Supporting Information 2 (SI2)

Upconverting/magnetic: Gd_2O_3:(Er^{3+},Yb^{3+},Zn^{2+}) nanoparticles for biological applications: Effect of Zn^{2+} doping

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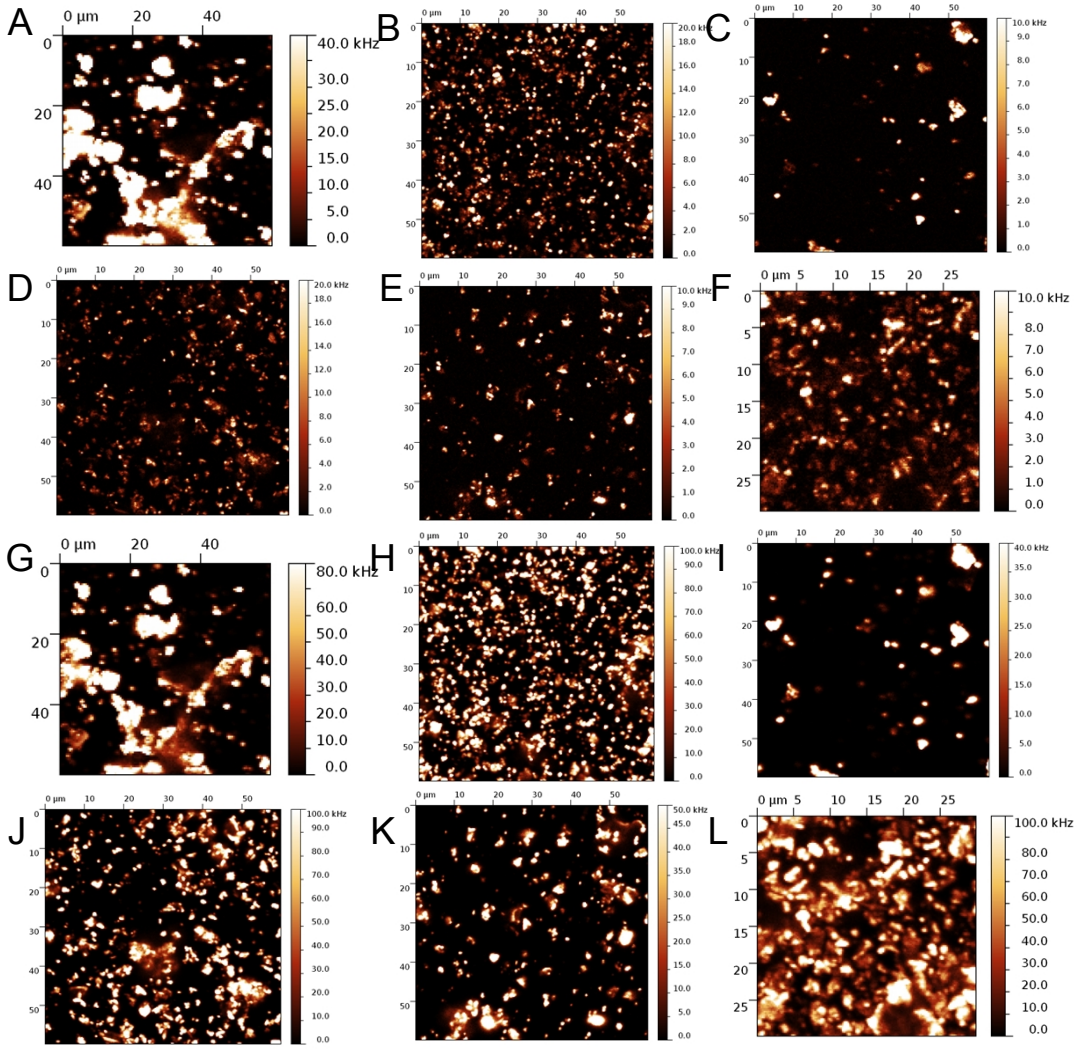

Fig. S16 Fluorescence maps of Gd_2O_3:(Er,Yb) NPs doped with various concentrations of input Zn^{2+} at 550 nm: A) 0% B) 2.5% C) 5% D) 20% E) 25% F) 50% and at 660 nm: G) 0% H) 2.5% I) 5% J) 20% K) 25% L) 50%.

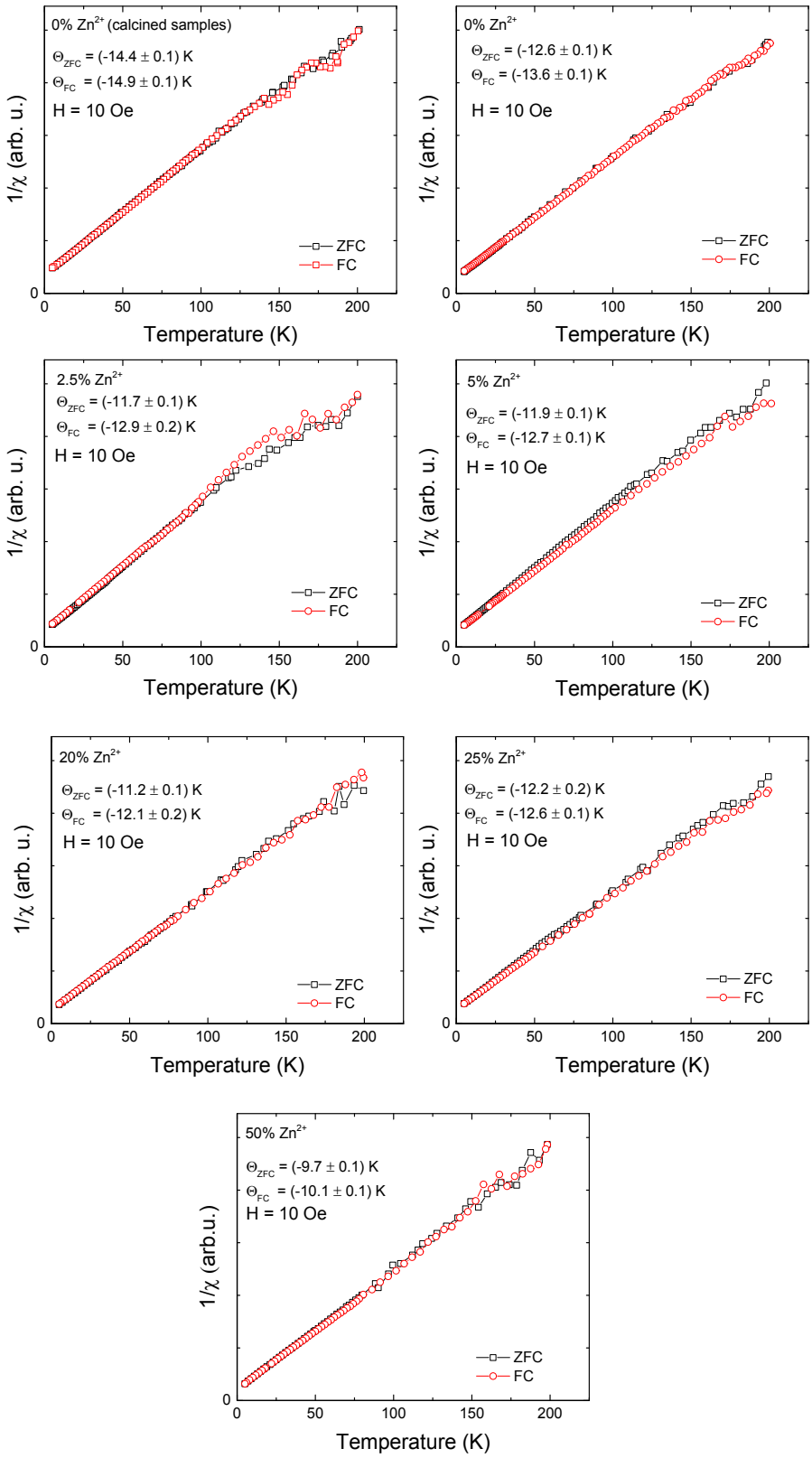

Fig. S17 Temperature dependence of reciprocal magnetic susceptibility for all the samples.

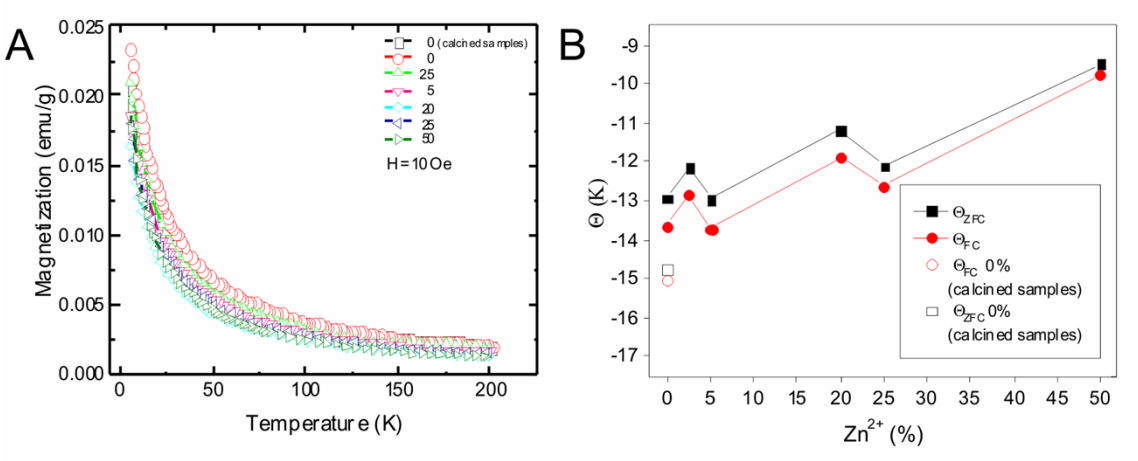

Fig. S18 A) Mass magnetization vs T for the sample with the varying zinc concentration. Dependence of paramagnetic Curie temperature on the amount of Zn in the compound. B) The empty points correspond to the NPs without Zn^{2+}, after calcination (two points).

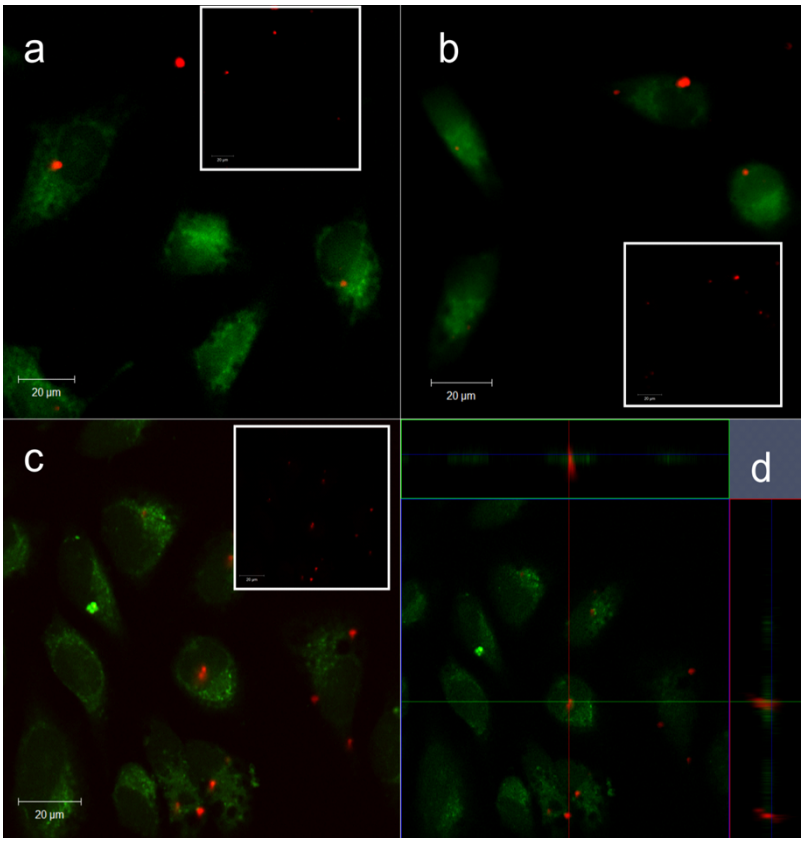

Fig. S19 Confocal images of HeLa cells after A) 4 h B) 10 h and C) 24 h incubation in a solution 1 µg·ml^{-1} NPs with 50% Zn concentration, PVP coated, with Lipofectamine 2000. The upconversion of NPs was excited with a 980 nm femtosecond laser (observed as red spots, insets). The autofluorescence of HeLa cells was excited with a wavelength of 488 nm argon laser (observed as green regions). D) Orthogonal projection of confocal images in HeLa cells with the NPs.

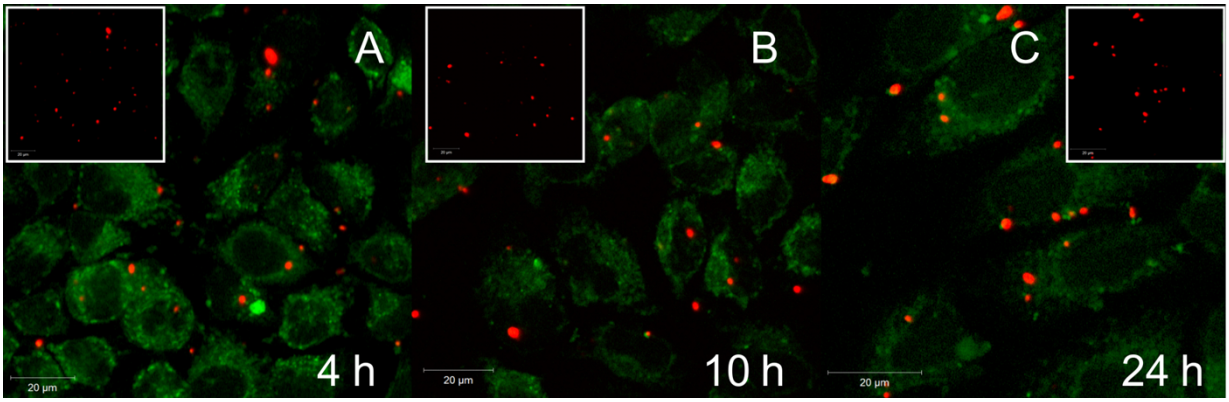

Fig. S20 Confocal images of HeLa cells after A) 4 h, B) 10 h and C) 24 h incubation in a solution 25 µg·ml^{-1} NPs with 50% Zn concentration, PVP coated, with Lipofectamine 2000. The upconversion of NPs was excited with a 980 nm femtosecond laser (observed as red spots, insets). The autofluorescence of HeLa cells was excited with a wavelength of 488 nm argon laser (observed as green regions).

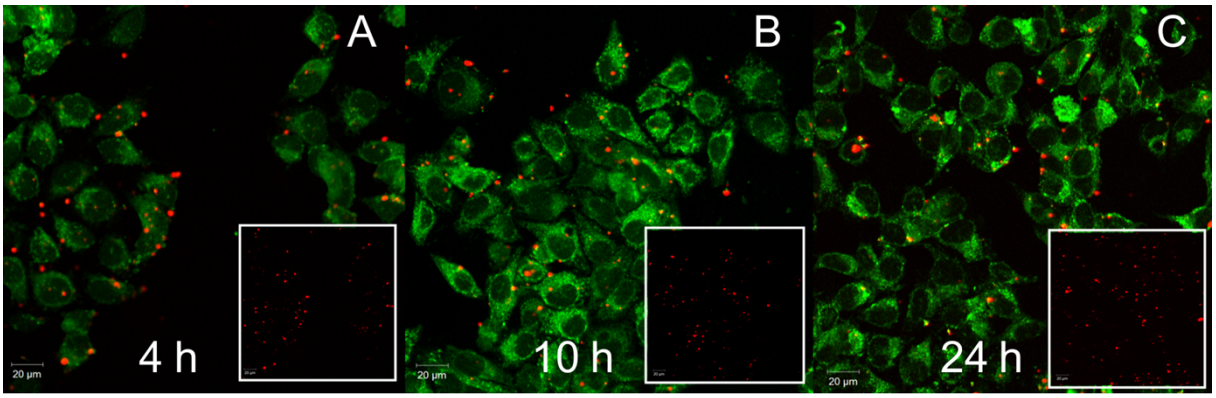

Fig. S21 Confocal images of HeLa cells after A) 4 h, B) 10 h and C) 24 h incubation in a solution 40 µg·ml^{-1} NPs with 50% Zn concentration , PVP coated, with Lipofectamine 2000. The upconversion of NPs was excited with a 980 nm femtosecond laser (observed as red spots, insets). The autofluorescence of HeLa cells was excited with a wavelength of 488 nm argon laser (observed as green regions).