Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Superparamagnetic versus blocked states in aggregates of $Fe_{3-x}O_4$ nanoparticles studied by MFM

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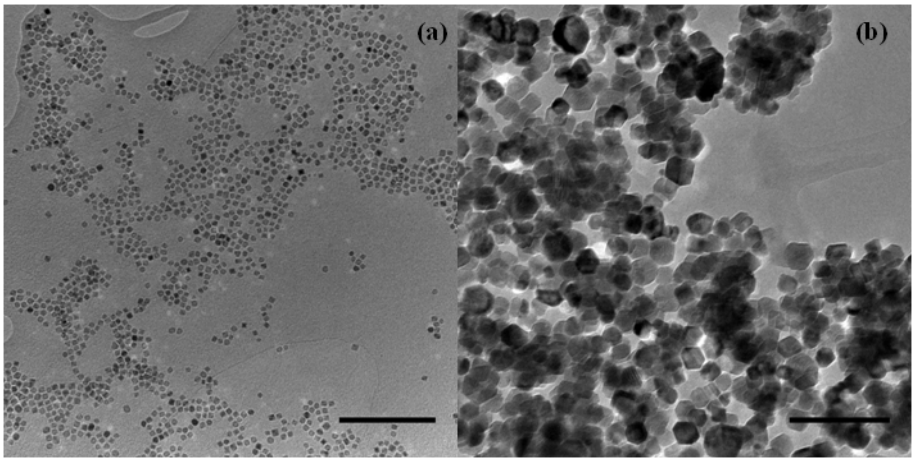

Figure S1. TEM images at low resolution. (a) 11 nm NPs and (b) 49 nm NPs. Scale bars correspond to 200 nm.

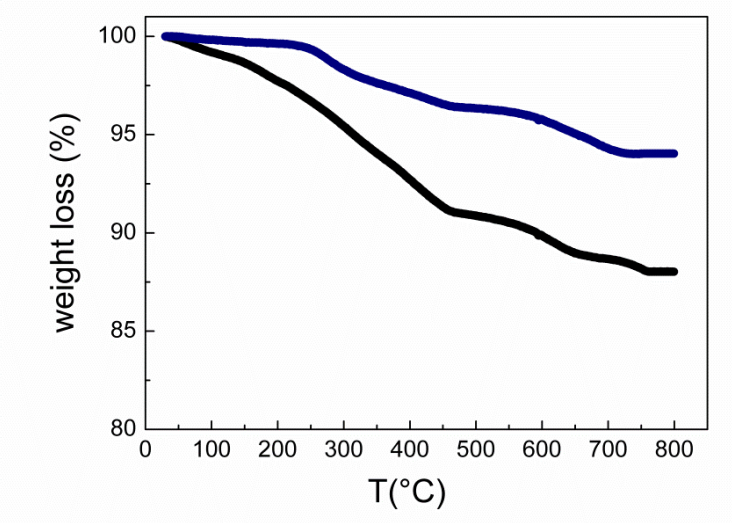

Figure S2. Thermogravimetric curves. Solid black line corresponds to 49 nm NPs and solid blue line corresponds to 11 nm NPs.

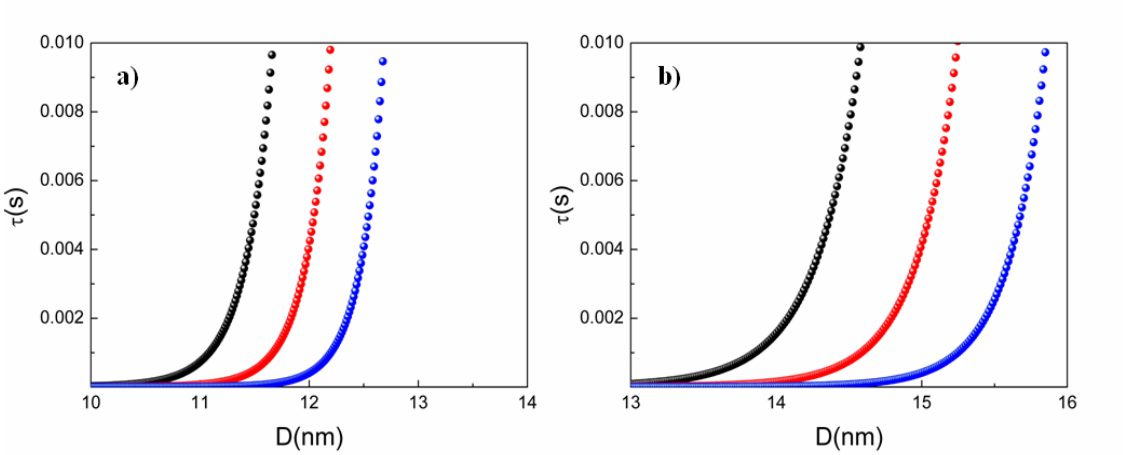

Figure S3. Calculated relaxation time from Arrhenius law for a single $Fe_{3-X}O_4$ NP following Néel relaxation. (a) $K_v = 2.1 \cdot 10^{-5}$ erg cm^{-3} and (b) $K_v = 4.1 \cdot 10^{-5}$ erg cm^{-3}. The values of the characteristic attempt time, τ_0, used in Arrhenius law are as follows. Black spheres: 10^{-9}s, red spheres: 10^{-10}s and blue spheres: 10^{-11}s.

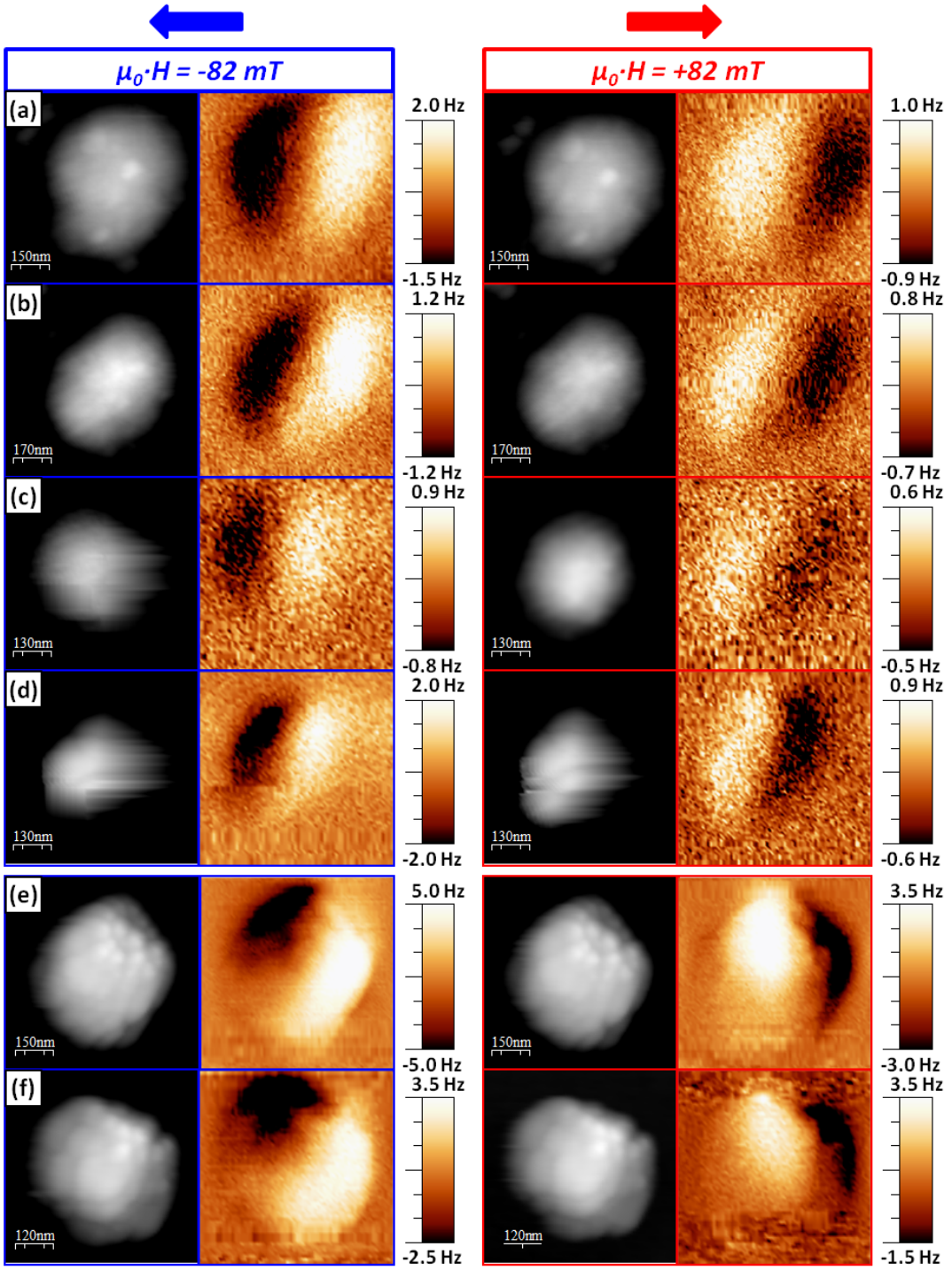

Figure S4. The exact same location for the topographic and MFM images of the aggregates of NPs shown in Figure 4 ((a)-(d) for R11 and (e)-(f) for R49).