

## Supporting Information for Langmuir

### **Preparation of Highly Anisotropic Cobalt Ferrite/Silica Microellipsoids Using an External Magnetic Field**

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**Figure S6:** ZFC/FC curves (magnetization versus temperature) of the H-CoFe<sub>2</sub>O<sub>4</sub>/SiO<sub>2</sub> microellipsoids (Solid black dots: ZFC curve. Open black dots: FC curve), CoFe<sub>2</sub>O<sub>4</sub>/SiO<sub>2</sub> microspheres (Solid green dots: ZFC curve. Open green dots: FC curve), and CoFe<sub>2</sub>O<sub>4</sub> nanoparticles dispersed into silica gel at low concentration (Solid blue dots: ZFC curve. Open blue dots: FC curve). For the silica gel, the mass fraction in magnetic nanoparticles is  $w_{NP}$ = 0.7%, which is much lower than the mass fraction in the microellipsoids and microspheres ( $w_{NP}$ = 33.7 and 34.3 %, respectively). Note that for the diluted sample, the blocking temperature seems to be attained ( $T_b$ =390K). All the values of magnetization are normalized to 1g of CoFe<sub>2</sub>O<sub>4</sub>.

**Movie S1:** Monitoring by optical microscopy (magnification  $\times 40$ ) of the water dispersion of the H-CoFe<sub>2</sub>O<sub>4</sub>/SiO<sub>2</sub> microellipsoids in absence of magnetic field (duration : 6 min 40s)

[microellipsoids H0.avi](#)

**Movie S2:** Monitoring by optical microscopy (magnification  $\times 40$ ) of the water dispersion of the CoFe<sub>2</sub>O<sub>4</sub>/SiO<sub>2</sub> microspheres in absence of magnetic field (duration : 6 min 40s)

[ferrite-silica microspheres H0.avi](#)

**Movie S3:** Monitoring by optical microscopy (magnification  $\times 40$ ) of the water dispersion of the  $\gamma$ - $\text{Fe}_2\text{O}_3/\text{SiO}_2$  microspheres in absence of magnetic field (duration : 6 min 40s)

[maghemite-silica microspheres H0.avi](#)

**Movie S4:** Monitoring by optical microscopy (magnification  $\times 40$ ) of the water dispersion of the H- $\text{CoFe}_2\text{O}_4/\text{SiO}_2$  microellipsoids after applying a magnetic field during 1 min (duration : 3 min 20s)

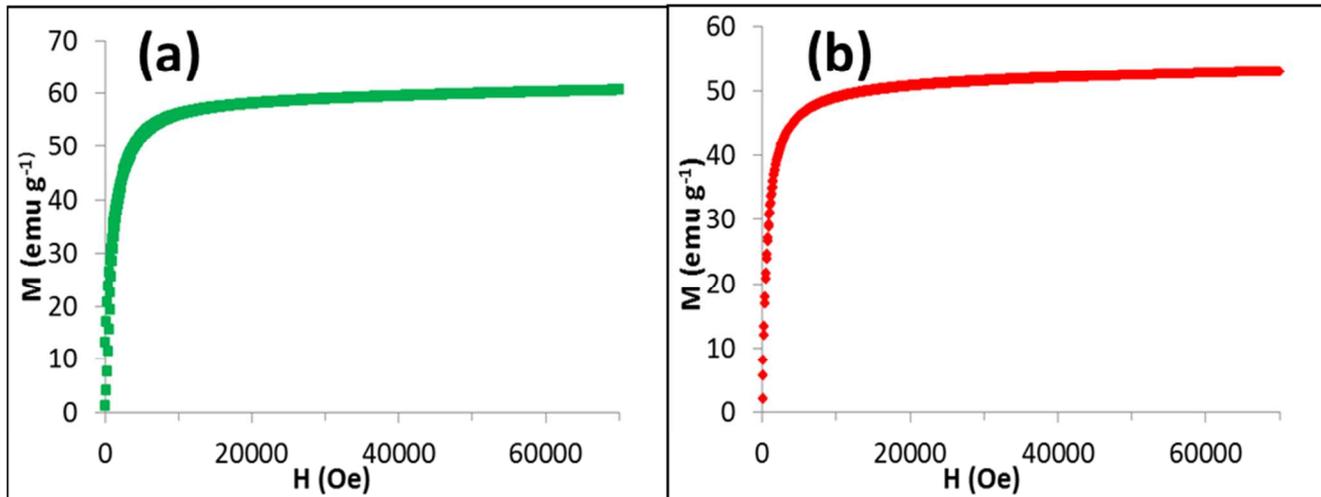
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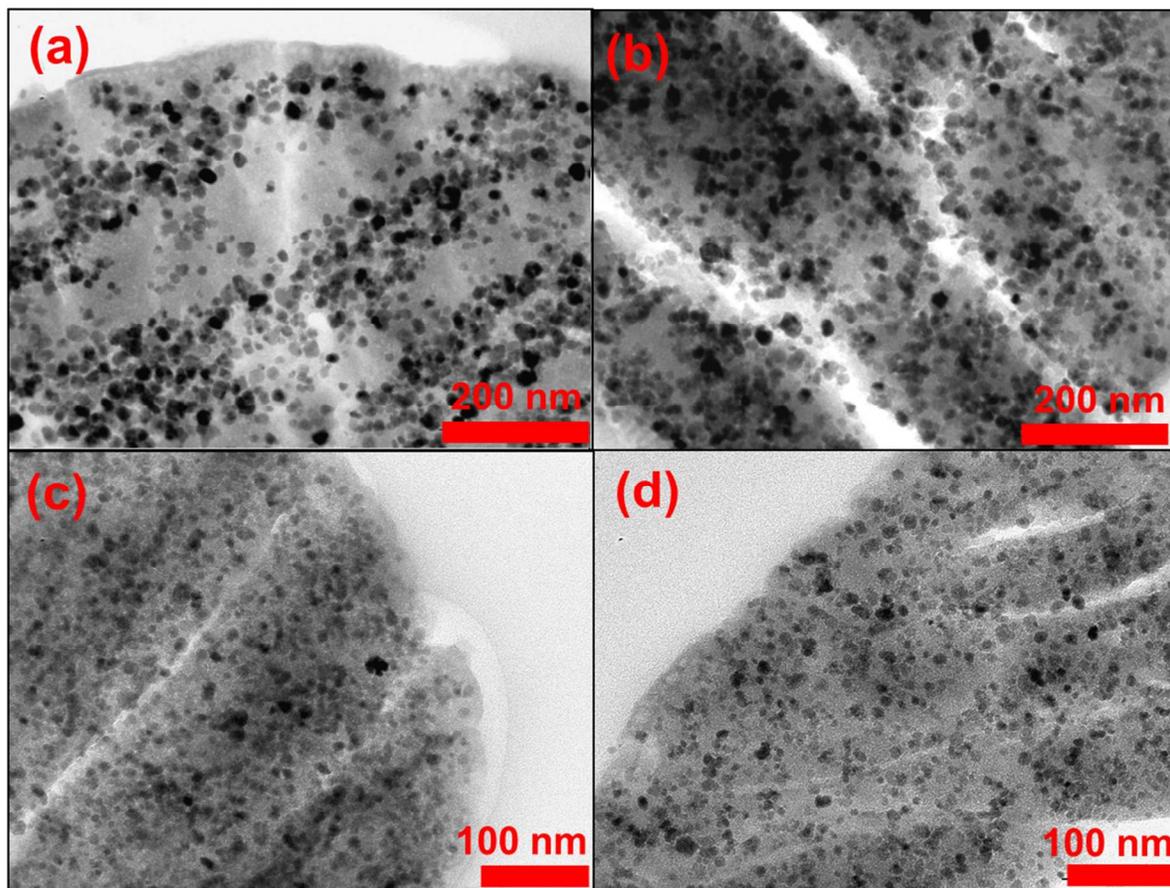
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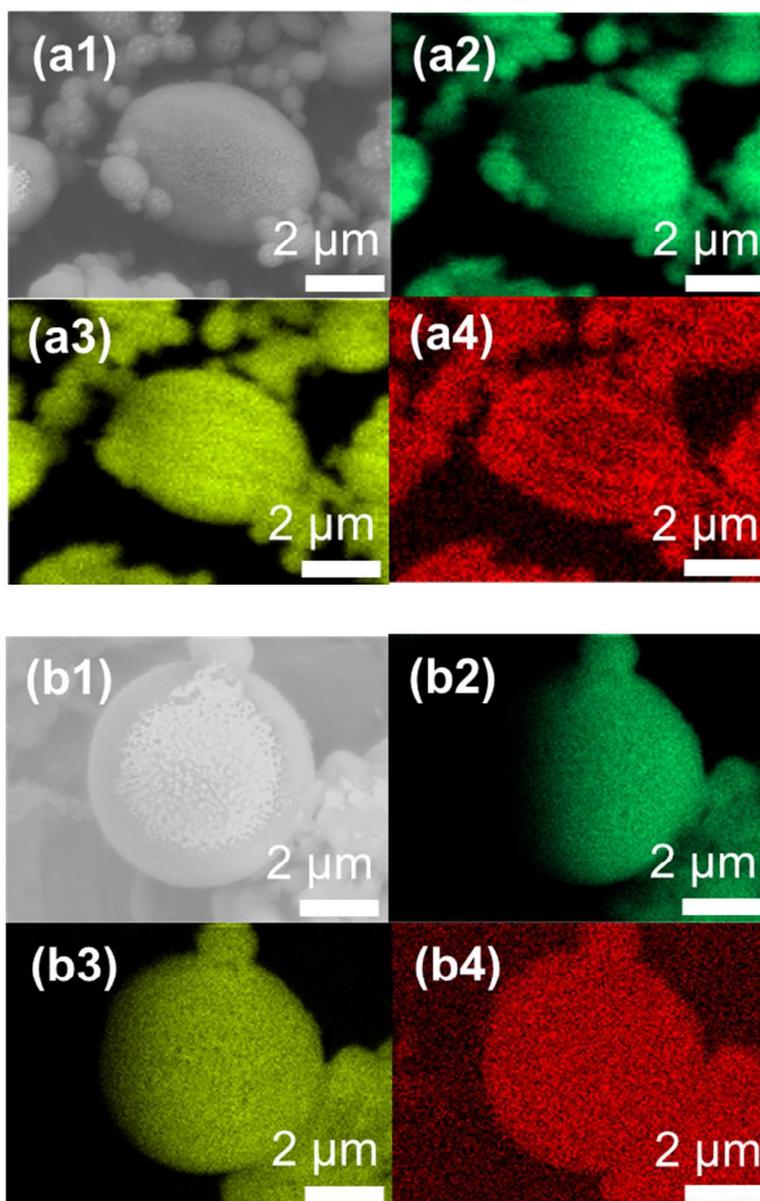
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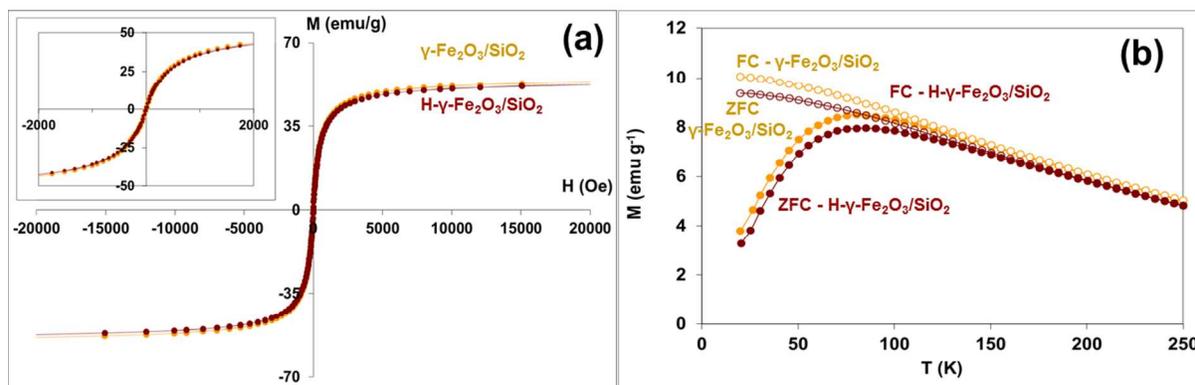
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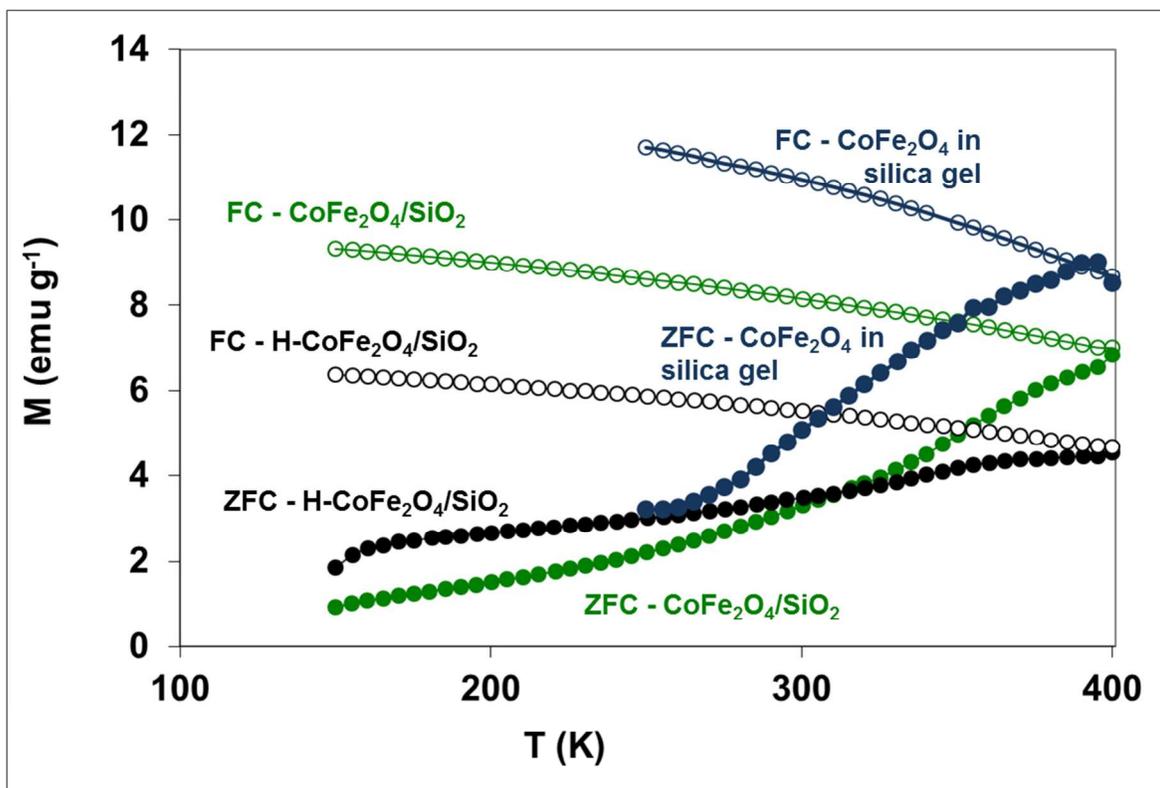
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**Figure S4:** Elemental mapping of the  $\text{CoFe}_2\text{O}_4$  composite microparticles by SEM-EDS (accelerating voltage = 10 kV). (a1)-(a4) H- $\text{CoFe}_2\text{O}_4/\text{SiO}_2$  microellipsoid. (a1) SEM image in secondary electron mode. (a2) Oxygen elemental map ( $\text{K}_\alpha$  line, 525 eV). (a3) Silicon elemental map ( $\text{K}_\alpha$  line, 1.74 keV). (a4) Iron elemental map, ( $\text{K}_\alpha$  line, 6.40 keV). (b1)-(b4)  $\text{CoFe}_2\text{O}_4/\text{SiO}_2$  microspheres. (b1) SEM image in secondary electron mode. (b2) Oxygen elemental map ( $\text{K}_\alpha$  line, 525 eV). (b3) Silicon elemental map ( $\text{K}_\alpha$  line, 1.74 keV). (b4) Iron elemental map ( $\text{K}_\alpha$  line, 6.40 keV). Note the anisotropic distribution of the iron element in the H- $\text{CoFe}_2\text{O}_4/\text{SiO}_2$  microellipsoid.



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**Figure S6:** ZFC/FC curves (magnetization versus temperature) of the H-CoFe<sub>2</sub>O<sub>4</sub>/SiO<sub>2</sub> microellipsoids (Solid black dots: ZFC curve. Open black dots: FC curve), CoFe<sub>2</sub>O<sub>4</sub>/SiO<sub>2</sub> microspheres (Solid green dots: ZFC curve. Open green dots: FC curve), and CoFe<sub>2</sub>O<sub>4</sub> nanoparticles dispersed into silica gel at low concentration (Solid blue dots: ZFC curve. Open blue dots: FC curve). For the silica gel, the mass fraction in magnetic nanoparticles is  $w_{NP}=0.7\%$ , which is much lower than the mass fraction in the microellipsoids and microspheres ( $w_{NP}=33.7$  and  $34.3\%$ , respectively). Note that for the diluted sample, the blocking temperature seems to be attained ( $T_b=390\text{K}$ ). All the values of magnetization are normalized to 1g of CoFe<sub>2</sub>O<sub>4</sub>.