Supporting Information for

Initiating Binary Metal Oxides Microcubes Electromagnetic Wave Absorber toward Ultrabroad Absorption Bandwidth through Interfacial and Defects Modulation

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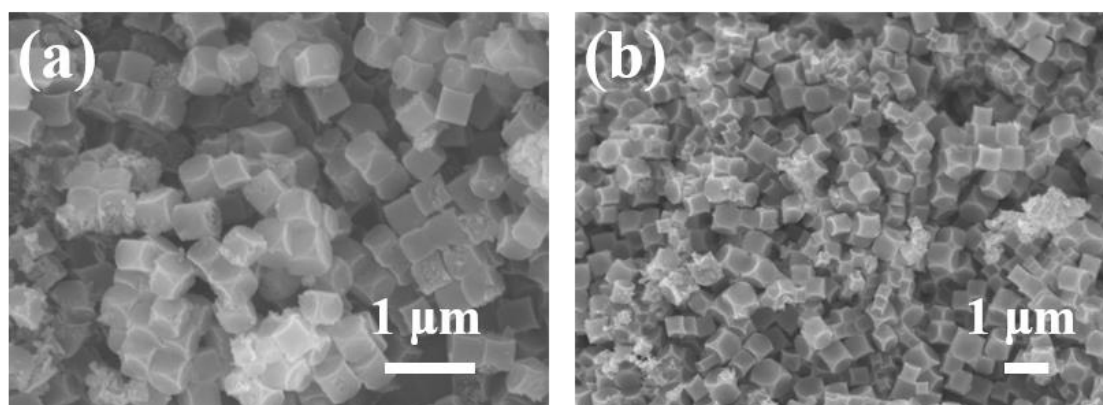
Supplementary Figures and Tables
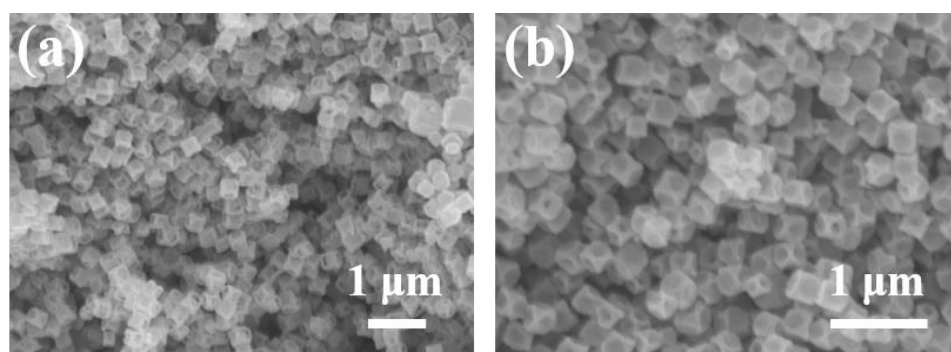

Fig. S1 SEM images of Ni-Co-PBA
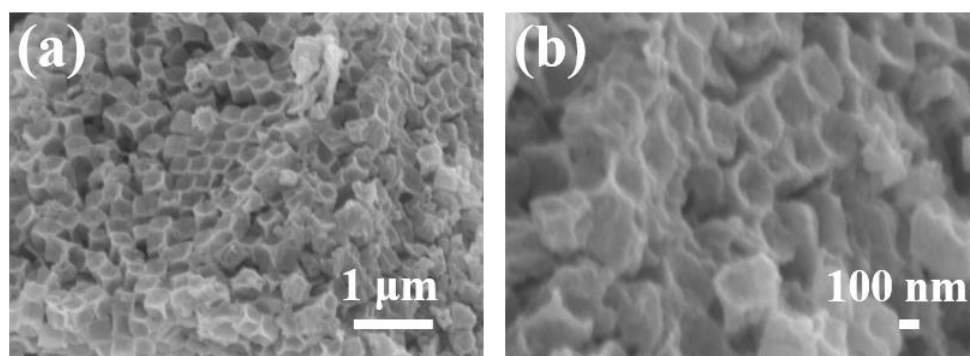
Fig. S2 SEM images of NCO-1

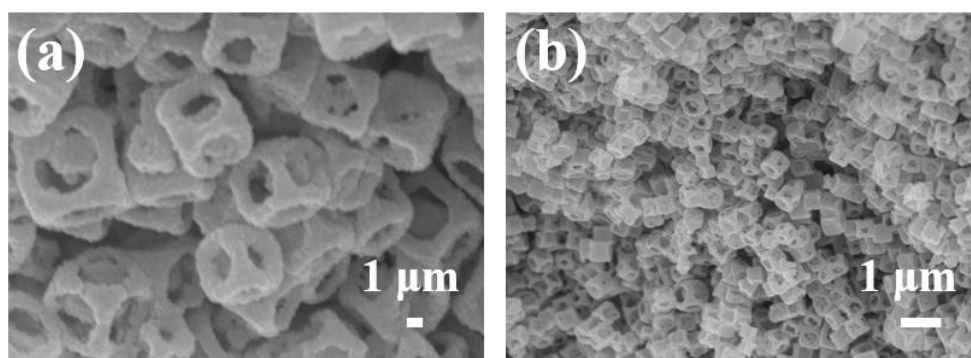**Fig. S3** SEM images of NCO-2

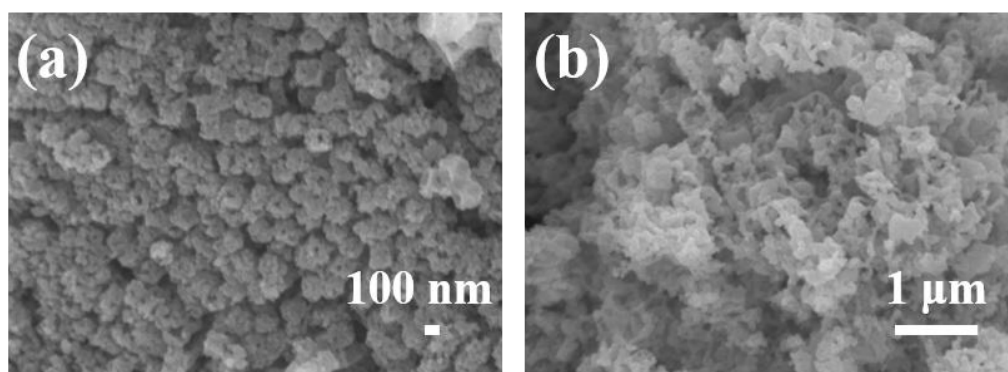**Fig. S4** SEM images of NCO-3

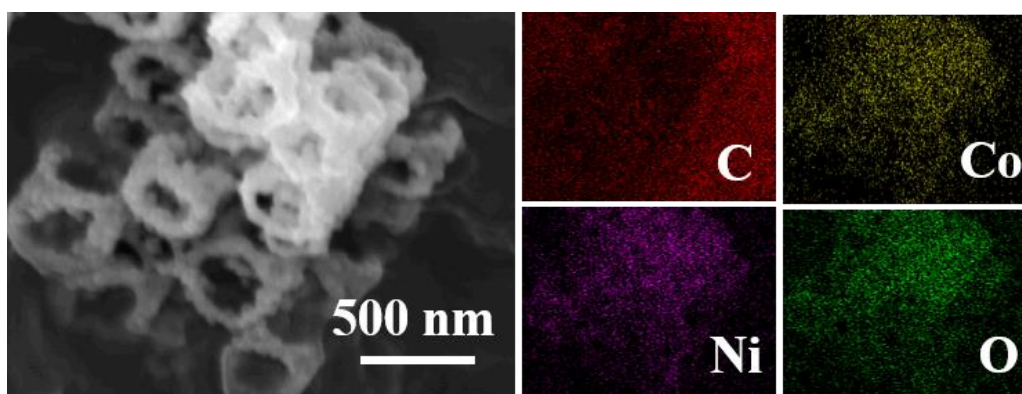**Fig. S5** SEM images of NCO-4
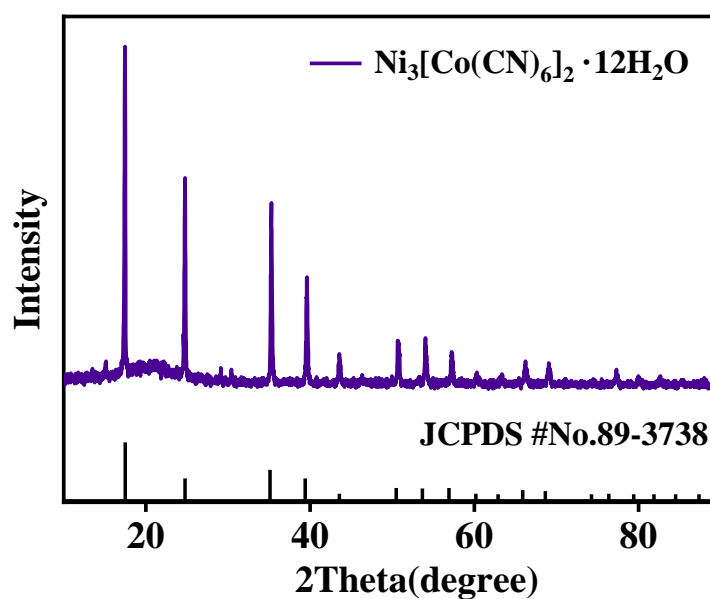
Fig. S6 EDS spectrum of NCO-3

Fig. S7 XRD patterns of Ni-Co PB

Table S1 Comparison of relative oxygen vacancy levels

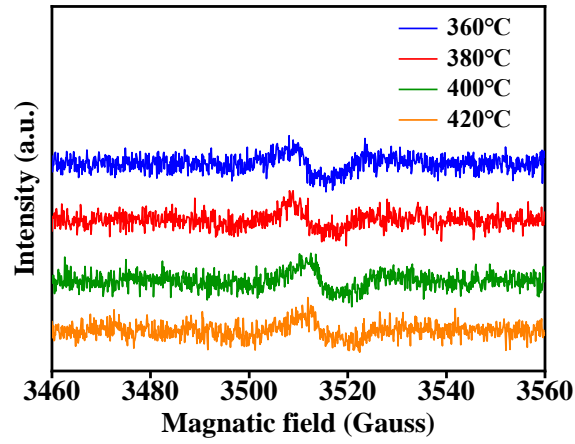| Sample	Oxygen vacancy	O 1s	Relative oxygen vacancy levels (%)
NCO-1	21226	205689	0.103195
NCO-2	27631	183178	0.150842
NCO-3	38109	193048	0.197407
NCO-4	29284	169477	0.17279

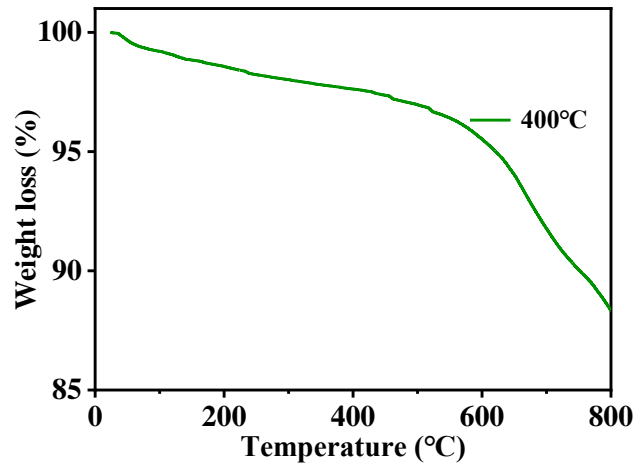**Fig. S8** Electron Paramagnetic Resonance curves of the samples
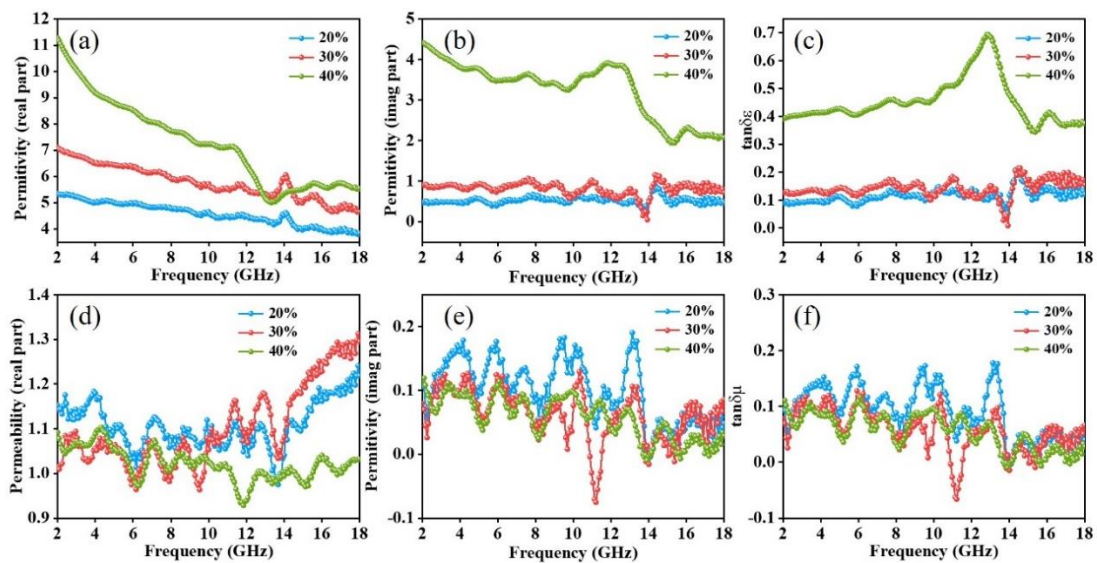

Fig. S9 TGA curves of NCO-3

Fig. S10 Frequency dependence of **a)** ε' and **b)** ε''; **c)** $\tan\delta\varepsilon$ and **d)** μ'; e) μ''; **f)** $\tan\delta\mu$ of NCO-3 with different filling ratios
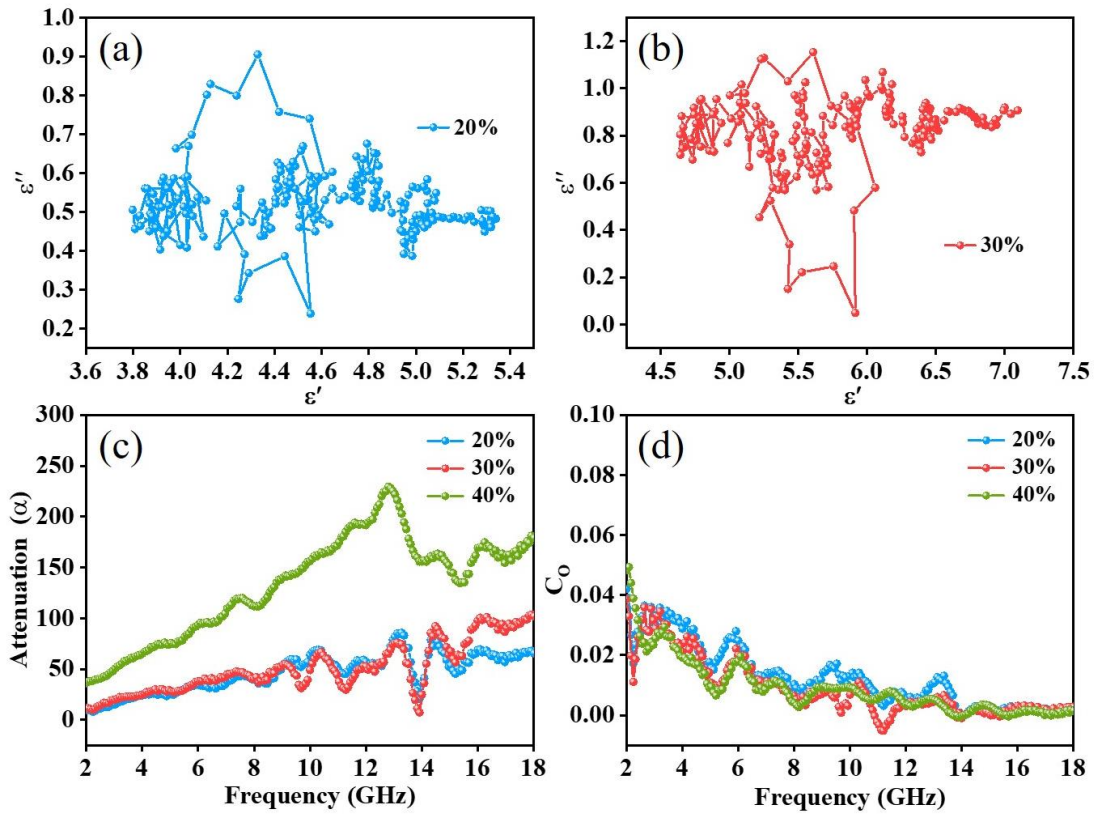
Fig. S11 a-b) Cole-Cole semicircles; **c**) Attenuation constant, and **d**) C_0 of NCO-3 with different filling ratios
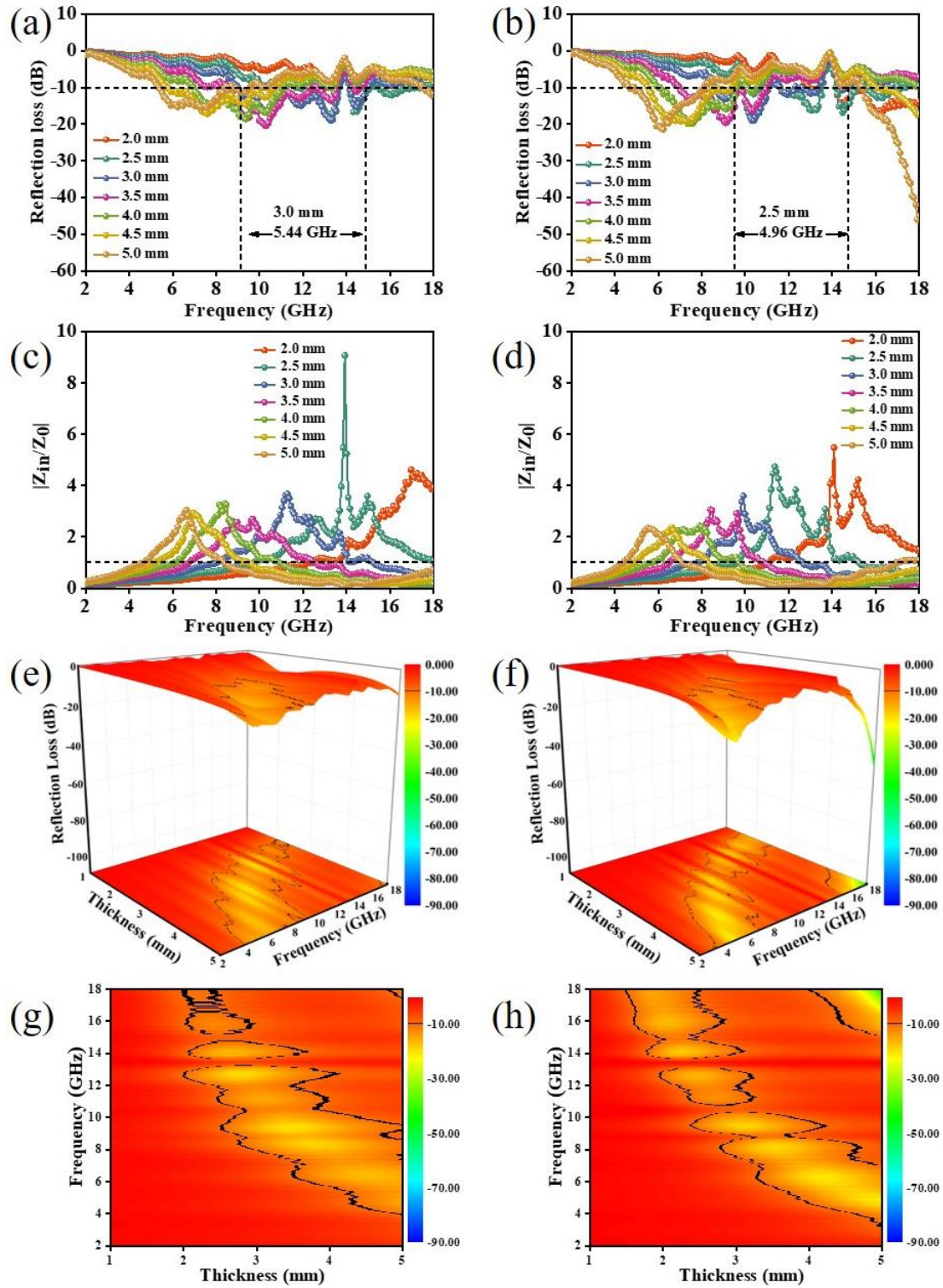
Fig. S12 RL value vs. frequency at different thickness, the impedance matching characteristic, 3D plots and 2D counter maps for **a, c, e, g**) NCO-3-20% and **b, d, f, h**) NCO-3-30%