Supporting information

Polarization Enhancement of Microwave Absorption by Increasing Aspect Ratio of Ellipsoidal Nanorattles with Fe_3O_4 Cores and Hierarchical $CuSiO_3$ Shells

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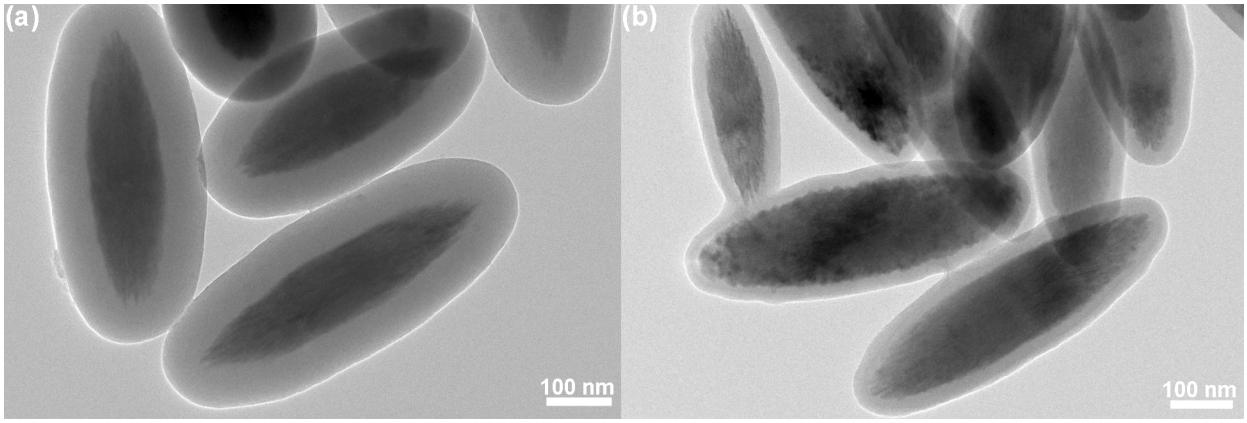

Figure S-1 TEM images of the α-Fe_2O_3@SiO_2 nanopindles with different SiO_2 layer thicknesses: (a) ~60 nm and (b) ~27 nm.

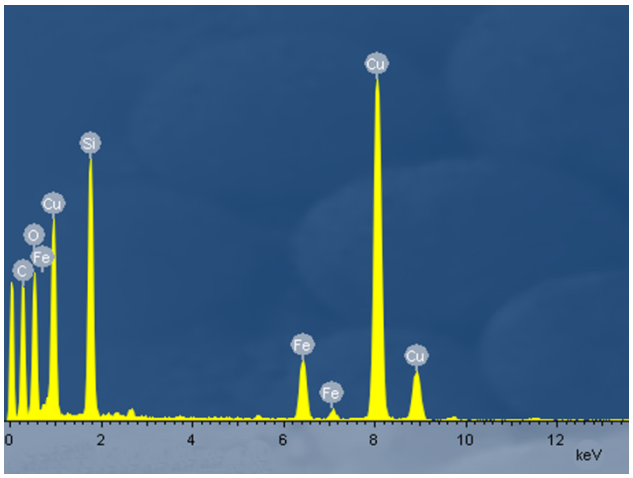

Figure S-2 EDS pattern of the Fe_3O_4@CuSilicate nanorattles.

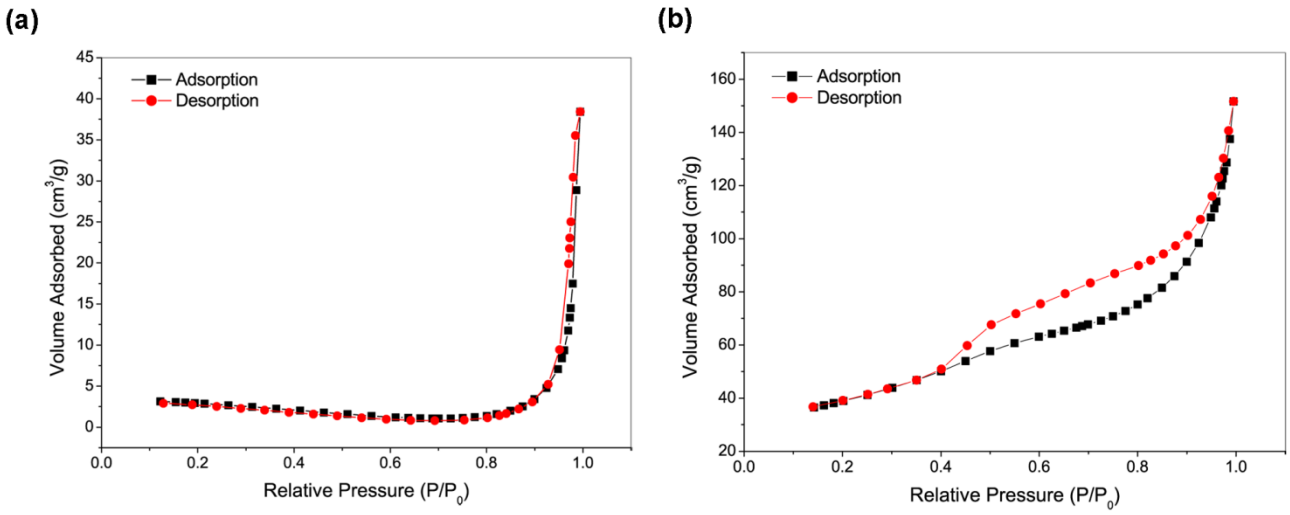

Figure S-3 N_2 adsorption-desorption isotherms of the α-Fe_2O_3 nanospindles (a) and the Fe_3O_4@CuSilicate nanorattles (b).

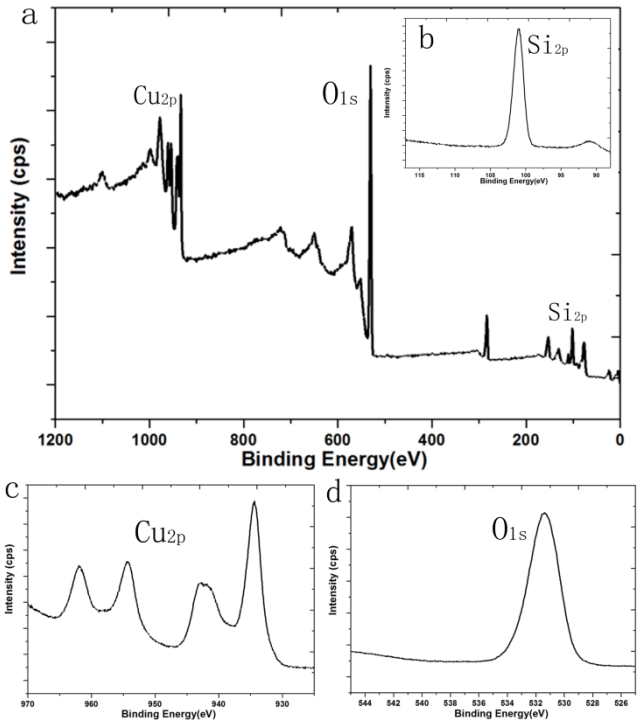

Figure S-4 XPS spectrum of MCM-5: (a) XPS elemental wide scanning spectrum; (b) spectrum of binding energy of electron in the 2p orbital of Si; (c) spectrum of binding energy of an electron in the 2p orbital of Cu; (d) spectrum of binding energy of an electron in the 1s orbital of O.

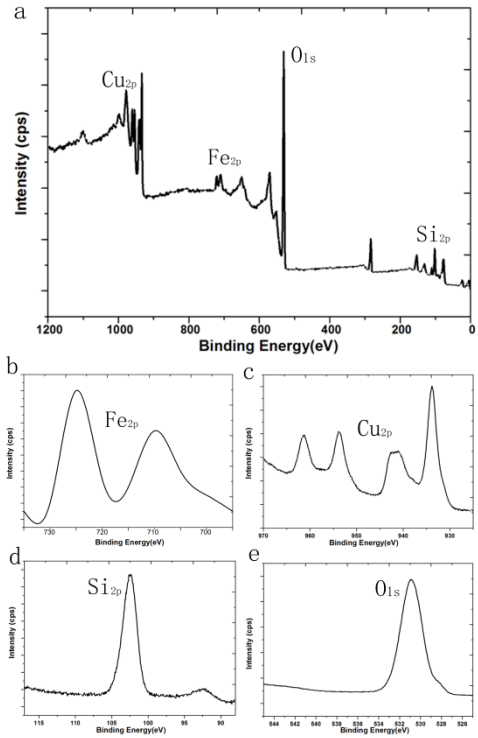

Figure S-5 XPS spectrum of the mixture of Fe_3O_4 and copper silicate: (a) XPS elemental wide scanning spectrum; (b) spectrum of binding energy of electron in the 2p orbital of Fe; (c) spectrum of binding energy of an electron in the 2p orbital of Cu; (d) spectrum of binding energy of electron in the 2p orbital of Si; (e) spectrum of binding energy of an electron in the 1s orbital of O.

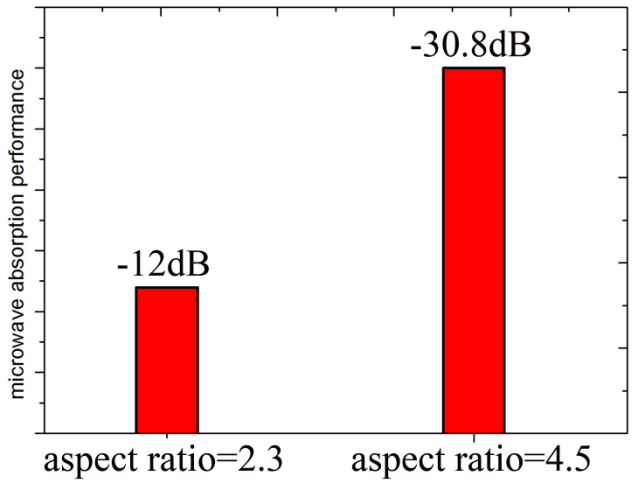

Figure S-6 The microwave absorption performance of Fe_3O_4@CuSilicate nanorattles with different aspect ratio

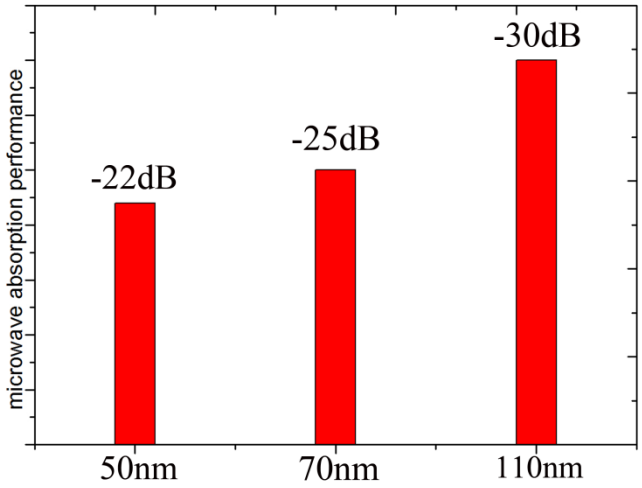

Figure S-7 The microwave absorption performance of Fe_3O_4@CuSilicate nanorattles with different shell thickness

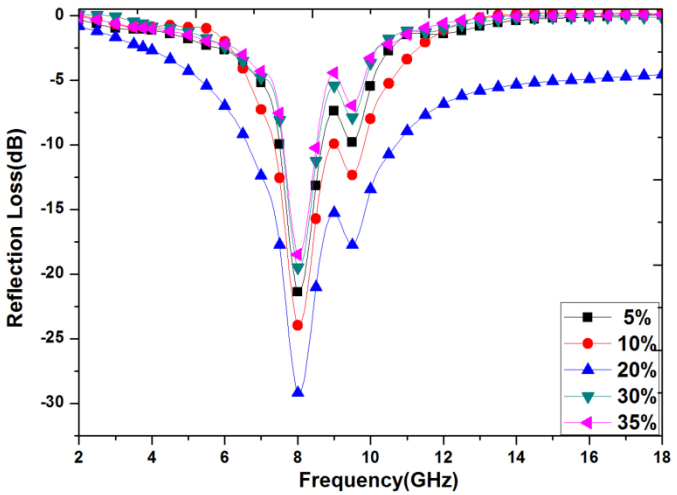

Figure S-8 Reflection loss of MCM-5 with different weight percent of nanoparticles.