

## Supplementary Information

### Improvement of multiple attenuation characteristics of two-dimensional lamellar ferrocobalt@carbon nanocomposites as excellent electromagnetic wave absorber

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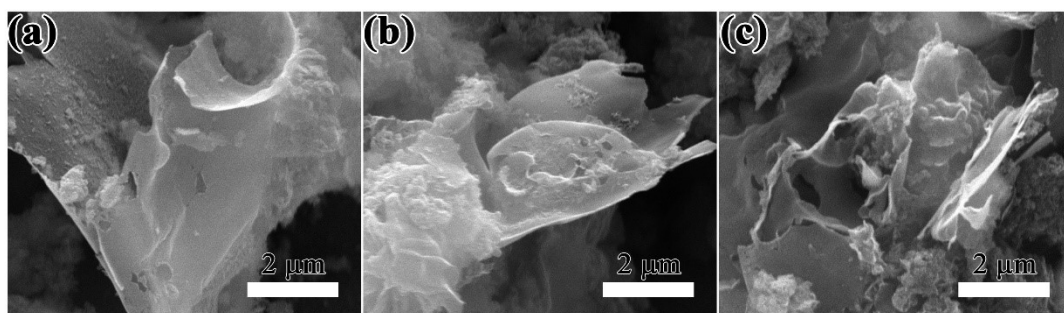


Fig. S1 The SEM images of (a) Co<sub>0.3</sub>Fe<sub>0.7</sub>/C, (b) Co<sub>0.5</sub>Fe<sub>0.5</sub>/C and (c) Co<sub>0.7</sub>Fe<sub>0.3</sub>/C nanocomposites.

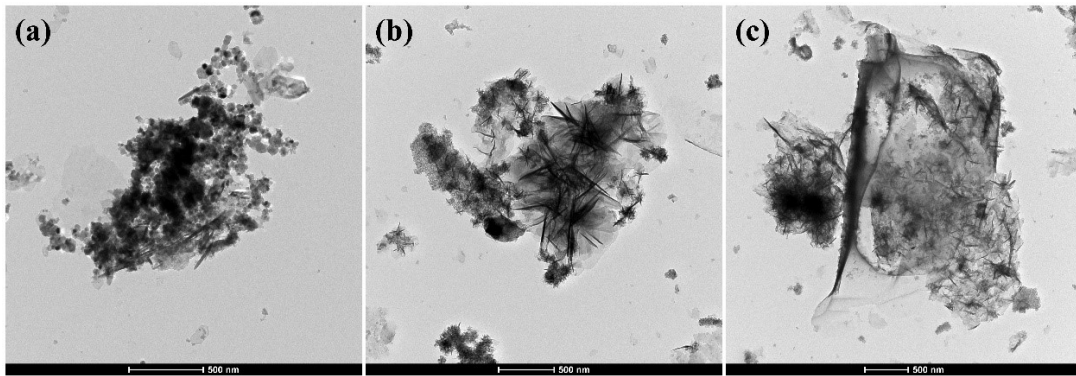


Fig. S2 The TEM images of (a)  $\text{Co}_{0.3}\text{Fe}_{0.7}/\text{C}$ , (b)  $\text{Co}_{0.5}\text{Fe}_{0.5}/\text{C}$  and (c)  $\text{Co}_{0.7}\text{Fe}_{0.3}/\text{C}$  nanocomposites.

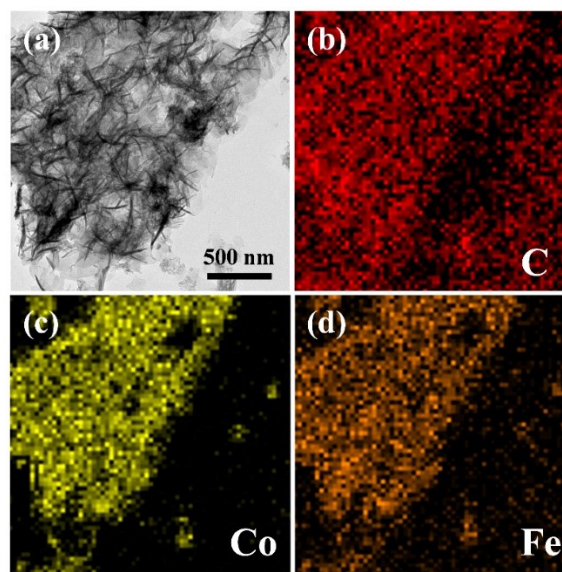


Fig. S3 The (a) TEM and (b-d) elemental mapping images of  $\text{Co}_{0.9}\text{Fe}_{0.1}/\text{C}$  nanocomposites.

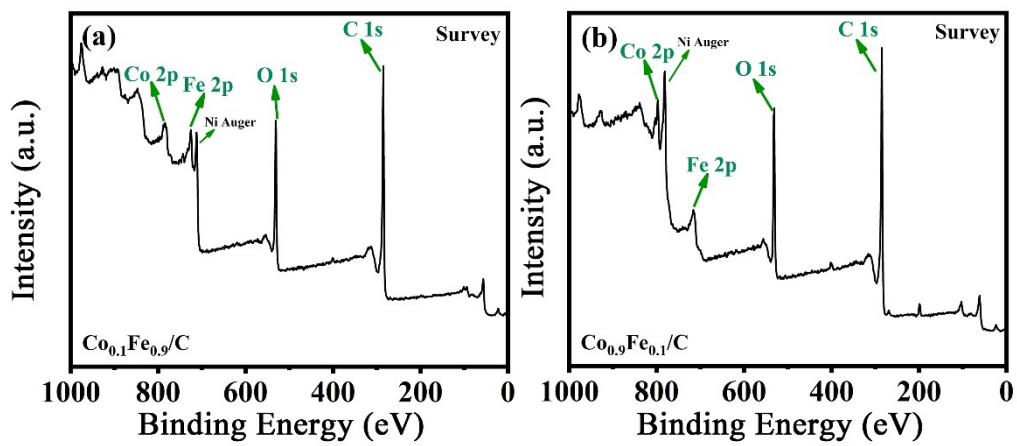


Fig. S4 XPS survey spectra of (a)  $\text{Co}_{0.1}\text{Fe}_{0.9}/\text{C}$  and (b)  $\text{Co}_{0.9}\text{Fe}_{0.1}/\text{C}$ .

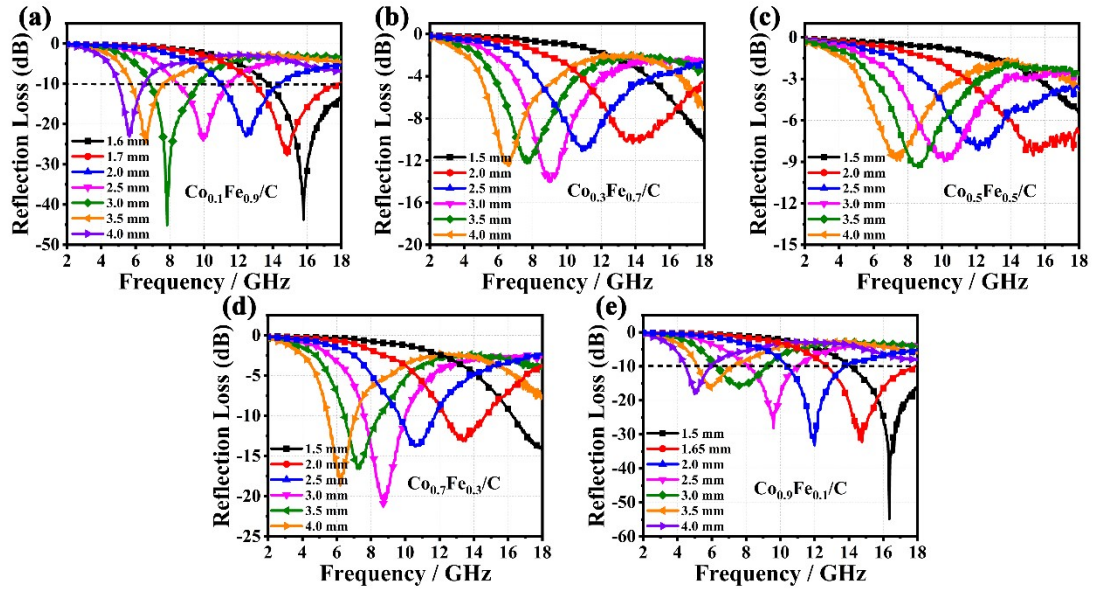


Fig. S5 The simulated reflection loss ( $RL$ ) curves of 2D lamellar (a)  $\text{Co}_{0.1}\text{Fe}_{0.9}/\text{C}$ , (b)  $\text{Co}_{0.3}\text{Fe}_{0.7}/\text{C}$ , (c)  $\text{Co}_{0.5}\text{Fe}_{0.5}/\text{C}$ , (d)  $\text{Co}_{0.7}\text{Fe}_{0.3}/\text{C}$  and (e)  $\text{Co}_{0.9}\text{Fe}_{0.1}/\text{C}$  nanocomposites at different thicknesses in the frequency of 2-18 GHz.

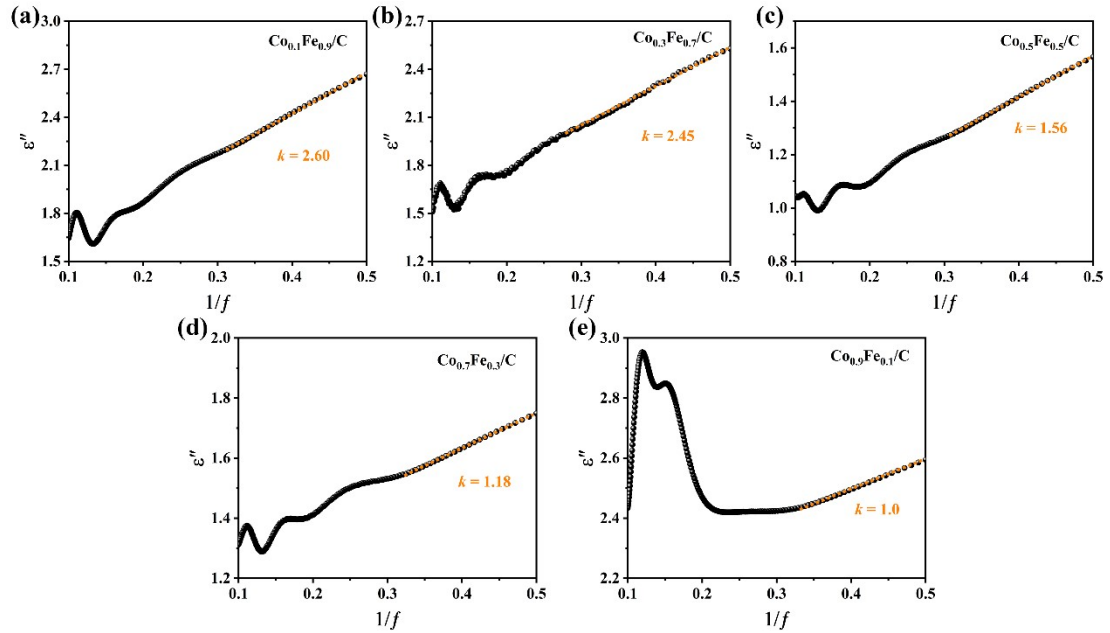


Fig. S6 The  $\varepsilon'' - 1/f$  curves of (a)  $\text{Co}_{0.1}\text{Fe}_{0.9}/\text{C}$ , (b)  $\text{Co}_{0.3}\text{Fe}_{0.7}/\text{C}$ , (c)  $\text{Co}_{0.5}\text{Fe}_{0.5}/\text{C}$ , (d)  $\text{Co}_{0.7}\text{Fe}_{0.3}/\text{C}$ , and (e)  $\text{Co}_{0.9}\text{Fe}_{0.1}/\text{C}$  nanocomposites.

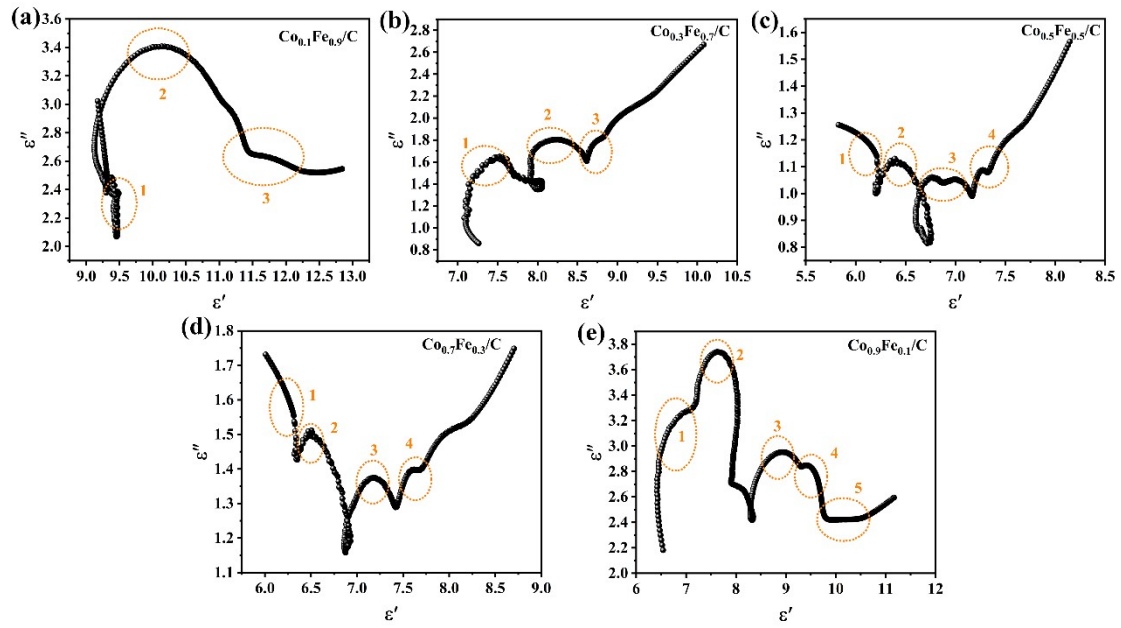


Fig. S7 The  $\epsilon'' - \epsilon'$  curves of (a)  $\text{Co}_{0.1}\text{Fe}_{0.9}/\text{C}$ , (b)  $\text{Co}_{0.3}\text{Fe}_{0.7}/\text{C}$ , (c)  $\text{Co}_{0.5}\text{Fe}_{0.5}/\text{C}$ , (d)  $\text{Co}_{0.7}\text{Fe}_{0.3}/\text{C}$ , and (e)  $\text{Co}_{0.9}\text{Fe}_{0.1}/\text{C}$  nanocomposites.

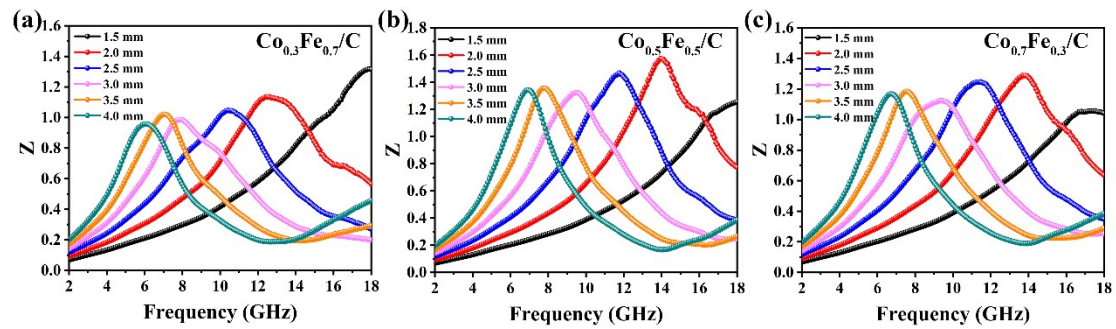


Fig. S8 The impedance matching factor ( $Z$ ) of (a)  $\text{Co}_{0.3}\text{Fe}_{0.7}/\text{C}$ , (b)  $\text{Co}_{0.5}\text{Fe}_{0.5}/\text{C}$  and (c)  $\text{Co}_{0.7}\text{Fe}_{0.3}/\text{C}$  nanocomposites.