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## **Supporting information**

## Symbiotic strategy of exogenous carbon and NiCo-MOF for intelligent switching

## of low/medium electromagnetic-response bands

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**Figure S1.** The complex permeability real part (a,d), imaginary part (b,e), and dielectric loss tangent (c,f) of NiCo-MOF@C- $\alpha_1$ , NiCo-MOF@C- $\alpha_2$  and NiCo-MOF@C- $\beta_1$ , NiCo-MOF@C- $\beta_2$ .



**Figure S2.** The complex permeability real part (a,d), imaginary part (b,e), and magnetic loss tangent (c,f) of NiCo-MOF@C- $\alpha_1$ ,NiCo-MOF@C- $\alpha_2$  and NiCo-MOF@C- $\beta_1$ , NiCo-MOF@C- $\beta_2$ .



**Figure S3.** The 3D images and 2D contours of calculated RL values of NiCo-MOF@C- $\alpha_1$  (a-b), NiCo-MOF@C- $\alpha_2$  (c-d), NiCo-MOF@C- $\beta_1$  (e-f), and NiCo-MOF@C- $\beta_2$  (g-h).



Figure S4. EAB of NiCo-MOF@C- $\alpha_1$ , NiCo-MOF@C- $\alpha_2$ , NiCo-MOF@C- $\beta_1$  and NiCo-MOF@C- $\beta_2$ .



**Figure S5.** Impedance matching diagrams (a-c), attenuation constant curves (e) and  $C_0$  curves (f) for NiCo-MOF@C- $\alpha$ , NiCo-MOF@C- $\beta$  and NiCo-MOF.



Figure S6. Cole-Cole curves of NiCo-MOF@C- $\alpha$  (a), NiCo-MOF@C- $\beta$  (b).



Figure S7. FT-IR spectrum of the NiCo-MOF, NiCo-MOF@C-α and NiCo-

 $MOF@C-\beta.$