Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.


**Supporting Information**

# Construction of $SnO_2/Co_3Sn_2$@C and $SnO_2/Co_3Sn_2$@Air@C hierarchical heterostructures for efficient electromagnetic wave absorption

Suyun Wang, Shisi Peng, Suting Zhong, Wei Jiang*

*National Special Superfine Powder Engineering Technology Research Center, Nanjing University of Science and Technology, 210094, Nanjing, China.*

** Corresponding author E-mail: superfine_jw@126.com; Tel: +86-025-8431-5942.*

## S1. Electromagnetic Wave Absorption Measurement

Composites used for electromagnetic wave absorption measurement were prepared by mixing samples with paraffin at a mass ratio of 3:7, respectively. Then the mixtures were compressed into cylindrical specimens with an inner diameter of 3.04 mm, outer diameter of 7 mm, and the thickness of 2 mm. The complex permittivity $\varepsilon_r$ ($\varepsilon_r = \varepsilon_r' - j\varepsilon_r''$) and permeability $\mu_r$ ($\mu_r = \mu_r' - j\mu_r''$) of the composites were measured by an Agilent E8363A vector network analyzer in the frequency range of 2-18 GHz.

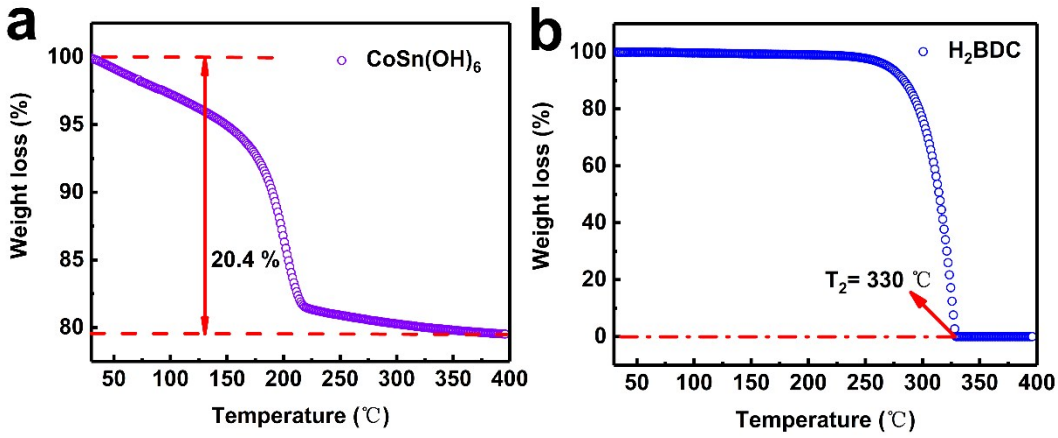


**Figure S1.** TGA curves of $CoSn(OH)_6$ (a) and $H_2BDC$ (b) which were tested in air from 50℃ to 400℃.

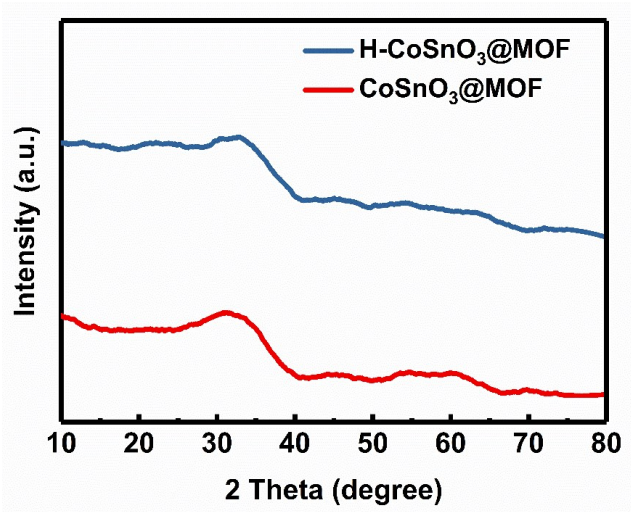


**Figure S2.** XRD pattern of the hollow $CoSnO_3$@MOF and H-$CoSnO_3$@MOF nanocubes.

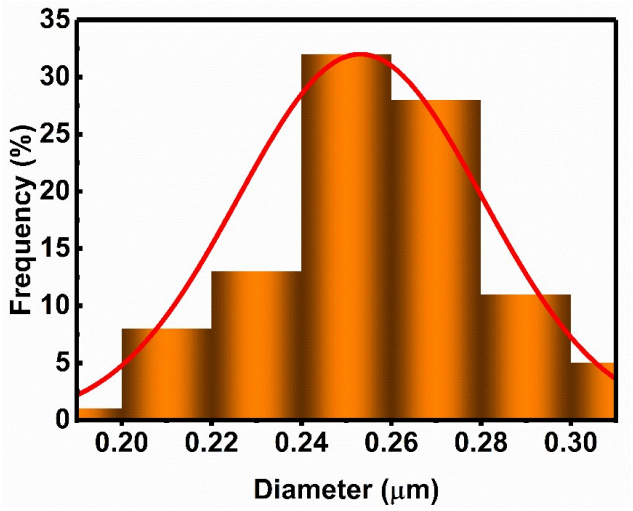


**Figure S3.** Size distribution of $CoSn(OH)_6$ particles.

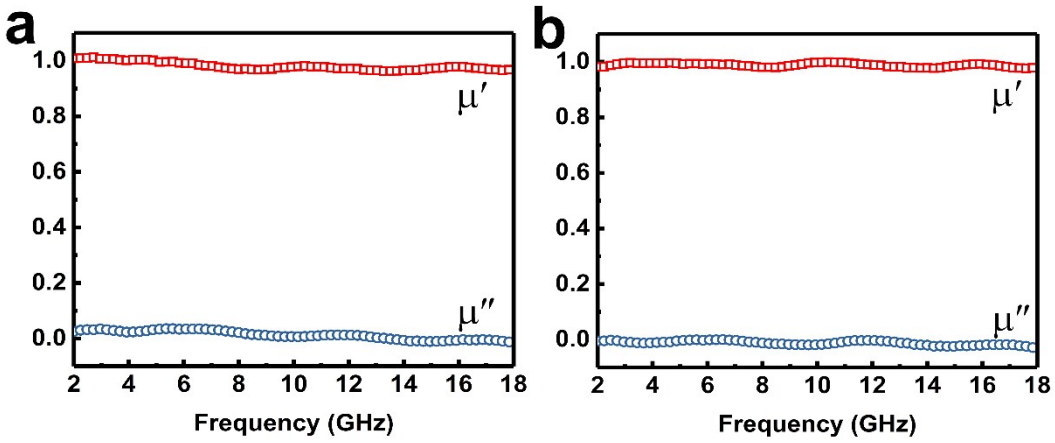


**Figure S4.** Real part (μ') and imaginary part (μ") of permeability for $SnO_2/Co_3Sn_2$@C(a) and $SnO_2/Co_3Sn_2$@Air@C(b)

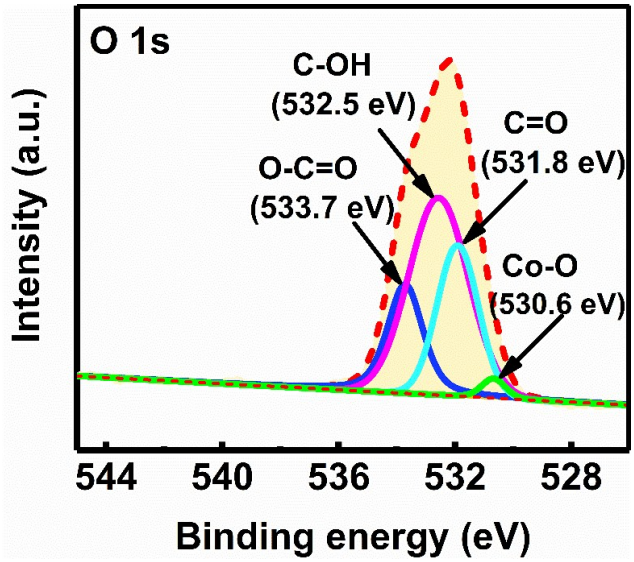


**Figure S5.** XPS survey spectrum of O 1s region of $SnO_2/Co_3Sn_2$@C.

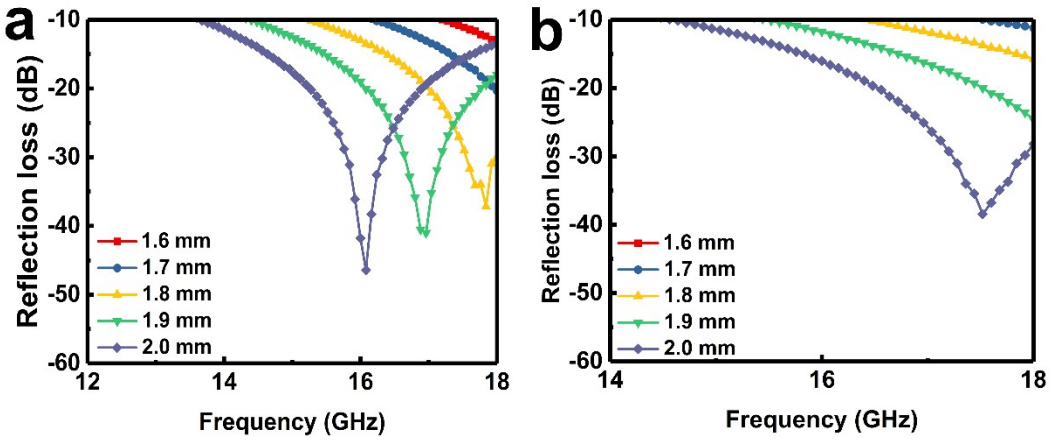


**Figure S6.** Calculated RL curves of $SnO_2/Co_3Sn_2$@C and $SnO_2/Co_3Sn_2$@Air@C with the thickness of 1.6 -2.0 mm.

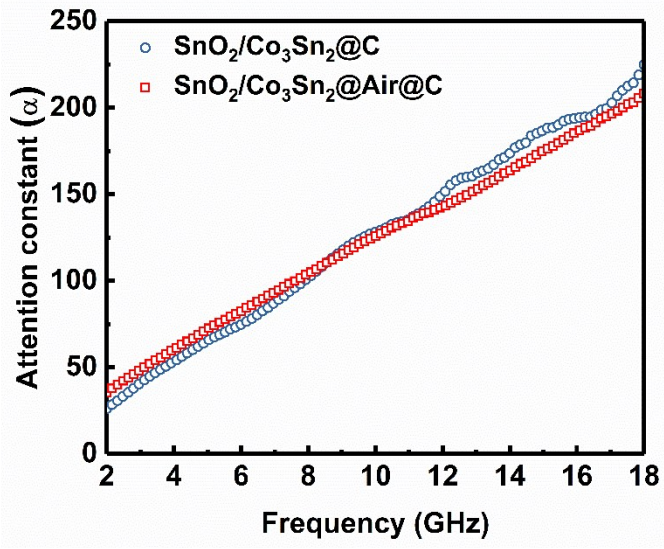


**Figure S7.** Attention constant (α) of $SnO_2/Co_3Sn_2$@C and $SnO_2/Co_3Sn_2$@Air@C

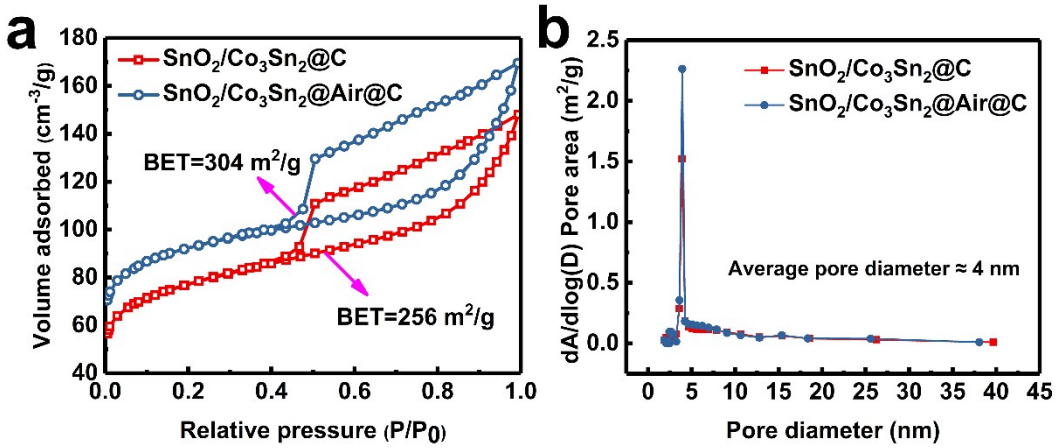


**Figure S8.** $N_2$ adsorption-desorption isotherms (a) and pore size distributions (b) of $SnO_2/Co_3Sn_2$@C and $SnO_2/Co_3Sn_2$@Air@C hybrids.