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Supporting Information

Fabrication of a lightweight and flexible silicon rubber foams with ultra-efficient electromagnetic interference shielding and adjustable low reflectivity

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1. The calculation of the power coefficients of absorption (A), reflection (R) and transmission (T) as well as the absorbed SE (SE_A), reflected SE (SE_R) and total SE (SE_T)

The S-parameters (S_{11} and S_{21}) were recorded from the Agilent N5230 vector network analyzer to calculate the power coefficients and EMI SE through the following equations:

$$R = |S_{11}|^2 \quad (1)$$

$$T = |S_{21}|^2 \quad (2)$$

$$A = 1 - R - T \quad (3)$$

$$SE_R = -10 lg(1 - R) \quad (4)$$

$$SE_A = -10 lg[T / (1 - R)] \quad (5)$$

$$SE_T = SE_R + SE_A + SE_M \quad (6)$$

In the above equation, the SE_T is the sum of SE_A, SE_R and multiple reflections (SE_M). Moreover, SE_M can be ignored when SE_T is greater than 15 dB.[1-3]

2. XPS spectra of Fe_3O_4@MWCNTs nanoparticles

The surface chemical compositions of Fe_3O_4@MWCNT-1, Fe_3O_4@MWCNT-2 and MWCNT were characterized by XPS. The corresponding survey of XPS spectra are exhibited in Fig. S1. Obviously, strong $Fe_{2p3/2}$ and $Fe_{2p1/2}$ signals can be observed from the XPS spectra of Fe_3O_4@MWCNT, which indicates the existence of Fe_3O_4 nanoparticles (as shown in Fig. S1a, b). The peaks located at 530.5 eV and 530.4 eV correlate to the binding energies of Fe-O in the spectrum of Fe_3O_4@MWCNT-1 and

Fe_3O_4@MWCNT-2, respectively.[4-5] The appearance of Fe-O peak illustrates that Fe_3O_4 particles are successfully decorated on MWCNT.

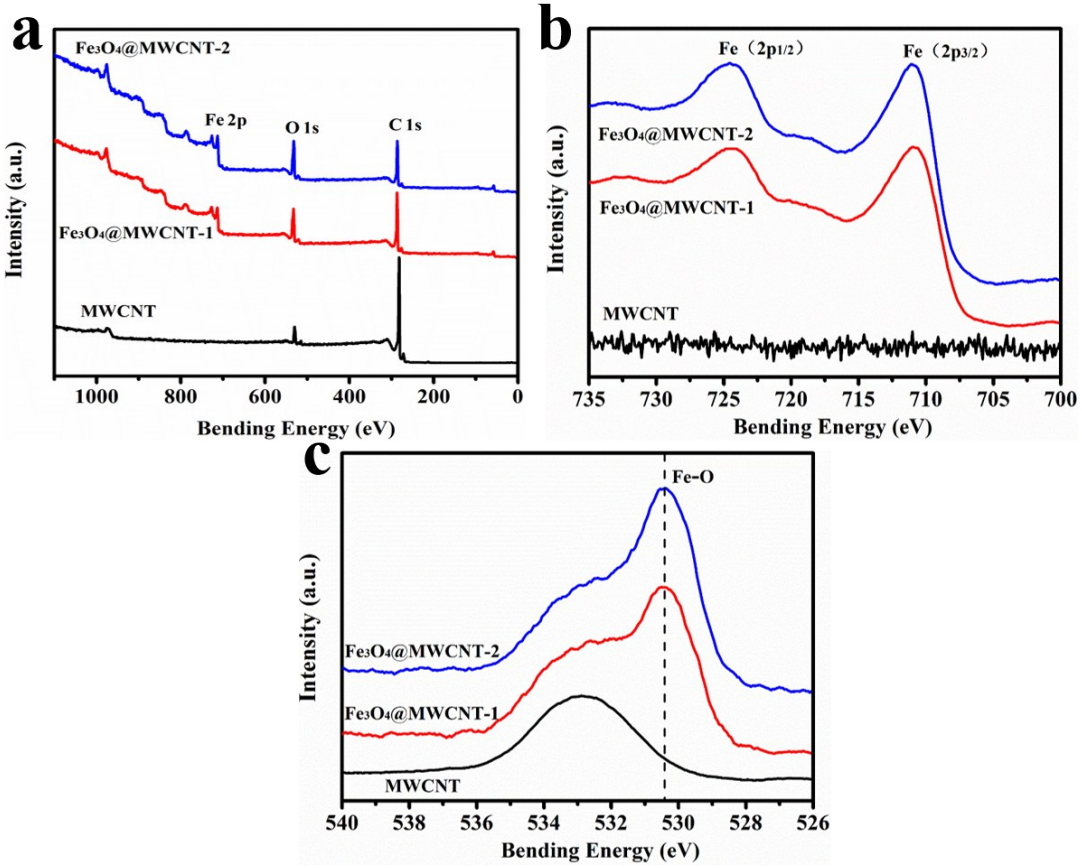

Fig. S1 (a) XPS spectra, (b) Fe_{2p} spectra and (c) O_{1s} spectra of Fe_3O_4@MWCNT-1, Fe_3O_4@MWCNT-2 and MWCNT.

3. Photographs showing the electrical properties, magnetic and flexibility properties of the VMQ/Fe_3O_4@MWCNT/Ag@NWF composite foams

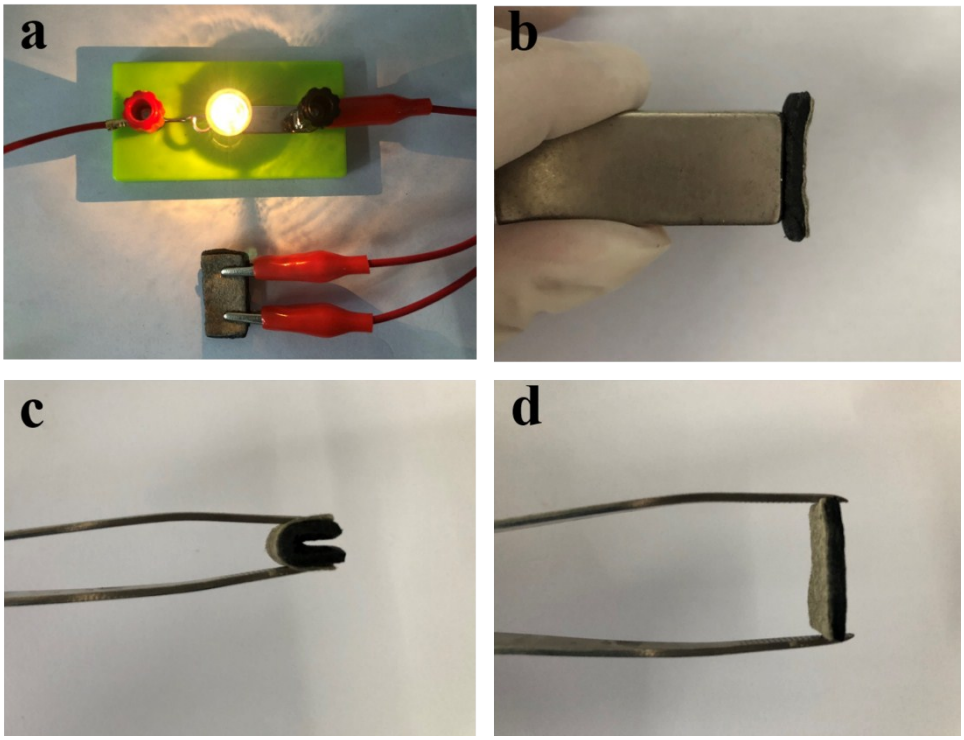

Fig. S2 Digital photograph showing a favorable (a) conductivity, (b) magnetic response of the VMQ/Fe_3O_4@MWCNT/Ag@NWF foams. The photographs of the composite foams (c) after bending and (d) recovery.

References

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