Supporting Information

Customizing Coaxial Stacking VS_2 Nanosheets for Dual Band Microwave Absorption with Superior Absorption Performance at C- and K_u-Bands

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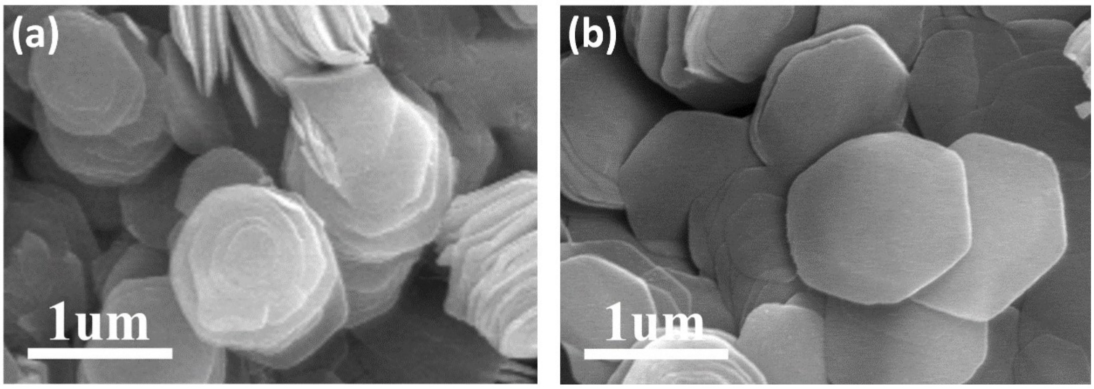

Figure S1. SEM images of samples S-170 (**a**) and S-200 (**b**).

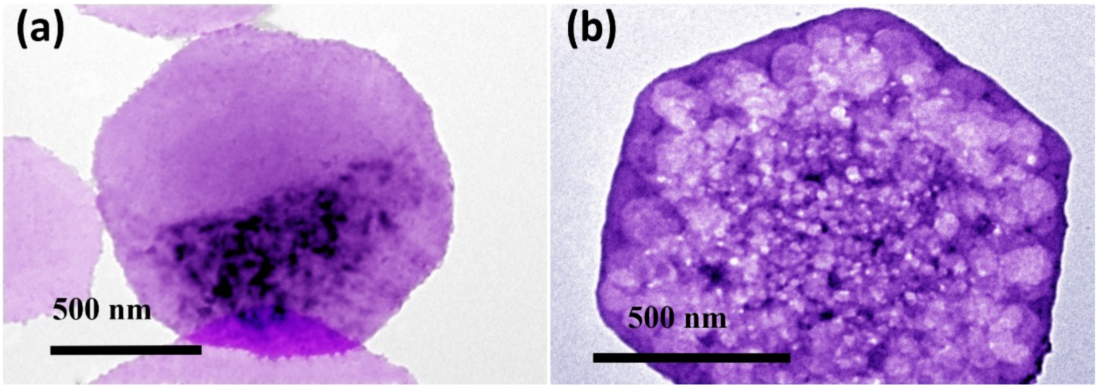

Figure S2. TEM images of samples S-170 (**a**) and S-200 (**b**).

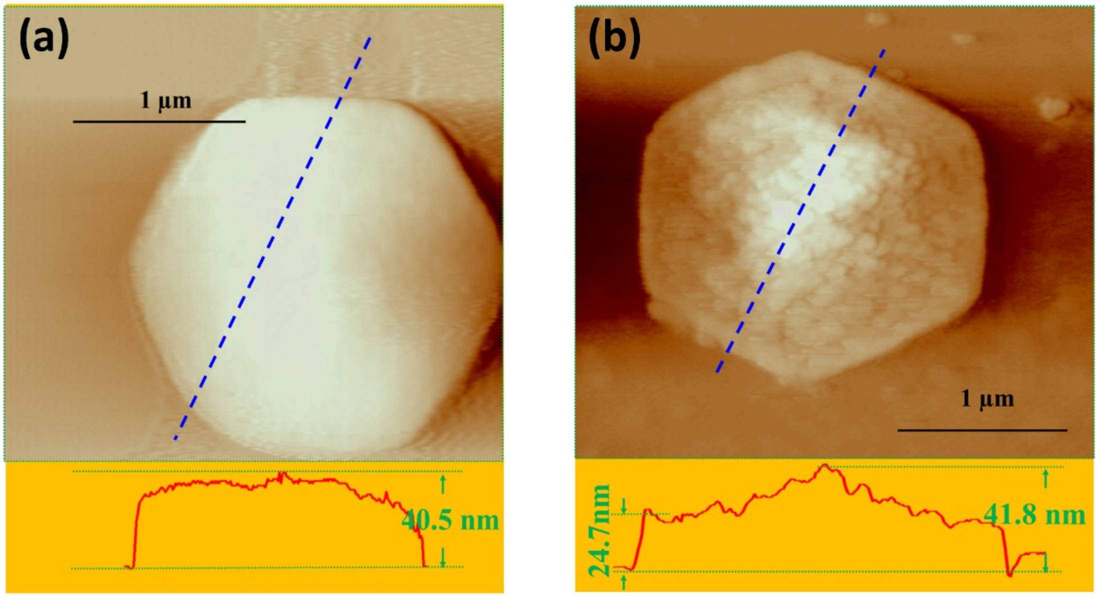

Figure S3. AFM images of typical samples (**a**) S-170 and (**b**) S-200.

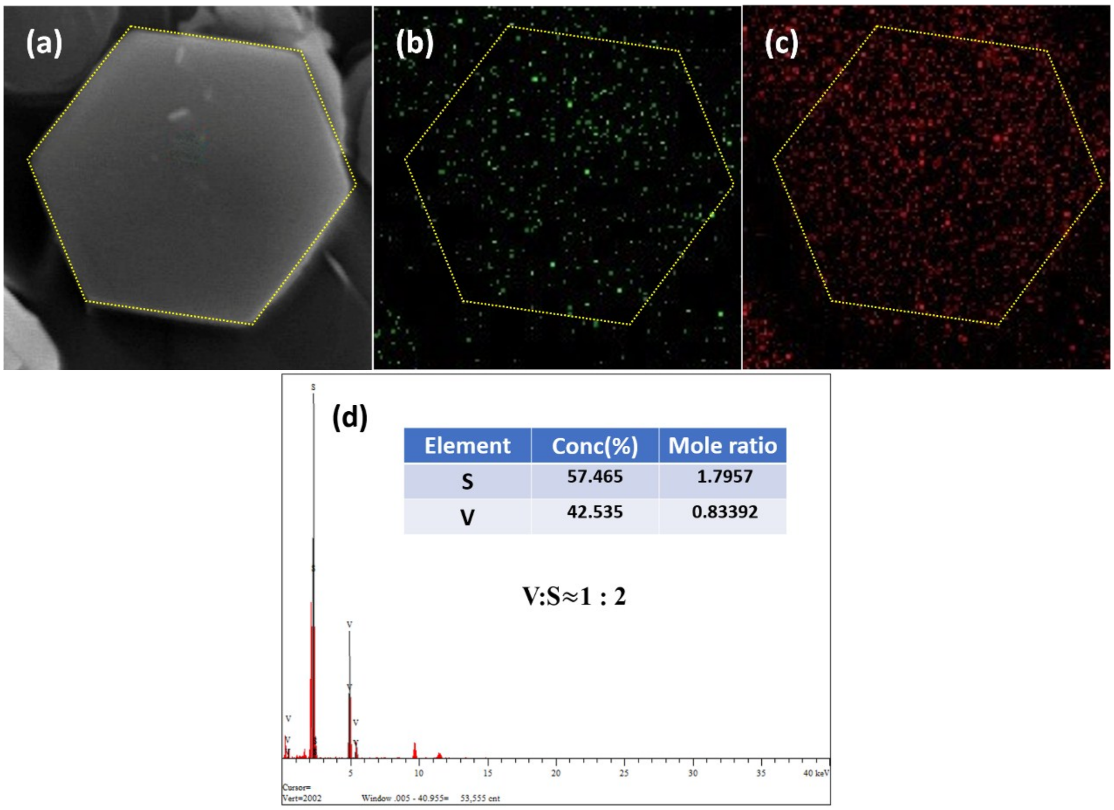

Figure S4. Elemental mapping images (**a, b, c**) and EDS spectra(**d**) of typical sample S-190.

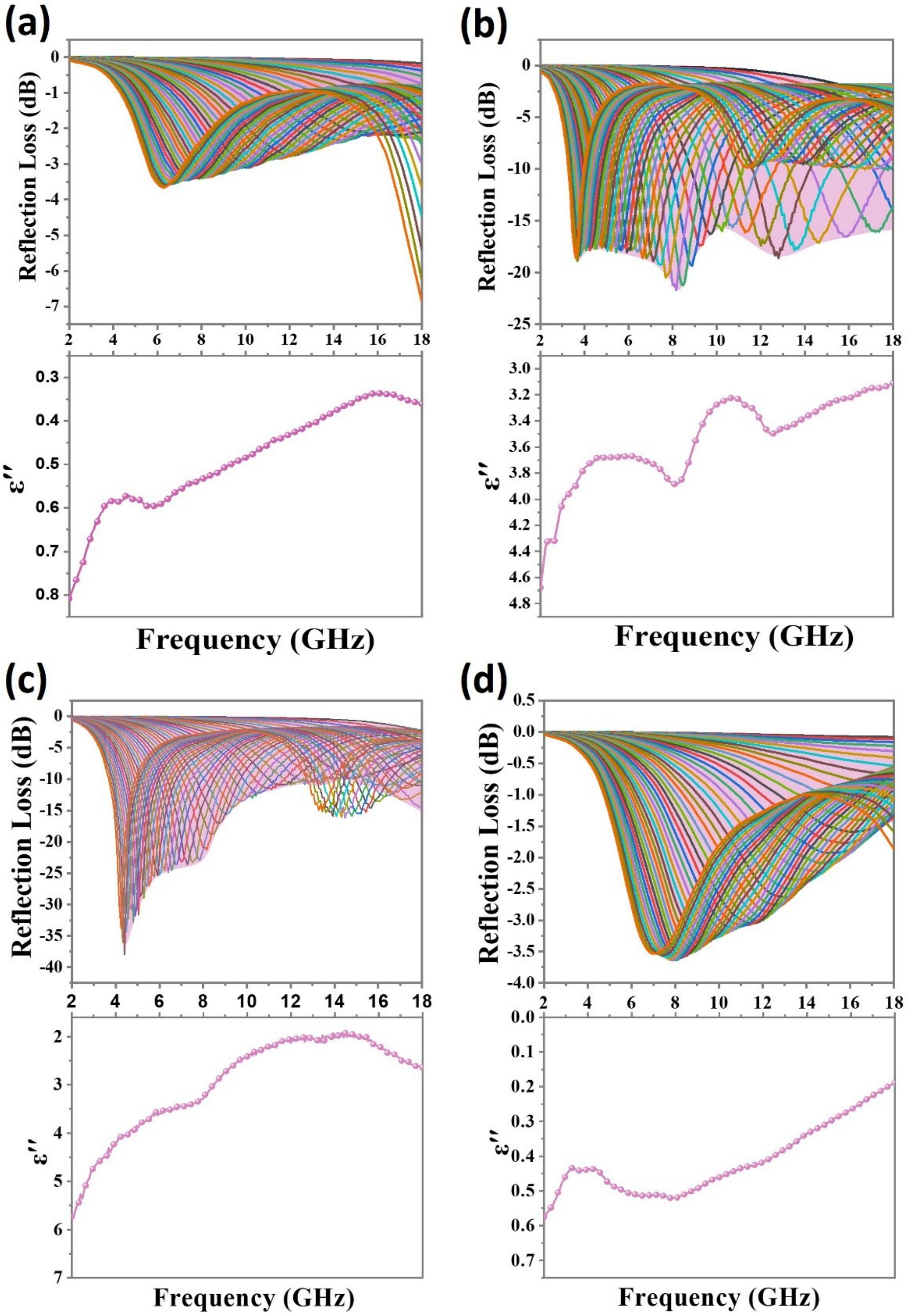

Figure S5. RL[1] map (Top picture) in combination with the plots of imaginary part of permittivity (Bottom picture) for samples (**a**) S-170; (**b**) S-180; (**c**) S-190 and (**d**) S-200.

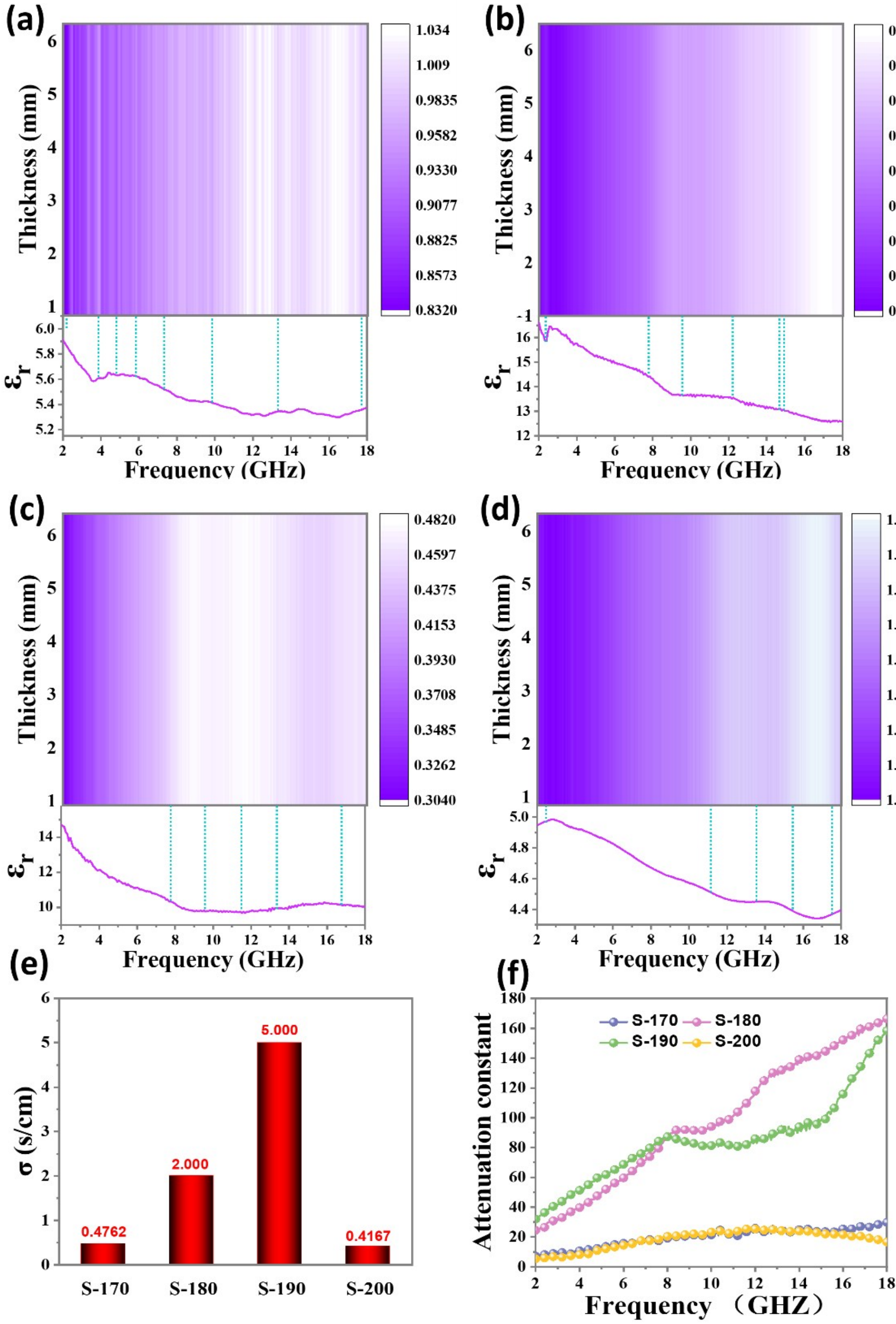

Figure S6. The calculated |△| value maps for VS_2 samples. **(a)** S-170; **(b)** S-180; **(c)** S-190; **(d)** S-200; **(e)** the conductivity and attenuation constants **(f)** of samples.

Table S1. Microwave absorbing performance of some previous materials.

Filler	loading ratio (wt %)	RL (dB)	Thickness (mm)	Frequency (GHz)	Maximal RL (dB)	Frequency of Maximal RL (GHz)	Thickness of Maximal RL (mm)	Ref
WS_2+RGO	40	-27	5.5	10.5	-41.5	10.5	2.5	[S1]
Flower-like $MoSe_2$	50	-19	7.8	3.2	-51.6	6.1	4.45	[S2]
MoS_2 nanosheets	60	-45	2.3	12.1	-47.8	12.9	2.2	[S3]
3D MoS_2	25	-26.11	2.5	11.36	––	––	––	[S4]
2D few layers WS_2	30	-37	6.0	4.3	-63	12.1	2.5	[S5]
Pure WS_2	35	-26	2.5	11.2	-47.1	12.9	2.2	[S6]
MoS_2-graphene	10	-8	7.0	9.5	-24.2	13.3	5.5	[S7]
2D MoS_2-graphene	30	––	5.4	16.1	-41.9	16.2	2.4	[S8]
MoS_2-RGO	10	-27	4	6.5	-50.9	11.6	2.3	[S9]
MoS_2+ RGO	60	-30	2.6	10	-38.42	11.17	2.4	[S10]
MoS_2+ RGO	20	-32	3.5	6.8	-55.3	12.8	1.5	[S11]
MoS_2+ MWCNTs	30	-16	5.0	5.9	-14	15	2.0	[S12]
MoS_2+PANI	40	-18	2.0	5.8	-40.79	14.01	4.5	[S13]
Graphene Aerogel	30	––	––	––	-61.09	9.9	4.81	[S14]
Carbon hollow spheres	20	-43	4.0	8.9	-50.9	11.1	3.2	[S15]
Carbon hollow microsphere	20	-22	5.0	6.0	-39.4	8.2	3.6	[S16]
3D carbon foams	30	-17	5.0	5.5	-52.6	15.8	2.6	[S17]

Table S2. The band gaps of the monolayer and bulk transition metal dichalcogenide.

Material	Monolayer	Bulk	Ref
VS_2	0.6 eV		[S18]
WS_2	1.3 eV	2.1 eV	[S19]
MoS_2	1.2 eV	1.9 eV	[S19]
$MoSe_2$	1.09 eV	1.44 eV	[S20]
WSe_2	1.13 eV	1.56 eV	[S20]
$MoTe_2$		0.57eV	[S21]

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