Electronic supplementary information (ESI) for

Spindle-like MRI-active europium-doped iron oxide nanoparticles with shape-induced cytotoxicity from simple and facile ferrihydrite crystallization procedure

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$$Percent\ \ of\ \ injected\ \ dose\ per\ organ\ [\%] = \frac{Europium\ \ organ\ \ concentration\ [\mu g/g] \times Organ\ \ weight\ [g]}{Injected\ \ europium\ \ mass\ [\mu g]} \times 100\ \%$$

Formula S1. Calculation of NPs retained by organs. Europium organ concentration and Injected europium mass were measured using ICP-MS. Organ weight was measured using precision balances.

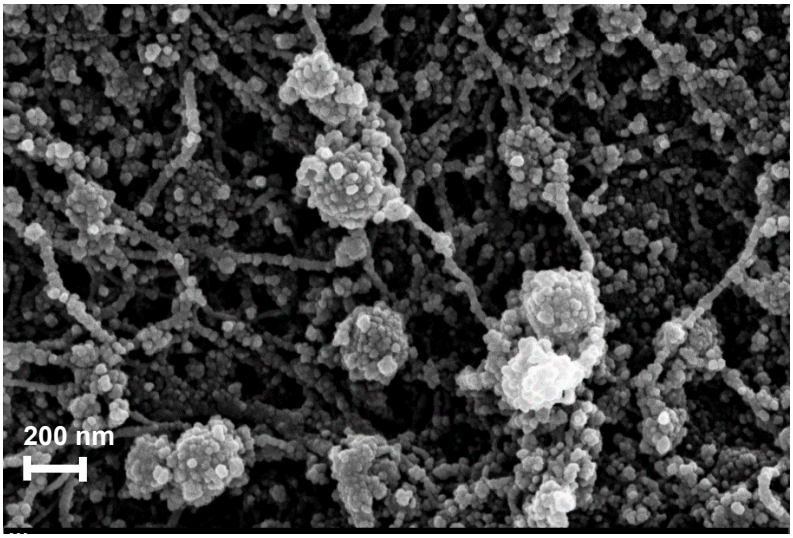

Figure S1. SEM of part of the cytoplasm of a CHO cell after treatment with the NPs. The cytoskeleton network and vesicles associated with microtubules are visible. The plasma membrane is destroyed.

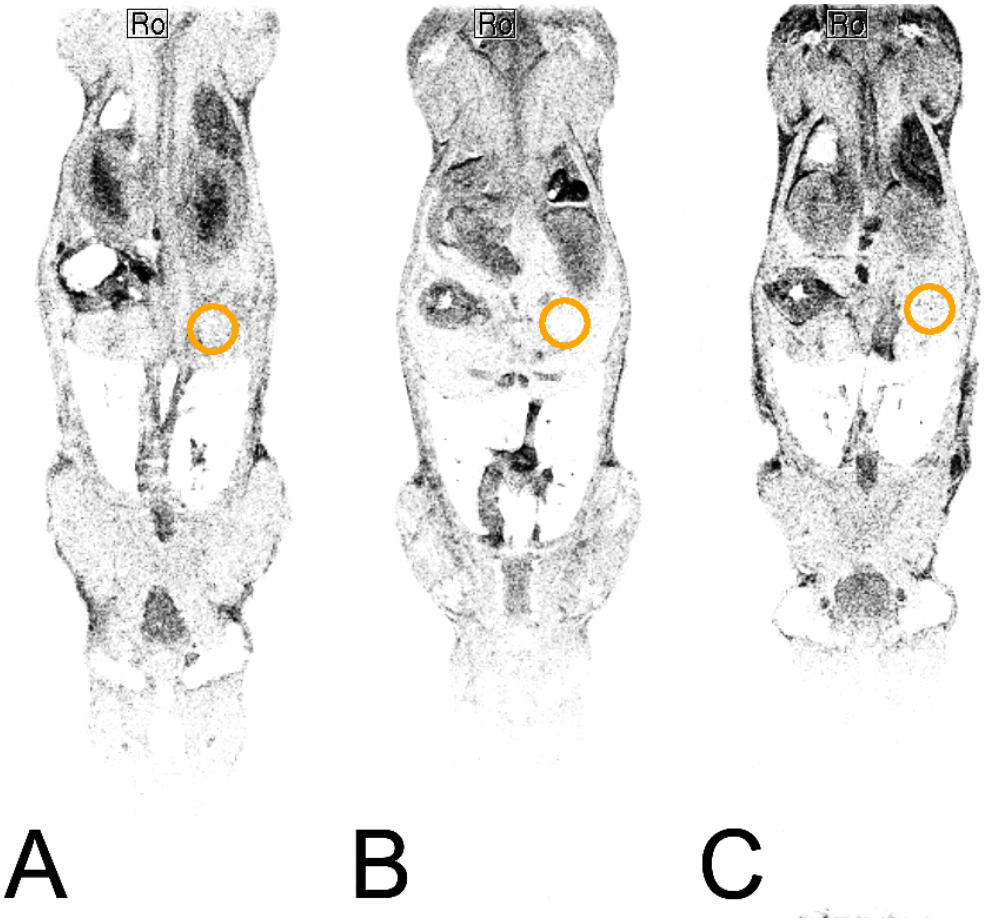

Figure S2. Inverted MRI Images (RARE)
A –control mice, B- doped with Eu NPs, C- pure iron oxide NPs

Table S1. Results of contrasting properties estimate.

	Europium NPs	Pure Iron oxide NPs	control
K (FLASH, TR 300ms, TE10ms)	4.07	3.49	1.04
K (RARE, 3000ms, 40ms)	1.20	1.10	0.99

Table S2. Biochemical assay in mice serum. ALT, alanine aminotransferase; AST, aspartate aminotransferase; BIL, bilirubin; CT creatinine; LDH, lactate dehydrogenase.

Group	ALT (mmol/(h*L))	AST (mmol/(h*L))	BIL (mmol/L)	CT (umol/L)	LDH (U/L)
Eu	0.95±0.19	0.43±0.04	0.25	141.1	276±89
NEu	1.31±0.07	0.62±0.02	3.14	160.5	276±121
Control	0.73±0.31	0.6±0.01	2.71	135.6	196±67