Implanting FeCo/C Nanocages with Tunable Electromagnetic Parameters in Anisotropic Wood Carbon Aerogels for Efficient Microwave Absorption

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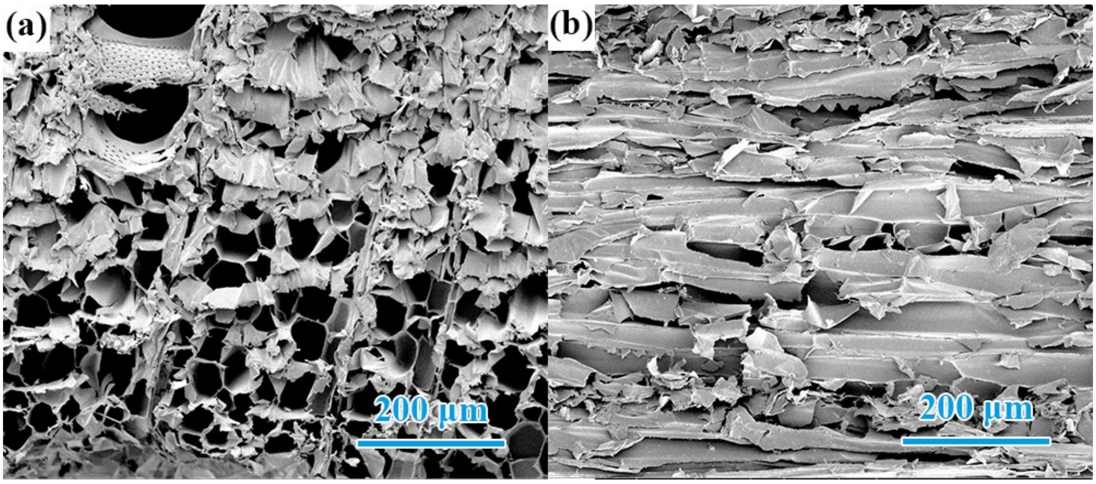

Figure S1. SEM images of the natural wood: (a) the cross-sections and (b) the longitudinal sections.

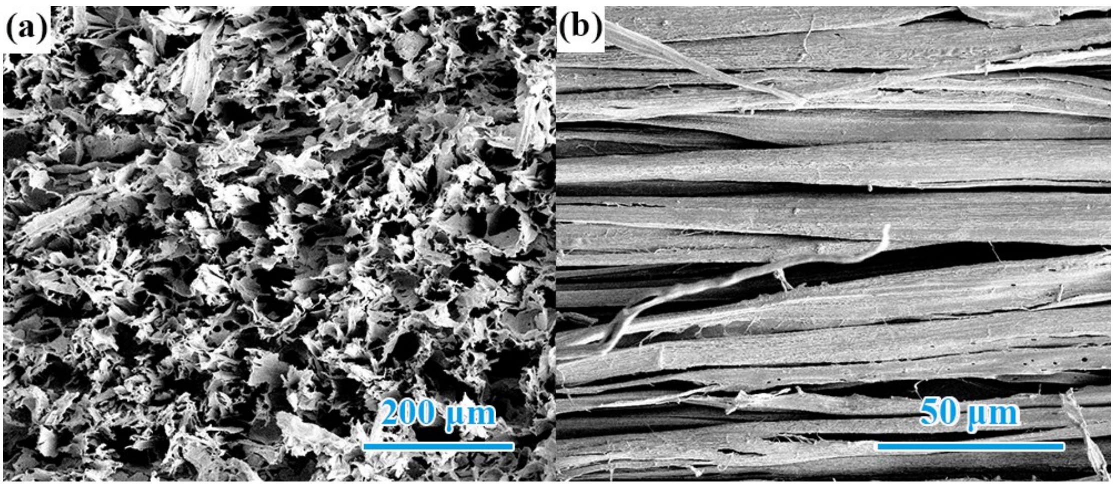

Figure S2. SEM images of the delignified wood aerogel: (a) the cross-sections and (b) the longitudinal sections.

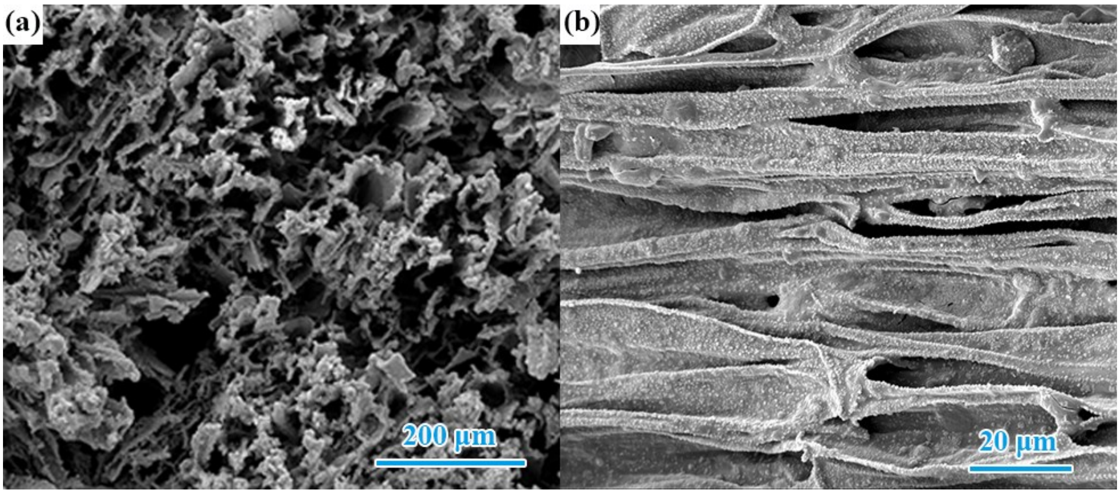

Figure S3. SEM images of the Fe_3O_4/ZIF-67@WA: (a) the cross-sections and (b) the longitudinal sections.

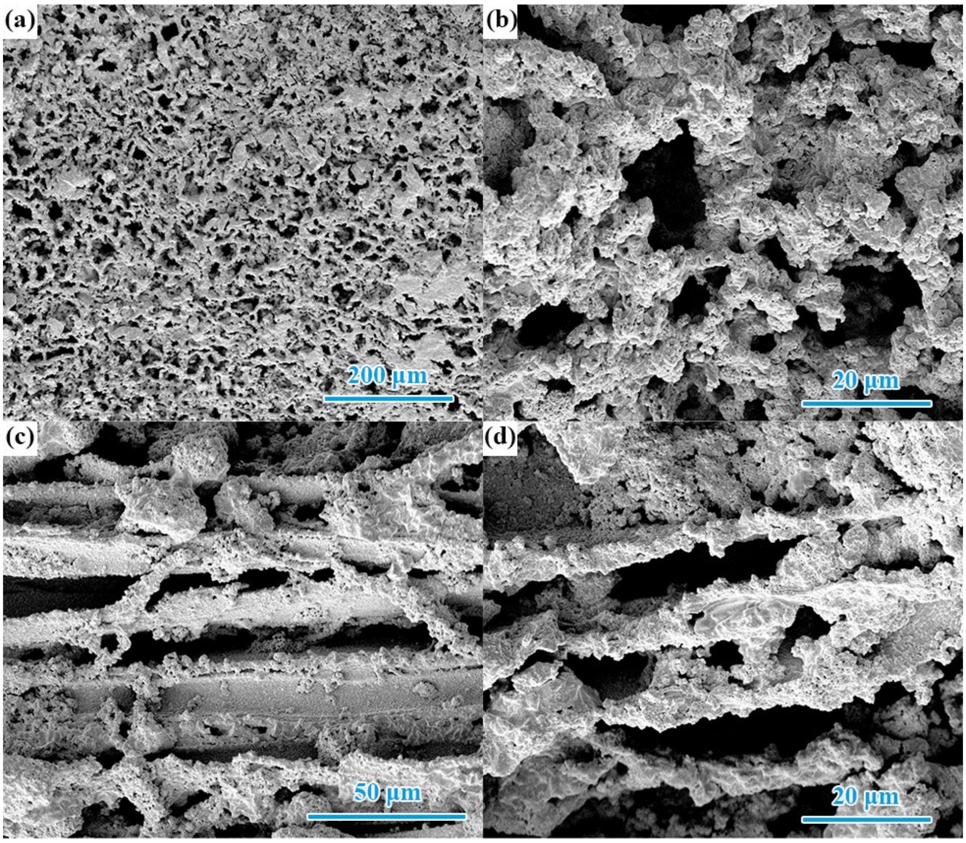

Figure S4. SEM images of the FeCo/C@WC: (a-b) the cross-sections and (c-d) the longitudinal sections.

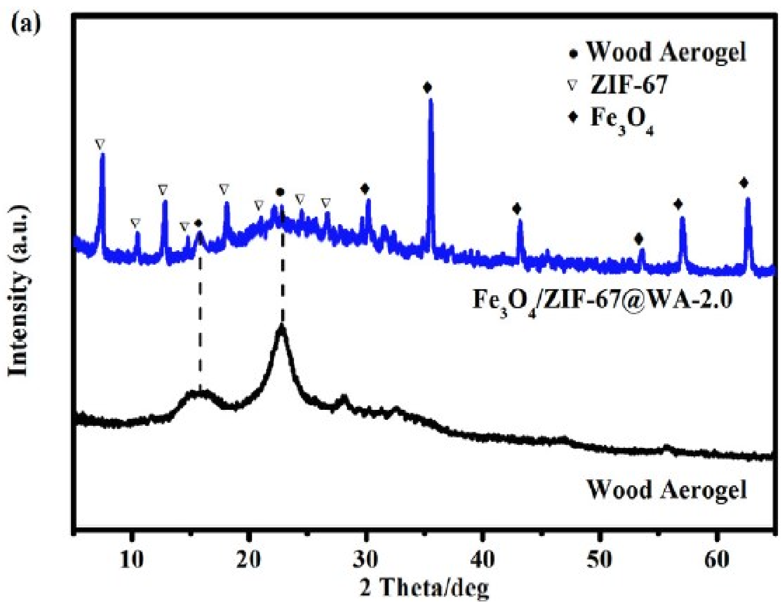

Figure S5. XRD curves of WA and Fe_3O_4/ZIF-67@WA.

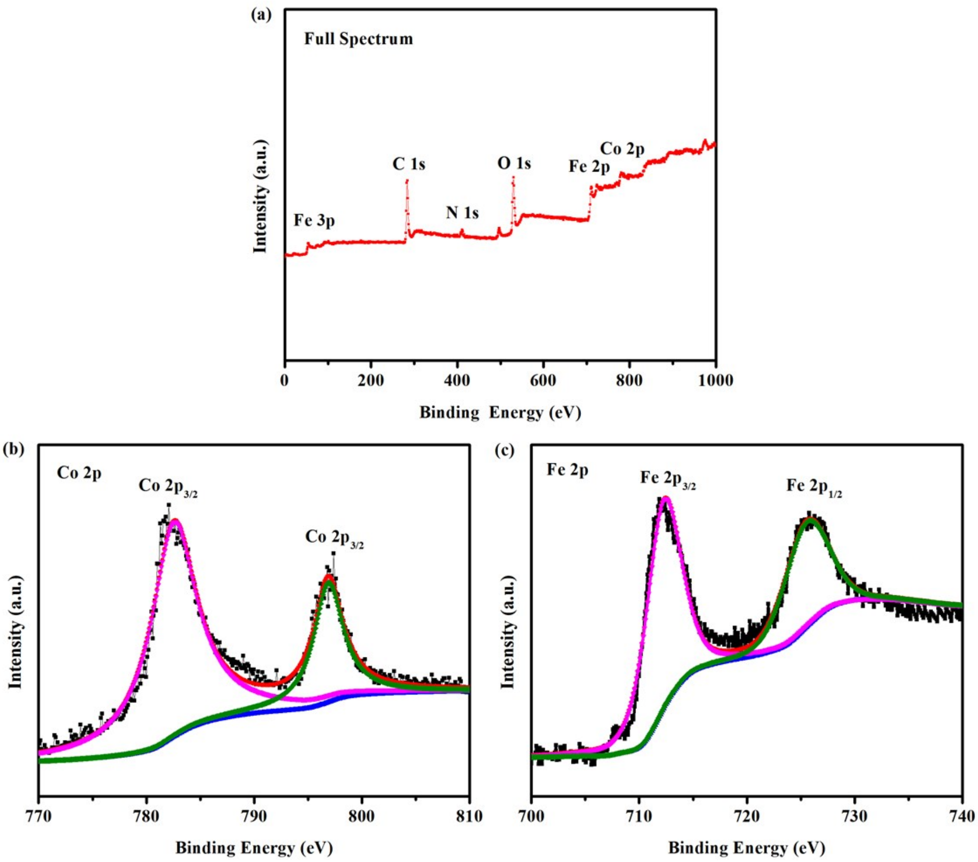

Figure S6. XPS curves of FeCo/C@WC: (a) full spectrum, (b) Co 2p, and (d) Fe 2p.

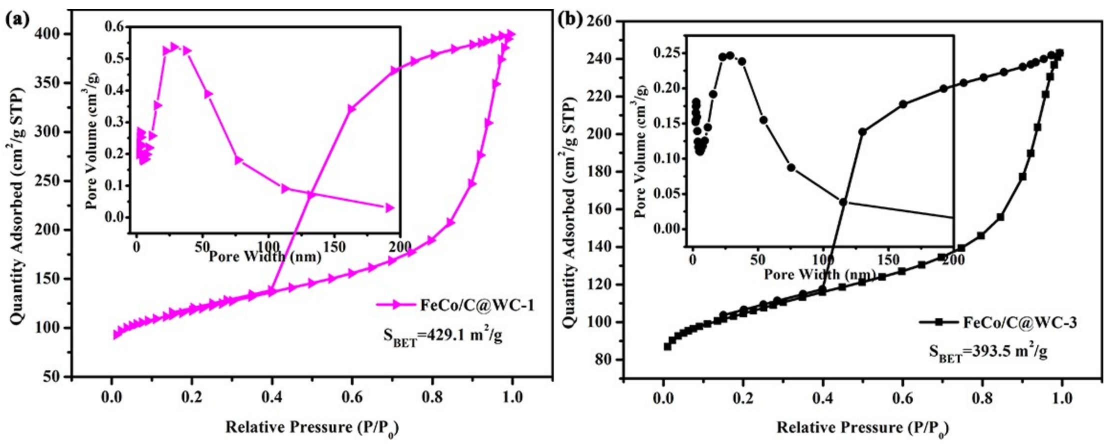

Figure S7. Nitrogen adsorption-desorption curves of (a) FeCo/C@WC-1 and (b) FeCo/C@WC-3.

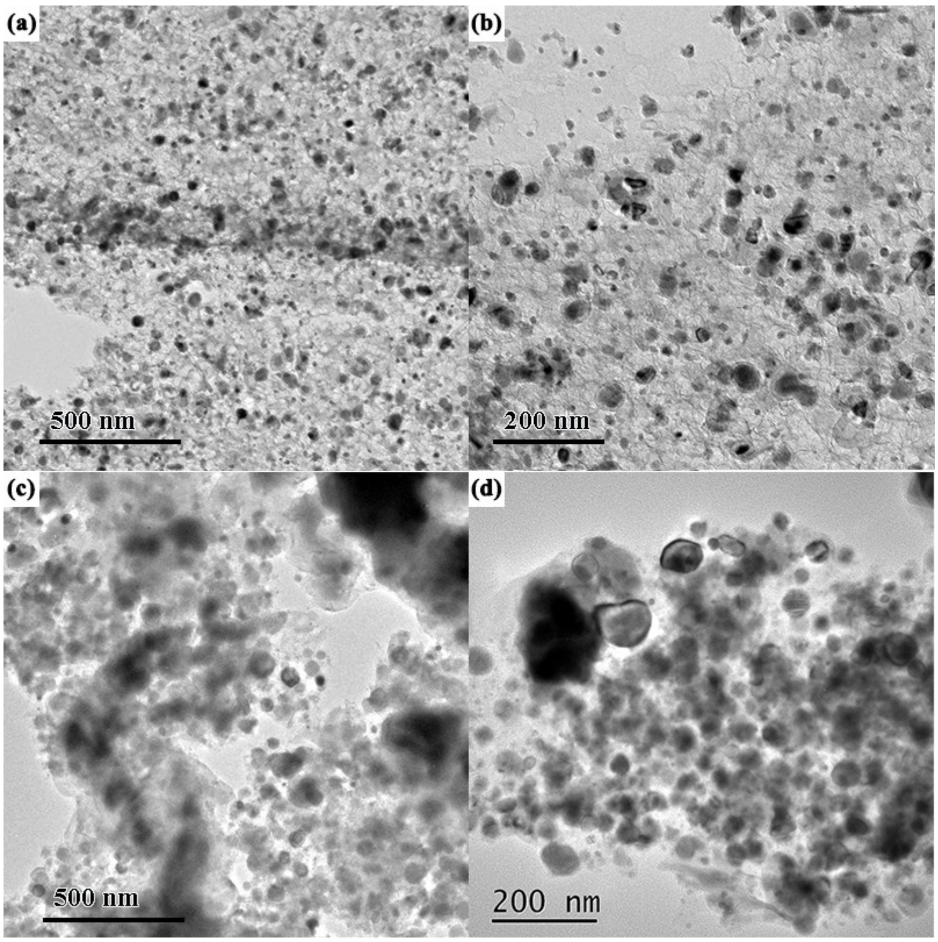

Figure S8. TEM images of (a-b) FeCo/C@WC-1 and (c-d) FeCo/C@WC-3.

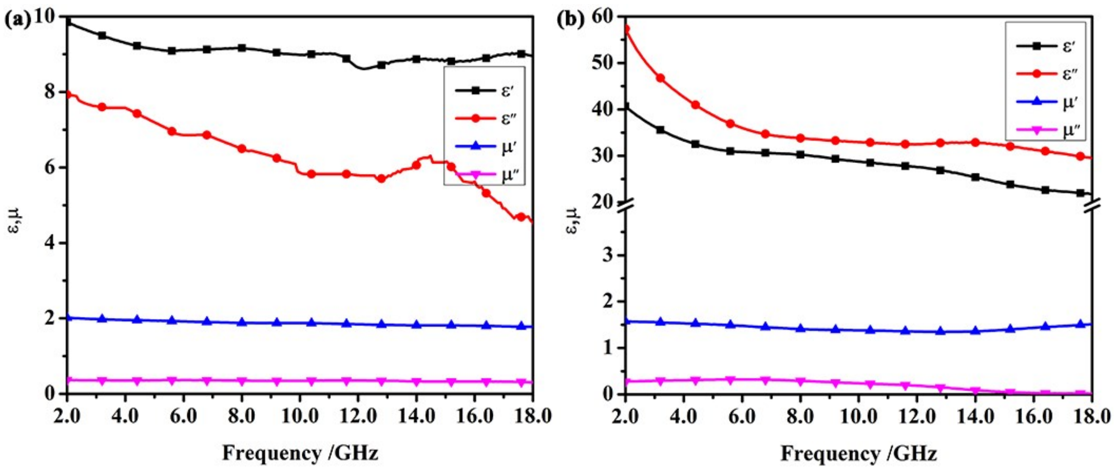

Figure S9. Frequency dependence of composites permittivity and permeability: (a) Fe/C@WC and (b) Co/C@WC.

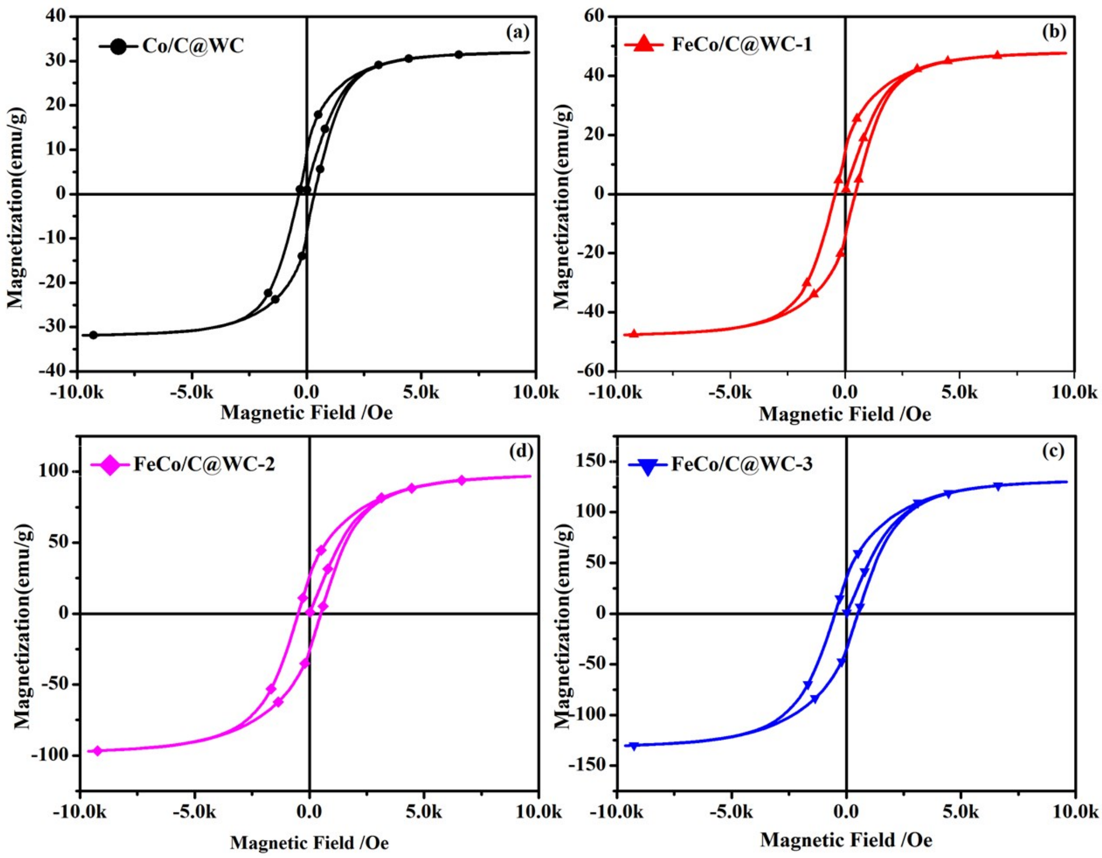

Figure S10. Field-dependent magnetization curve of Co/C@WC, FeCo/C@WC-1, FeCo/C@WC-2, and FeCo/C@WC-3 at room temperature.

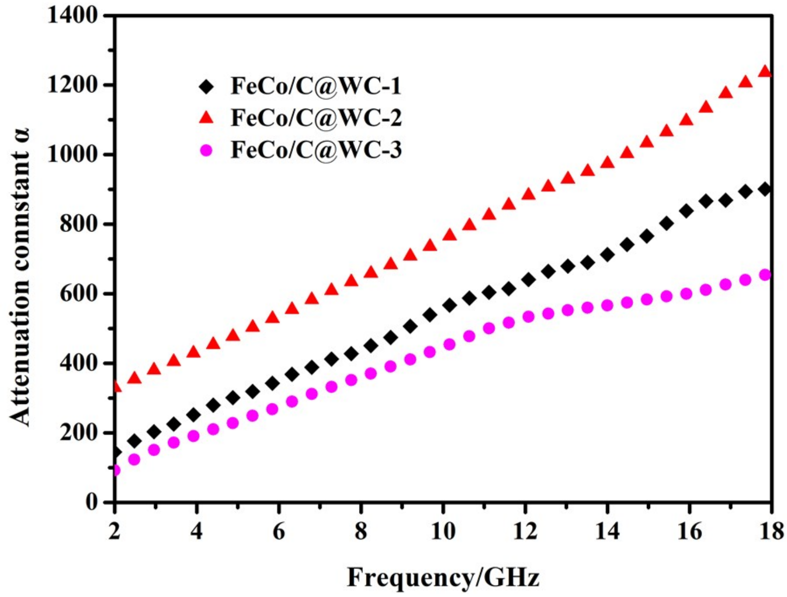

Figure S11. The attenuation constants for FeCo/C@WC.

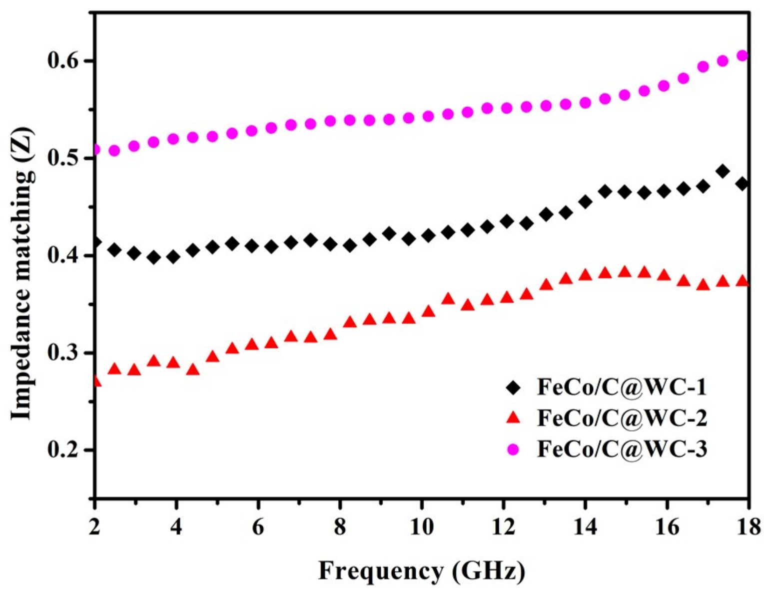

Figure S12. Frequency dependence of the impedance matching ratio (Zr).

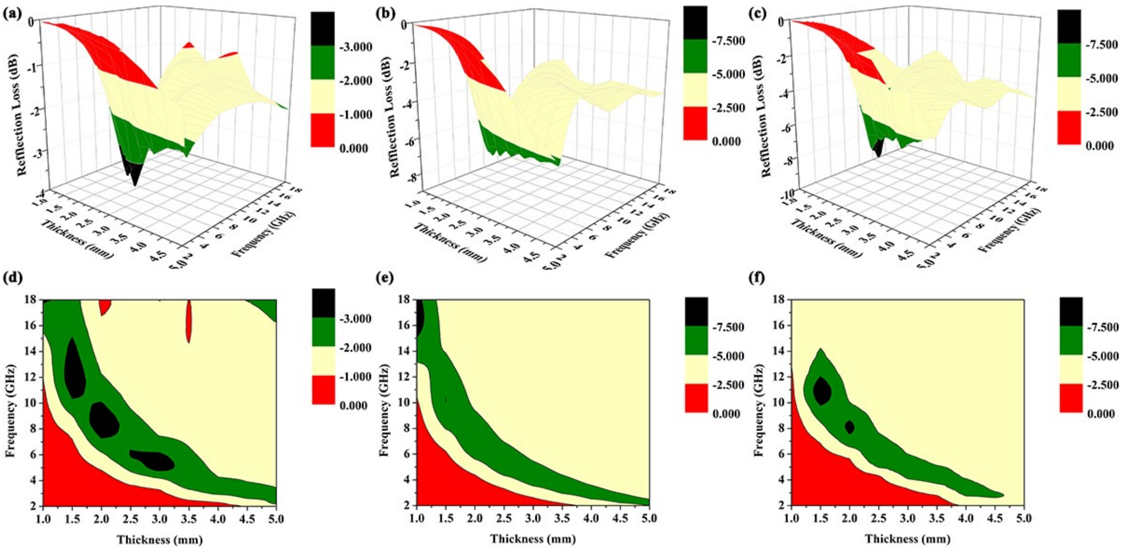

Figure S13. (a-c) 3D representations of reflection loss and (d-f) the efficient absorption bandwidths of WC, Fe/C@WC, and Co/C@WC.

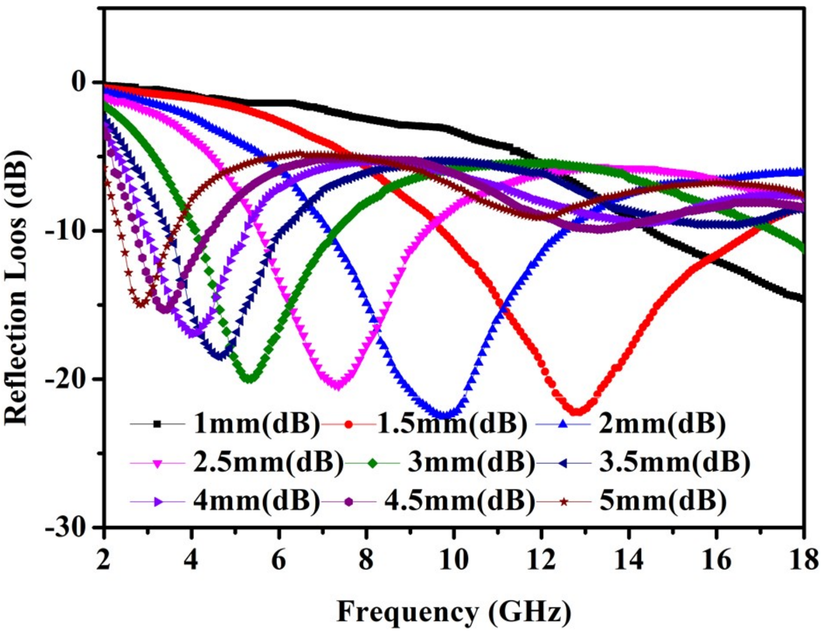

Figure S14. Frequency dependence of reflection losses of FeCo/C@WC-1.

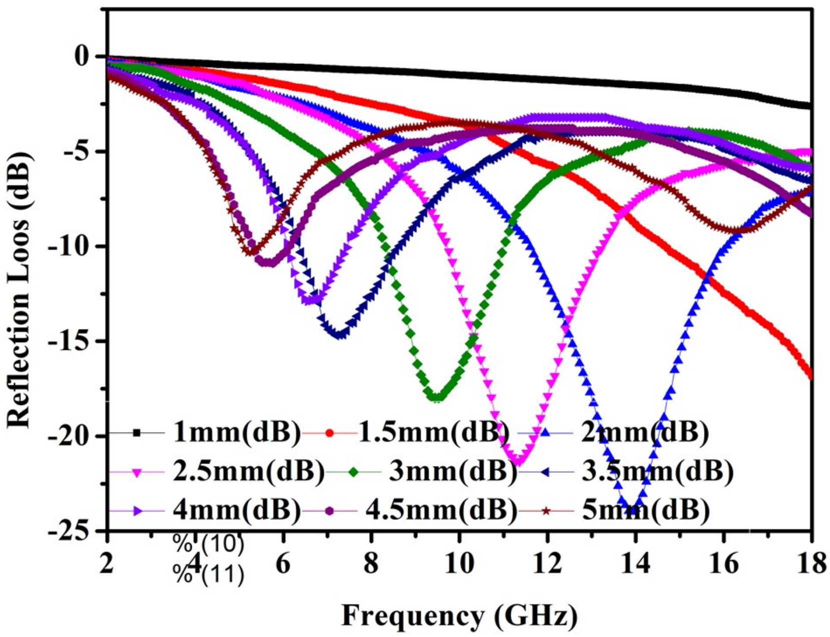

Figure S15. Frequency dependence of reflection losses of FeCo/C@WC-3.

Table S1. The density of the samples.

Sample	Density (mg/cm^3)
WC	70.78
FeCo/C@WC-1	42.52
FeCo/C@WC-2	48.13
FeCo/C@WC-3	52.24

Table S2. The content of FeCo were obtained by Energy Dispersive Spectrometer (EDS).

Atomic percentage	Co	Fe	C	O	N
FeCo/C@WC-1	7.09	3.24	76.47	9.85	3.35
FeCo/C@WC-2	6.45	7.18	74.42	9.32	3.63
FeCo/C@WC-3	5.86	12.92	71.93	8.63	4.26

Table S3. Typical carbon-based composites and their MA performance.

Absorbers	RLmax (dB)	Thickness (mm)	Absorption bandwidth (GHz)	SRL_t	Ref.
CNTs/Co	-54.5	3.0	2.5	-18.2	[1]
FeCo/CNTs	-46.5	1.7	3.92	-27.4	[2]
CMT@CNT/Co	-52.3	2.0	5.1	-26.1	[3]
FexCyNz/N-CNT	-25.1	4.0	1.2	-6.3	[4]
Ni/SnO_2/MWCNT	-39.2	1.5	3.6	-26.1	[5]
ERG/Si_3N_4	-26.7	3.75	4.2	-7.12	[6]
RGO/hBN	-23	1.2	3	-19.2	[7]
Fe_3O_4-graphene	-30.1	1.48	10.5	-20.3	[8]
RGO/PANI	-36.9	3.5	4.2	-10.5	[9]
RGO/MWCNTs/$ZnFe_2O_4$	-22.2	1.0	2.3	-22.2	[10]
CF@G@PPy	-45.12	2.5	2.5	-18.0	[11]
Polypyrrole aerogel	-34.6	2.5	6.2	-13.8	[12]
Fe-C nanofibers	-36.0	3.0	0.9	-12.0	[13]
Co/N-C NFs	-25.7	2.0	4.3	-12.9	[14]
Biomass-pyrolized carbon	-68.3	4.28	6.13	-15.9	[15]
FeCo/C@WC	-47.6	1.5	6.3	-31.7	This work

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