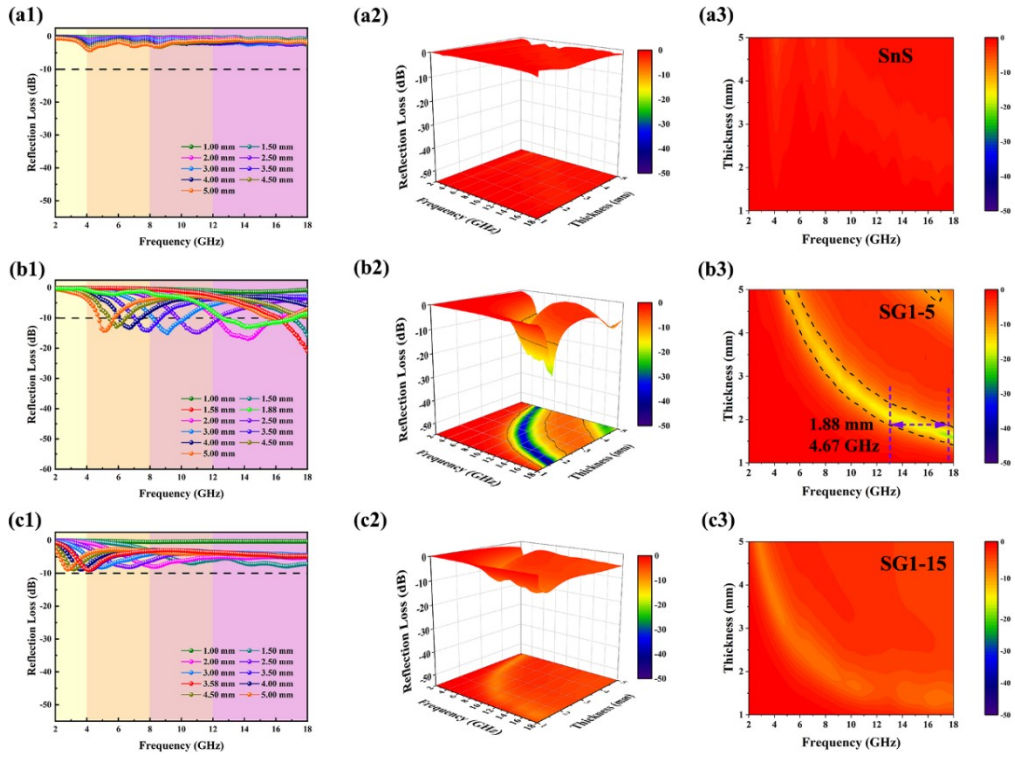


Figure S13. RL-f curves at different thicknesses, 3D plots, and contour maps for (a1-a3) SnS, (b1-b3) SG1-5 and (c1-c3) SG1-15.

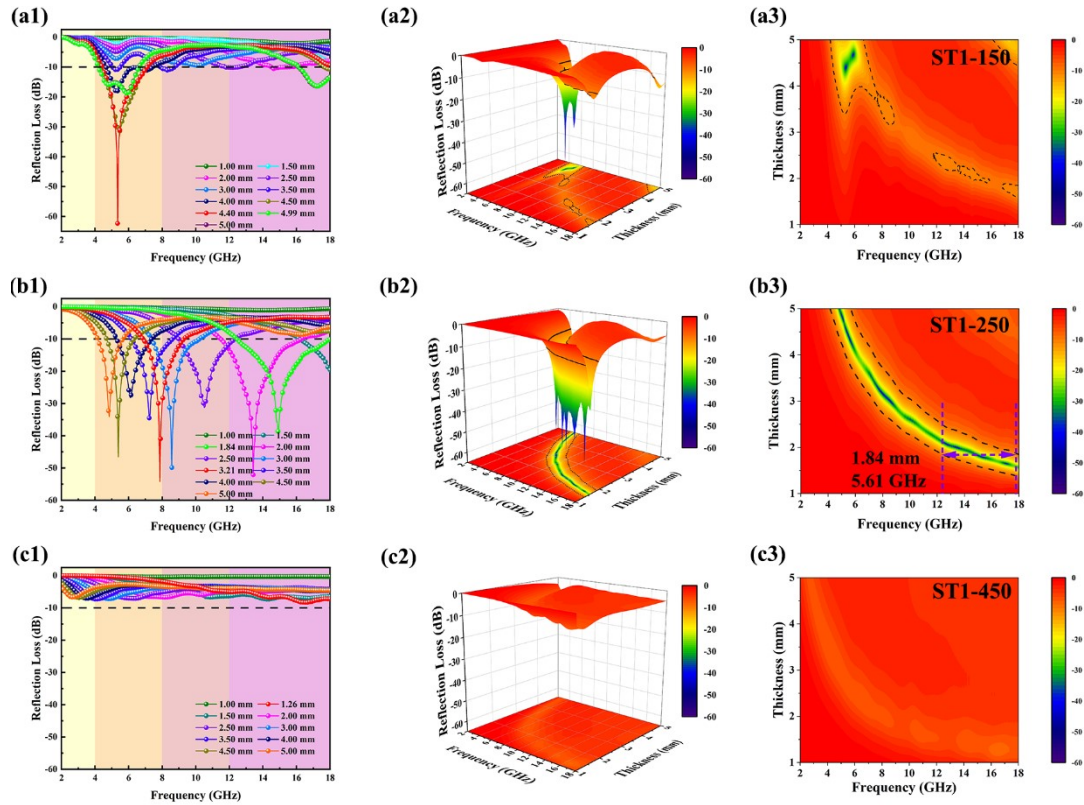


Figure S14. RL-f curves at different thicknesses, 3D plots, and contour maps for (a1-

a3) ST1-150, (b1-b3) ST1-250 and (c1-c3) ST1-450.

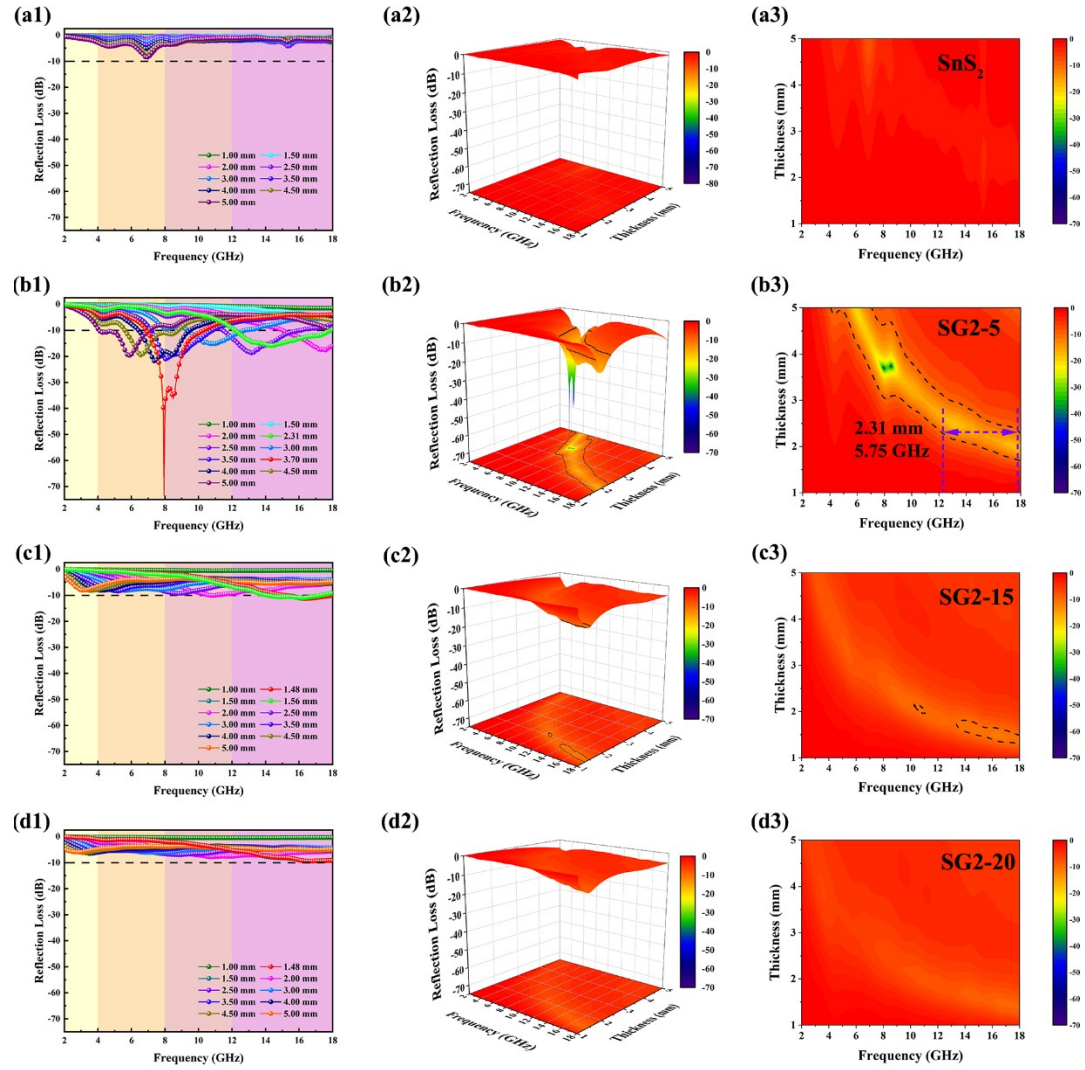


Figure S15. RL-f curves at different thicknesses, 3D plots, and contour maps for (a1-a3) SnS₂, (b1-b3) SG2-5, (c1-c3) SG2-15, and (d1-d3) SG2-20.

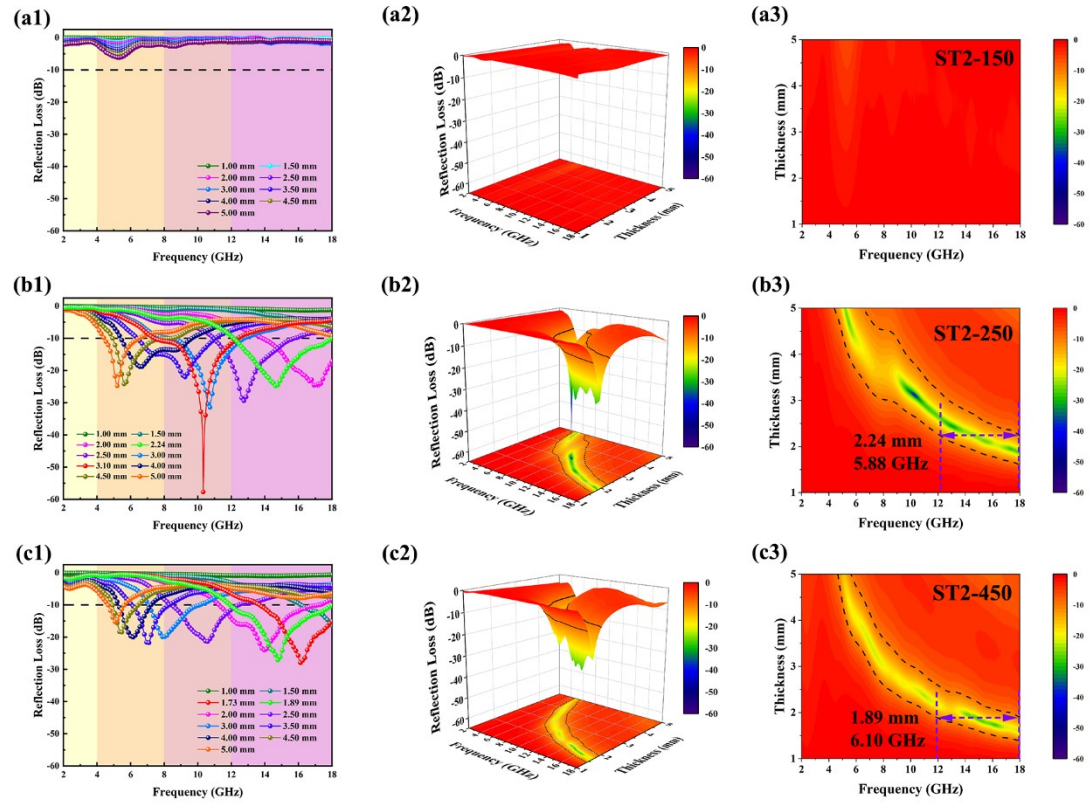


Figure S16. RL-f curves at different thicknesses, 3D plots, and contour maps for (a1-a3) ST2-150, (b1-b3) ST2-250 and (c1-c3) ST2-450.

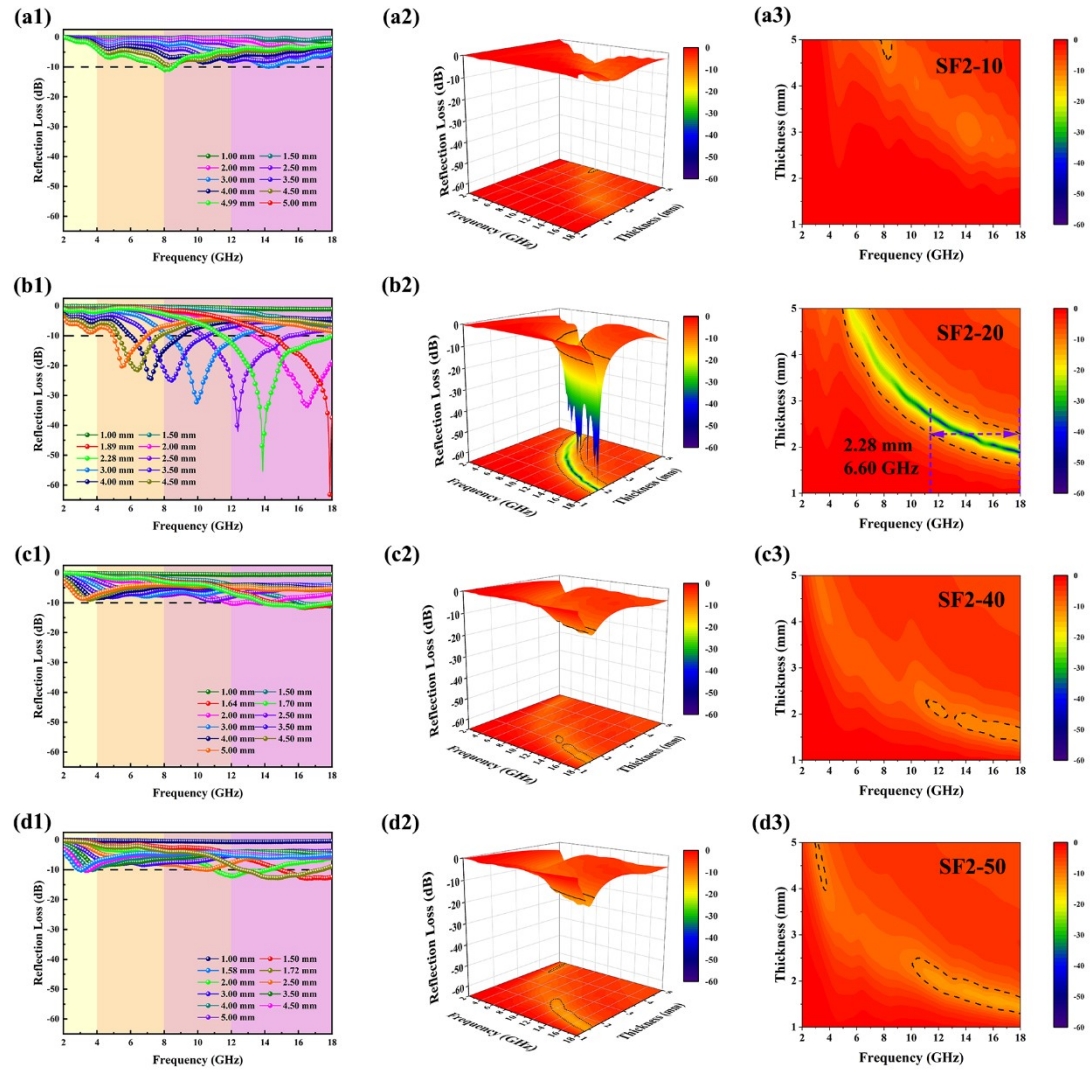


Figure S17. The RL curves, 3D and 2D color map of SG2 with different filling ratios, (a1-a3) 10%, (b1-b3) 20%, (c1-c3) 40%, and (d1-d3) 50%.

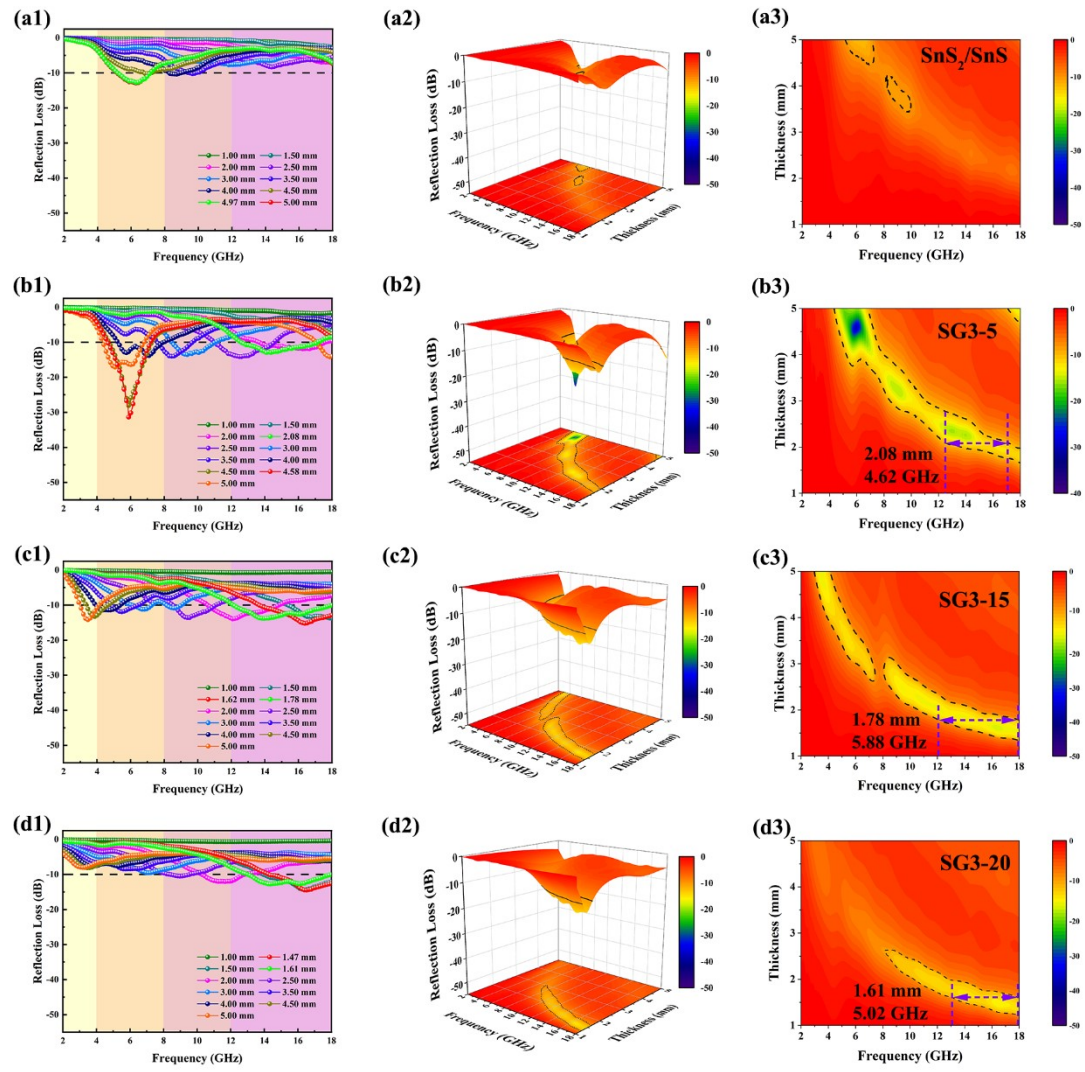


Figure S18. RL-f curves at different thicknesses, 3D plots, and contour maps for (a1-a3) SnS₂/SnS, (b1-b3) SG3-5, (c1-c3) SG3-15, and (d1-d3) SG3-20.

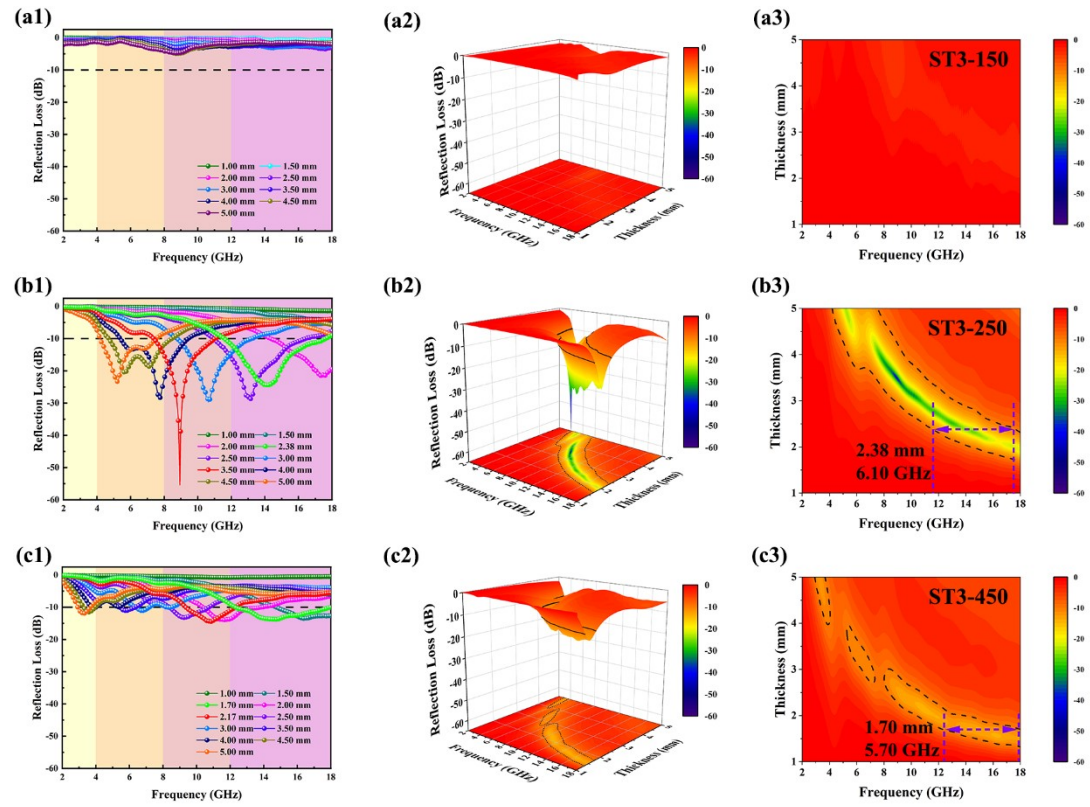


Figure S19. RL-f curves at different thicknesses, 3D plots, and contour maps for (a1-a3) ST3-150, (b1-b3) ST3-250 and (c1-c3) ST3-450.

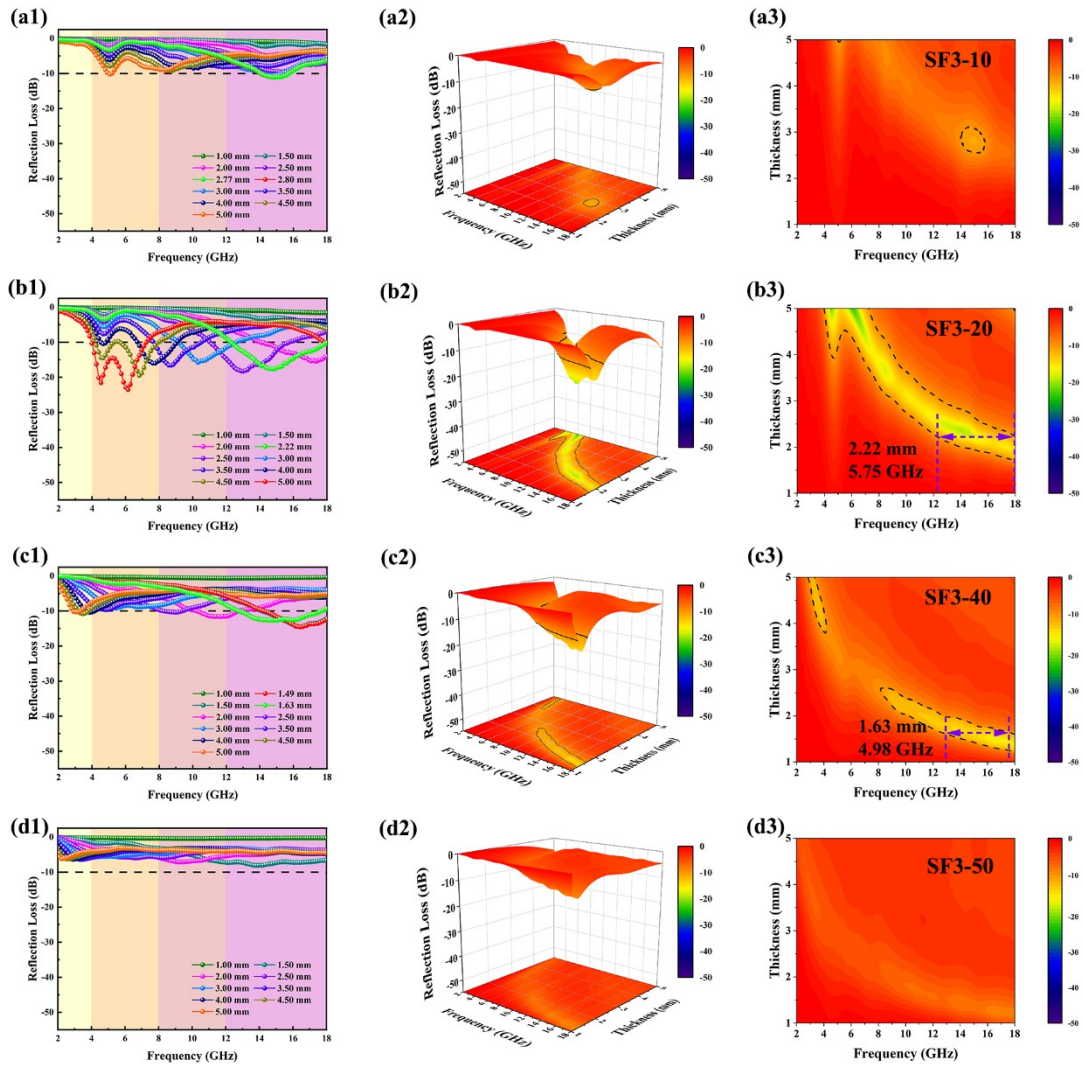


Figure S20. The RL curves, 3D and 2D color map of SG3 with different filling ratios, (a1-a3) 10%, (b1-b3) 20%, (c1-c3) 40%, and (d1-d3) 50%.