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Supporting Information

for

ZnO-decorated SiC@C hybrids with strong electromagnetic absorption

Liqun Duan, Zhiqian Yang, Yilu Xia, Xiaoqing Dai, Jian'an Wu and Minqian Sun

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Additional experimental data

Experimental

Pristine materials

Pristine SiC_{nw} (diameter: 100–600 nm; length >100 μm; density: 3.21 g/cm^3; purity: ≈98%) was purchased from XF Nano Materials Tech Co., Ltd. (Nanjing, China).

Characterization and measurements

The morphology of the SCZ materials was characterized through transmission electron microscopy (TEM) on a FE-HRTEM, Tecnai G2 F20UTwin (FEI, USA) at 200 kV. X-ray photoelectron spectroscopy (XPS) experiments were carried out on a K-Alpha 1063 system (Thermo Fisher Scientific). The X-ray anode was run at 72 W and the high voltage was kept at 12.0 kV. The base pressure of the analyzer chamber was about 1×10^{-9} mbar. A whole spectrum scan (0–1400 eV) and regional scans of all the elements at very high resolution were recorded for each sample. X-ray diffractometry (XRD) was carried out on a Bruker D8 advance (Bruker, Germany). Relative complex permittivity (ε_r) and permeability (μ_r) in the 2–18 GHz range were obtained through a vector network analyzer (N5242A PNA-X, Agilent, UK). Uniform mixtures of SCZ samples and wax were pressed into a toroidal shape (outer diameter: 7.00 mm, inner diameter 3.04 mm).

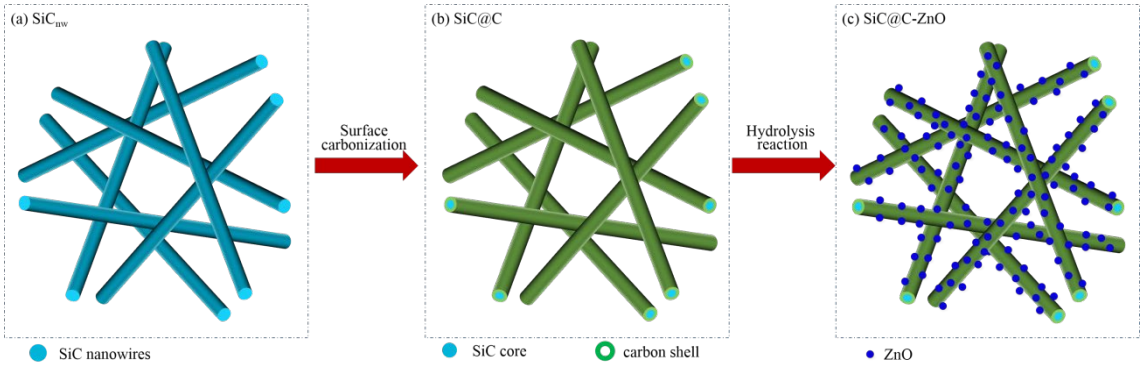

Figure S1: Schematic illustration of the fabrication of SCZ hybrids.

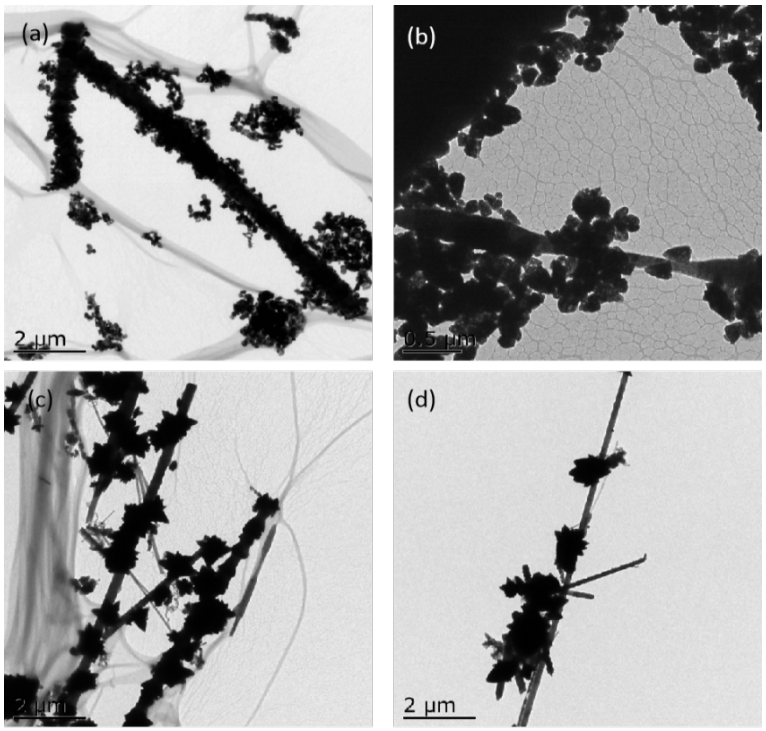

Figure S2: TEM images of SCZ samples. (a) SCZ4; (b) SCZ3; (c) SCZ2; (d) SCZ1.

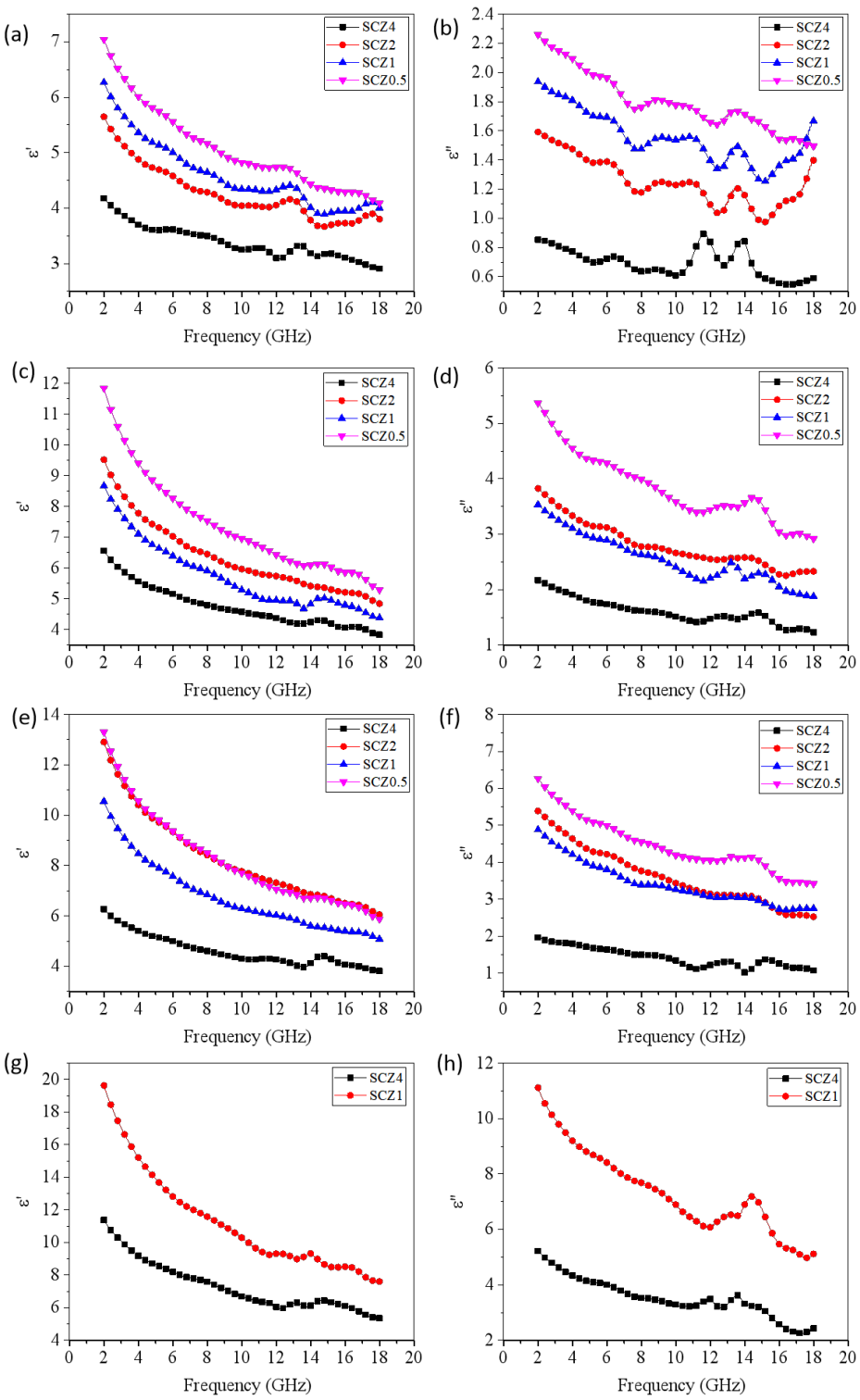

Figure S3: Real part (a,c,e,g) and imaginary part (b,d,f,h) of the relative complex permittivity of SCZ samples with different loadings. (a, b) 20 wt %; (c, d) 30 wt %; (e, f) 40 wt %; (g, h) 50 wt %.

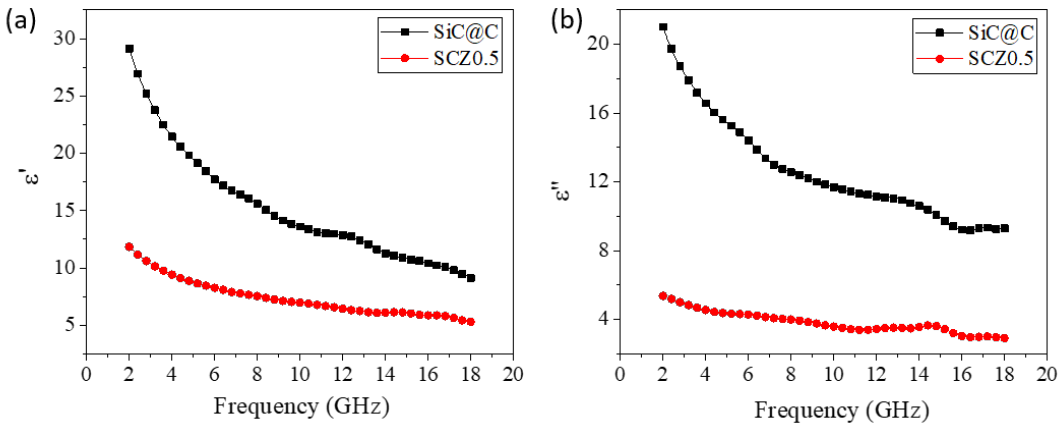

Figure S4: Real part (a) and imaginary part (b) of the relative complex permittivity of SCZ0.5 and SiC@C samples.

Table S1: The minimum matching thickness of SCZ samples for covering X and Ku bands.

Samples	Filler load (wt %)	d_x (mm)[a]	d_{Ku} (mm)[b]
SCZ0.5	30	2.98	2.15
SCZ0.5	40	2.85	2.09
SCZ1	30	3.47	2.44
SCZ1	40	3.16	2.88
SCZ2	30	3.28	2.35
SCZ2	35	—	2.2
SCZ2	40	2.82	—
SCZ4	50	3.03	2.08

[a]d_x and d_{Ku} indicates the minimum matching thickness for the X and Ku bands, respectively.