Label-free iron oxide nanoparticles as multimodal contrast agents in cells using multi-photon and magnetic resonance imaging.

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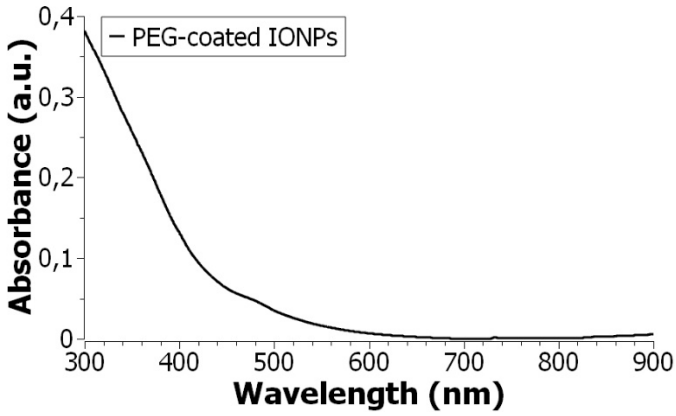

Figure S1. UV/Vis absorption spectrum of PEG-coated IONPs in dH_2O (0.01 mg of Fe/mL).

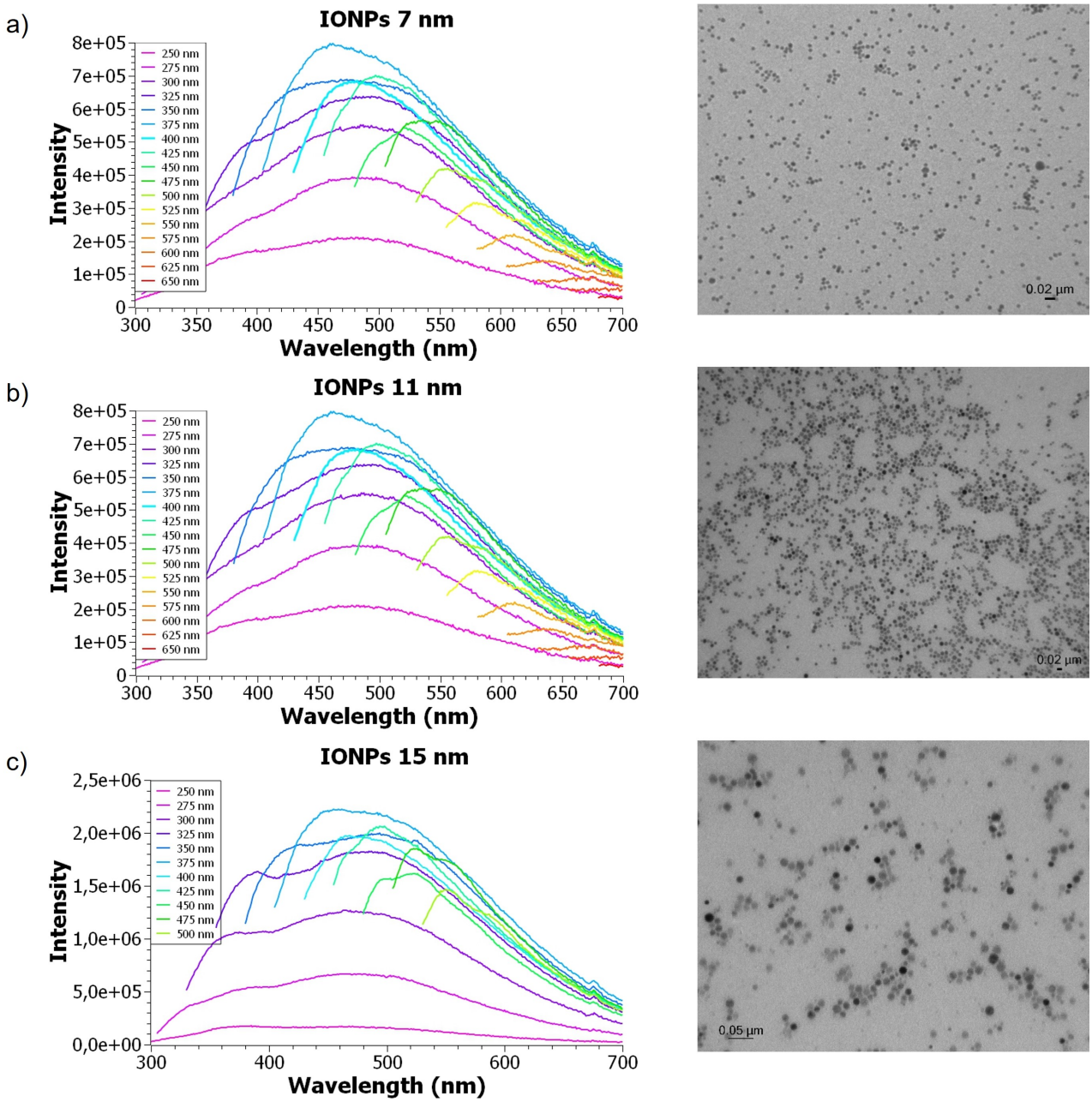

Figure S2. One-photon emission spectra (left) of OA-IONPs dispersed in heptane with an average diameter of a) 7 nm, b) 11 nm and c) 15 nm at different excitation wavelengths, and their respective TEM-images (right). The iron concentration for all samples was kept at 0.1 mg/mL.

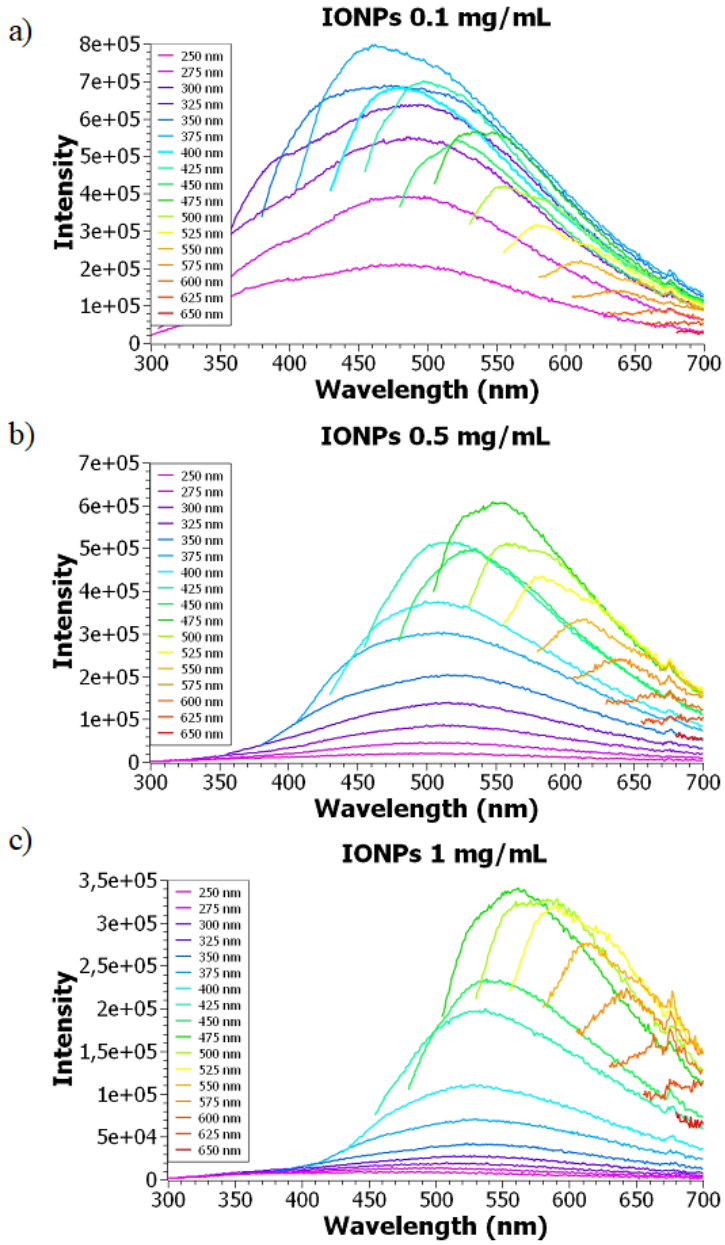

Figure S3. One-photon emission spectra of OA-IONPs dispersed in heptane with a concentration of a) 0.1 mg/mL, b) 0.5 mg/mL and c) 1 mg/mL at different excitation wavelengths.

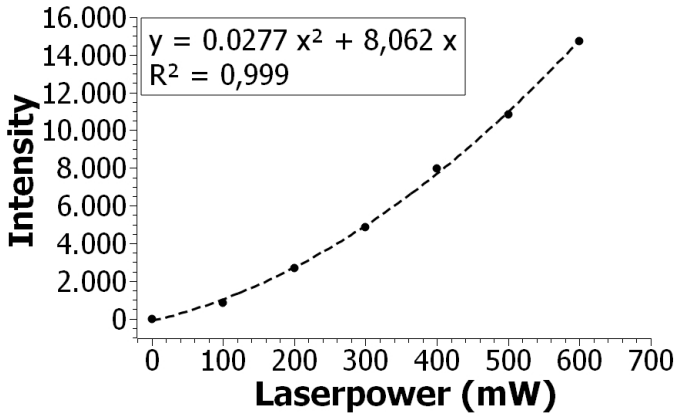

Figure S4. Plot of the multi-photon emission intensity of PEG-coated IONPs in function of the incident laser power. The quadratic dependence confirms that the multi-photon emission is a two-photon process.

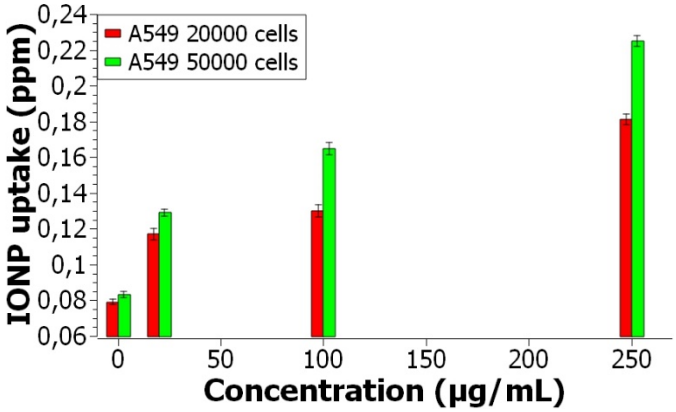

Figure S5. Cell uptake in A549 cells after 24 h incubation. Samples with 2 cell counts of 20000 and 50000 cells and with different PEG-coated IONPs concentrations added from 0 to 250 µg/mL were digested and the iron content was quantified with ICP-MS.

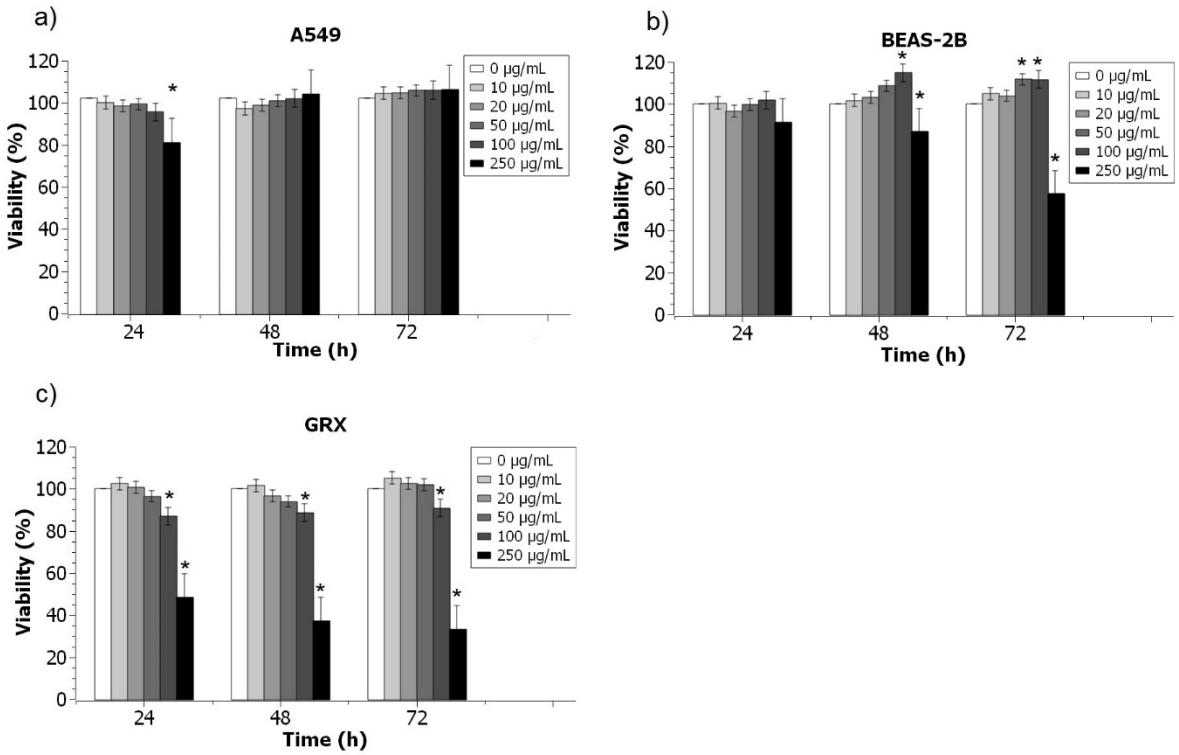

Figure S6. XTT cytotoxicity assay of a) A549 cells, b) BEAS-2B cells and c) GRX cells incubated with PEG-coated IONPs at different concentrations for 24 h, 48 h and 72 h, respectively). Data was collected from two independent experiments with three replicates per sample and analyzed with Two-Way ANOVA with Bonferroni post-Hoc test: Interaction ($P>0.05$) and One-Way ANOVA with Dunnet's post-Hoc: (* $P<0.05$ and difference >10%)

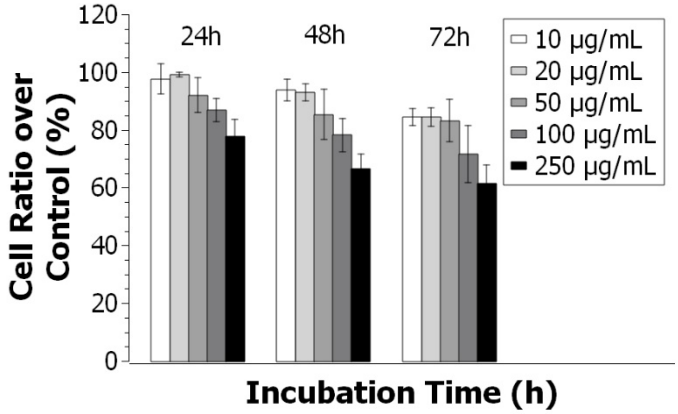

Figure S7. Cell ratio over control (cells without NPs treatment) after the incubation of A549 cells with PEG-coated IONPs at different concentrations for different durations. The decrease of cell ratio when increasing the concentration of PEG-IONPs indicates that cell replication stopped and therefore that PEG-IONPs present some toxicity at high concentration.

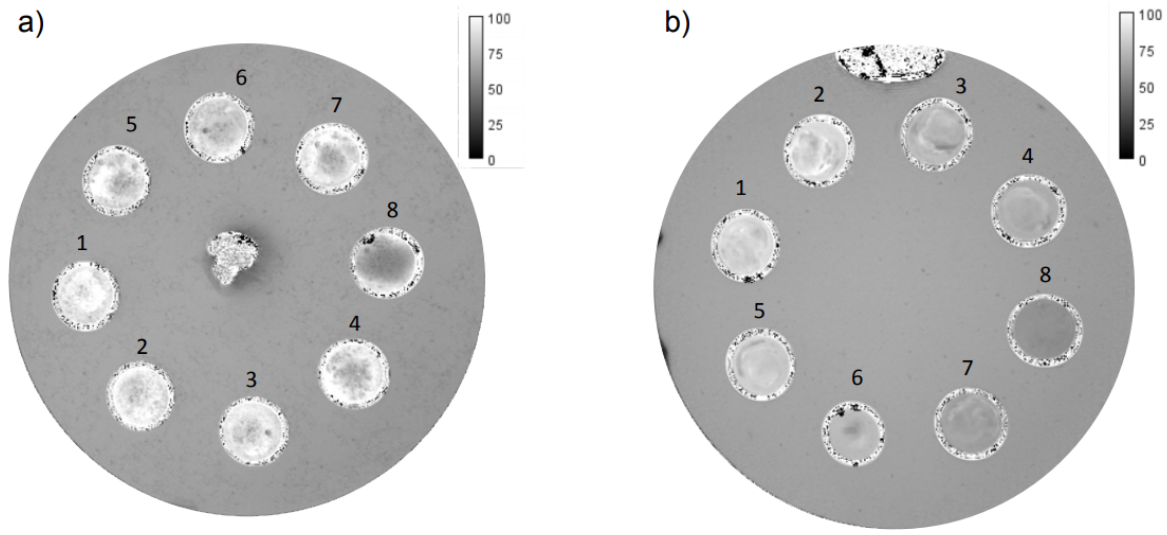

Figure S8. T2 maps of A549 cells labeled with PEG-coated IONPs. a) Eppendorfs 1 to 4 (50 cells/mL) and 5 to 8 (100 cells/mL) and Fe concentration of 0 (1 and 5), 50 (2 and 6), 100 (3 and 7) and 250 ug/mL (4 and 8); b) Eppendorfs 1 to 4 (250 cells/mL) and 5 to 8 (400 cells/mL) and Fe concentration of 0 (1 and 5), 50 (2 and 6), 100 (3 and 7) and 250 ug/mL (4 and 8).