Supplementary Information

Rational design of 2D hierarchically laminated Fe₃O₄@Nanoporous Carbon@rGO nanocomposites with strong magnetic coupling for excellent electromagnetic absorption applications

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Figure S1. The XRD curves of GO sheets and laminated Fe-MOFs/GO hybrids.



Figure S2. The TG curve of the laminated Fe-MOFs/GO hybrids in N_2 atmosphere.



Figure S3. The magnification XRD curves of S500, S600, and S700.

Table S1 Phase fraction, average grain size, magnetic properties and specific area of S500,

S600 and S700.

Sample	phase fraction (wt%)		average grain	magnetic properties		$S = (m^2/\sigma)$
	С	MNP	size (MNP, nm)	$M_{\rm s}$ (A·m ² ·kg ⁻¹)	$H_{\rm c}({\rm kA}{\cdot}{\rm m}^{-1})$	$\mathcal{S}_{\text{BET}}(\text{III}^{-/}\text{g})$
S500	53.6	46.4 (Fe ₃ O ₄)	18	45.4	6.6	275.4
S600	49.7	50.3 (Fe ₃ O ₄)	32	60.3	8.3	252.7
S700	45.9	54.1 (Fe)	63	90.4	9.6	134.7



Figure S4. Raman spectra of Fe-MOF/GO composites.



Figure S5. XPS spectra of wide span, Fe 2p spectrum, C 1s spectrum and O 1s spectrum of (a-1, a-2, a-3) Fe-MOF/GO, (b-1, b-2, b-3) S500, (c-1, c-2, c-3) S600, and (d-1, d-2, d-3) S700.



Figure S6. Room temperature magnetic hysteresis loops of S500, S600 and S700 (Inset is a magnification of magnetic hysteresis loops).



Figure S7. (a-1) N_2 adsorption-desorption isotherms and (a-2) surface area of S500,

S600, and S700, respectively.



Figure S8. The pore-size distribution of the (a) S500, (b) S600, (c) S700, and (d) total pore volume of composites.



Figure S9. The frequency dependent the microwave reflection loss with various thicknesses for composites (Fe-MOFs-600 (a) and Fe-MOFs/GO(10)-600 (b)) derived from the Fe-MOFs/GO hybrids with different GO contents of 0 and 10 mg/mL by pyrolysis at 600 °C, respectively.



Figure S10. Values of $\mu''(\mu')^{-2}f^{-1}$ for the S500, S600, S700 in the frequency range 2-18 GHz.



Figure S11. The relationship between real part (ε') and imaginary part (ε'') of (a) S500, (b) S600 and (c) S700 in the frequency range of 2-18 GHz.



Figure S12. Attenuation constant (α), modulus of relative input impedance ($|Z_{in}/Z_0|$) and *RL* values for the S500 (2.5 mm) and S700 (1.5 mm) in the frequency range 2-18 GHz.



Figure S13. The modulus of relative input impedance $(|Z_{in}/Z_0|)$ of (a) Fe-MOFs-600 and (b) Fe-MOFs/GO(10)-600.



Figure S14. The attenuation constant (α) of (a) Fe-MOFs-600 and (b) Fe-MOFs/GO(10)-600.