

**Carbonized wood with ordered channels decorated by NiCo<sub>2</sub>O<sub>4</sub> for lightweight  
and high-performance microwave absorber**

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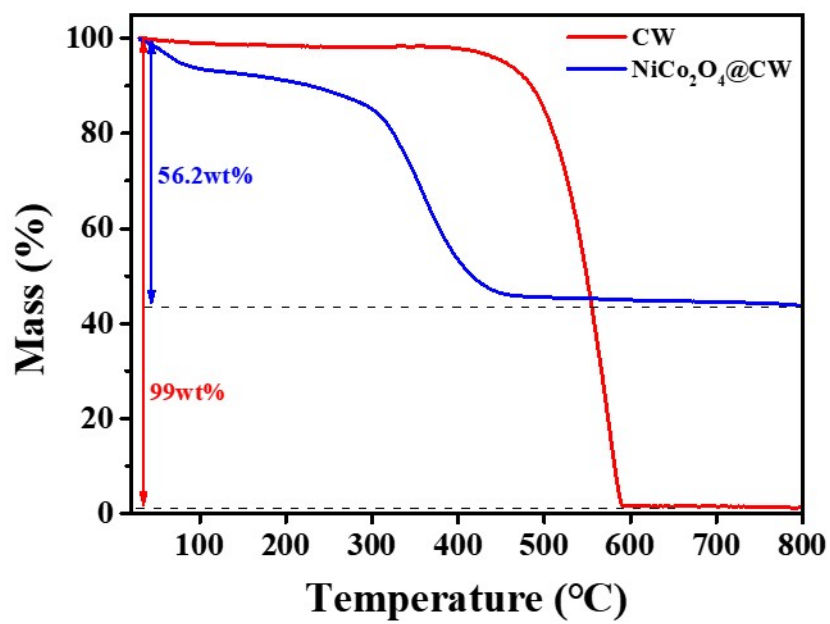


Fig. S1. TG curve of CW and NiCo<sub>2</sub>O<sub>4</sub>@CW.

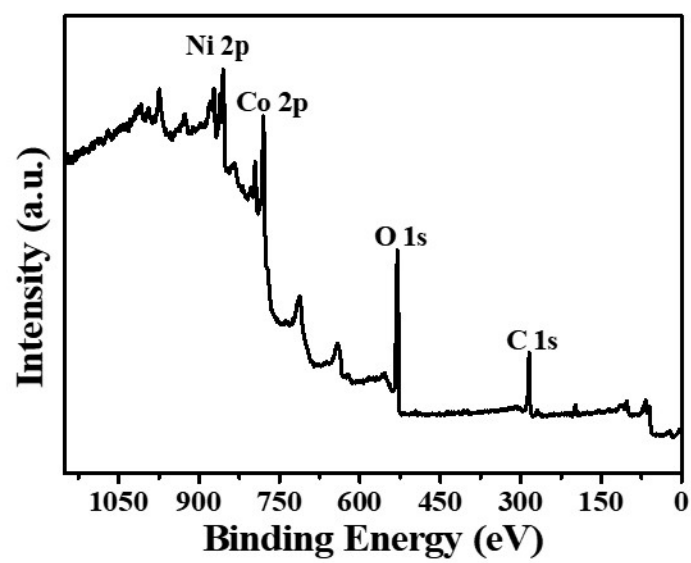


Fig. S2. XPS spectra of NiCo<sub>2</sub>O<sub>4</sub>@CW: wide span

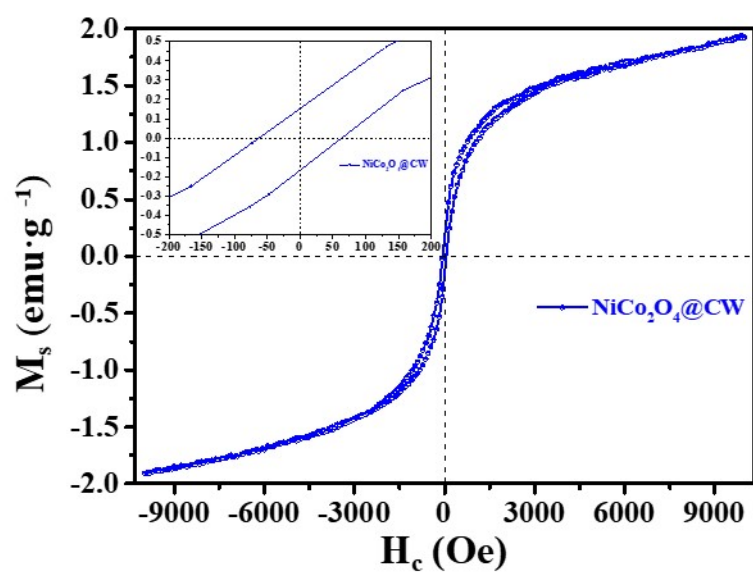


Fig. S3. Hysteresis loop of  $\text{NiCo}_2\text{O}_4@\text{CW}$ .

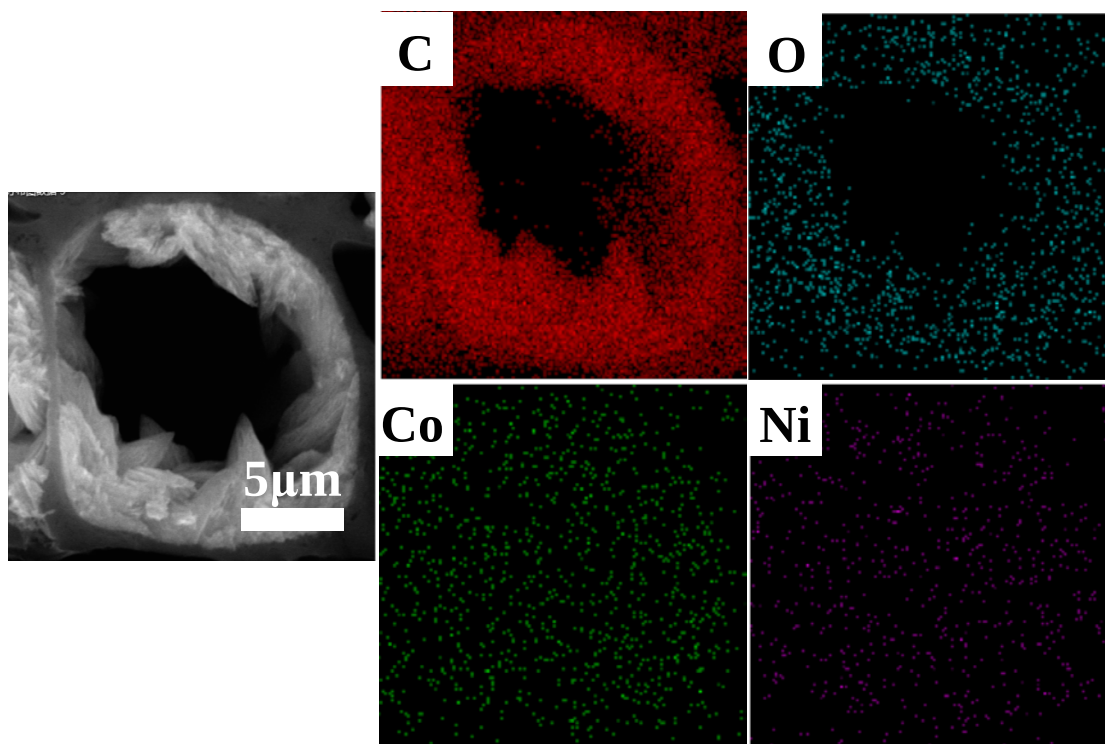


Fig. S4. EDS images of vertical channel in  $\text{NiCo}_2\text{O}_4@\text{CW}$

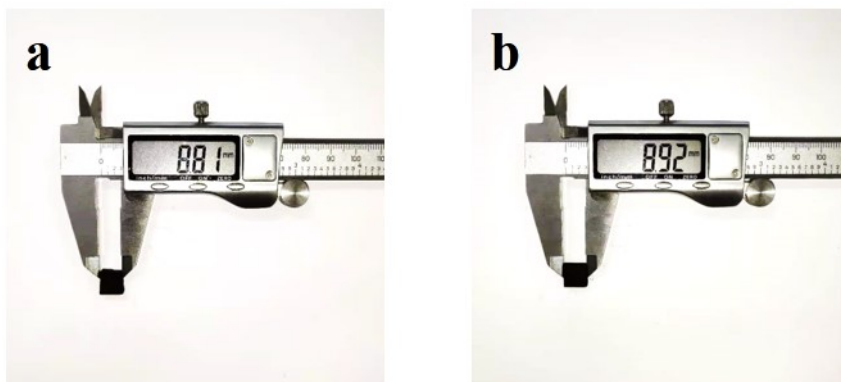


Fig. S5. The optical photograph of as-prepared CW and  $\text{NiCo}_2\text{O}_4@\text{CW}$

(a) CW; (b)  $\text{NiCo}_2\text{O}_4@\text{CW}$

The size of as-prepared CW and  $\text{NiCo}_2\text{O}_4@\text{CW}$  has shrunk compared with the original wood (10 mm  $\times$  10 mm  $\times$  10 mm), and was measured to be 8.81 mm and 8.92 mm respectively.

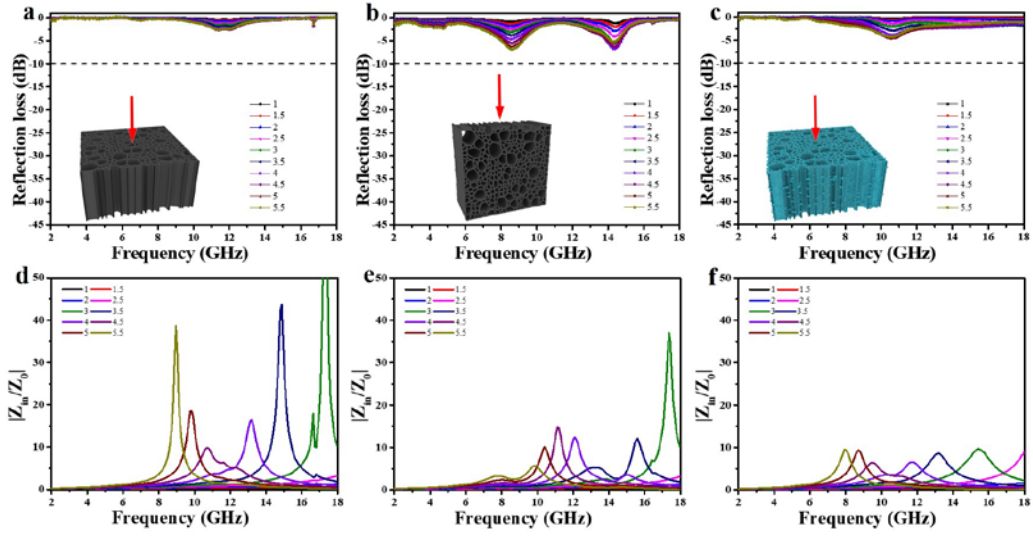


Fig. S6. RL values plotted against frequency for (a) V-CW, (b) H-CW, (c) V-CW@NiCo<sub>2</sub>O<sub>4</sub>; Impedance matching ratio plotted against frequency for (d) V-CW, (e) H-CW, (f) V-CW@NiCo<sub>2</sub>O<sub>4</sub>.

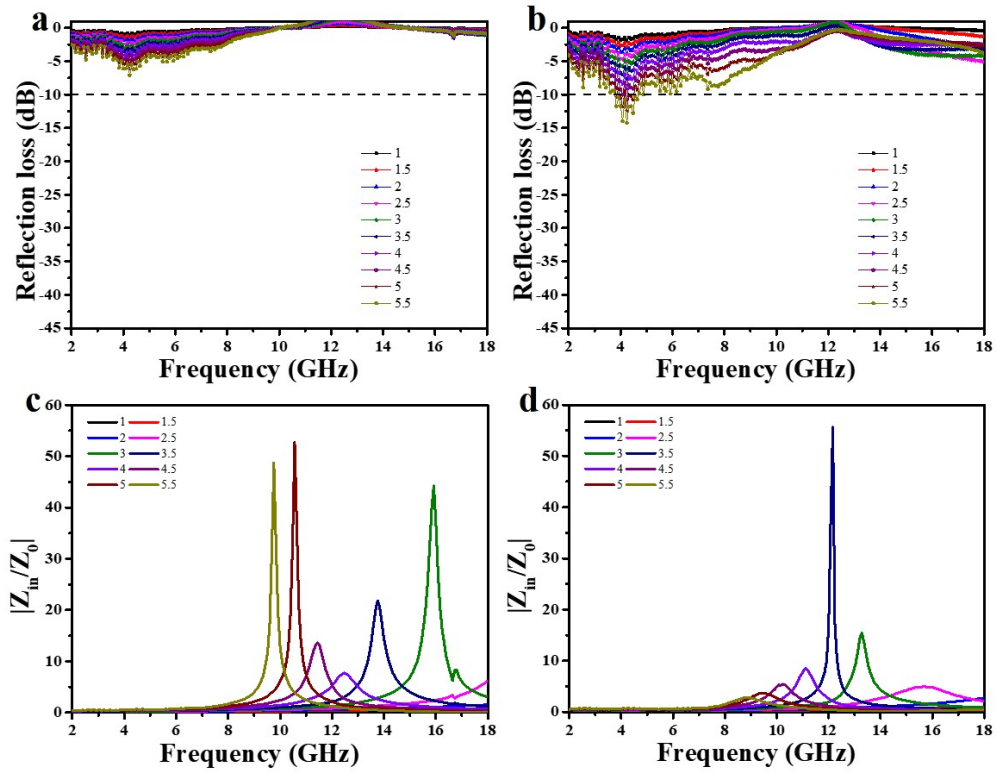


Fig. S7. RL values of disordered samples plotted against frequency: CW (a), CW@NiCo<sub>2</sub>O<sub>4</sub> (b); Impedance matching ratio of disordered samples plotted against frequency: CW (c), CW@NiCo<sub>2</sub>O<sub>4</sub> (d).

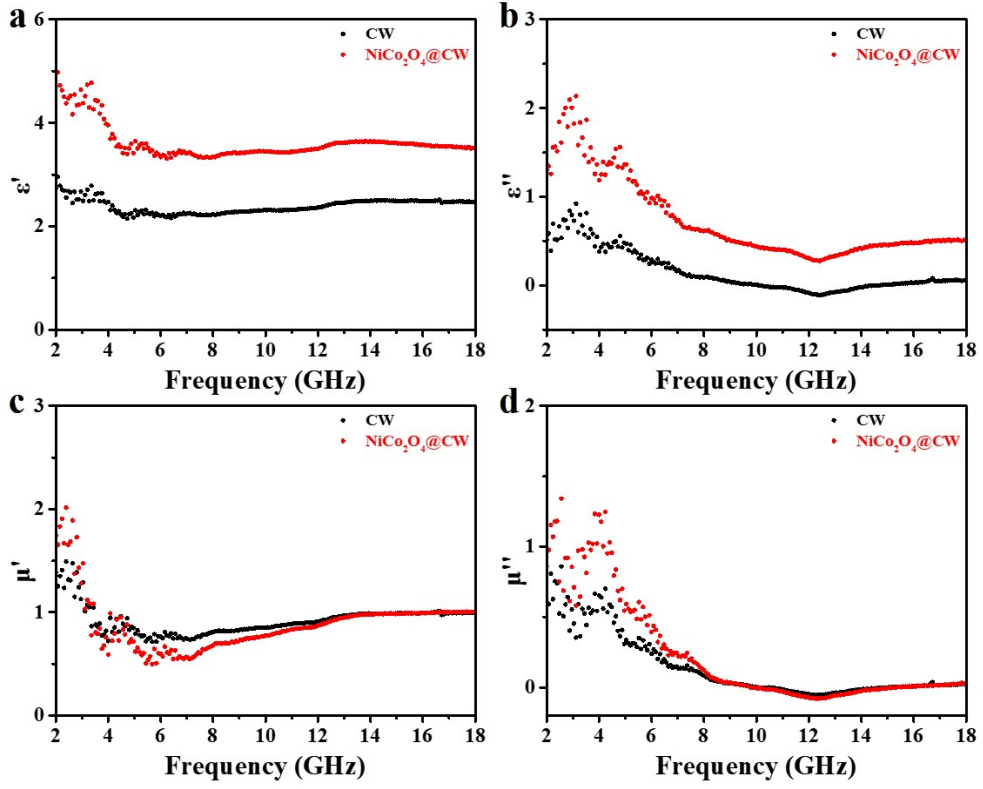


Fig. S8. The EM parameters of disordered samples of CW and CW@NiCo<sub>2</sub>O<sub>4</sub>

(a) real part  $\epsilon'$  and (b) imaginary part  $\epsilon''$  of permittivity, (c) real part  $\mu'$  and (d) imaginary part  $\mu''$  of permeability.

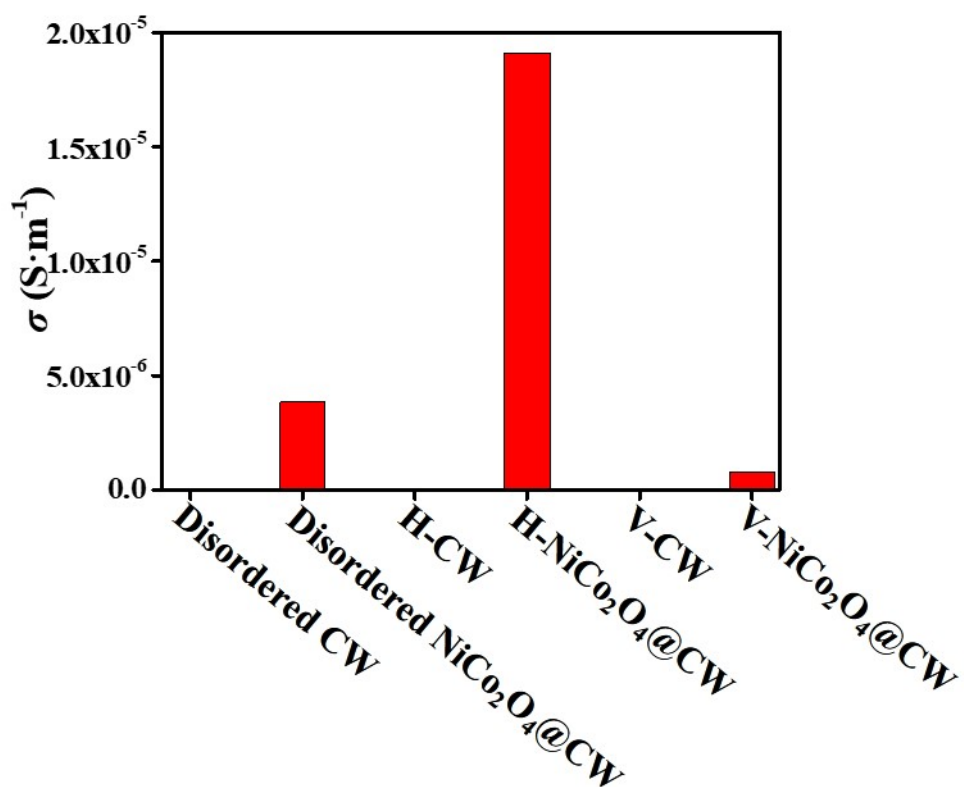


Fig. S9. The conductivity of all samples.

The conductivity of disordered CW, H-CW and V-CW is too low to be measured by the instrument.

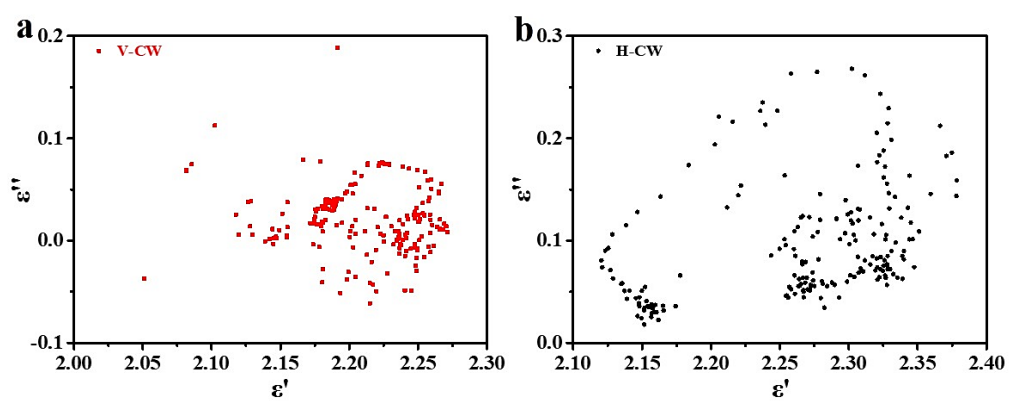


Fig. S10. Cole-Cole curves of (a) V-CW and (b) H-CW.