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Supplementary Information

Metal Nanostructures with Magnetic and Biodegradable Properties for Medical Applications

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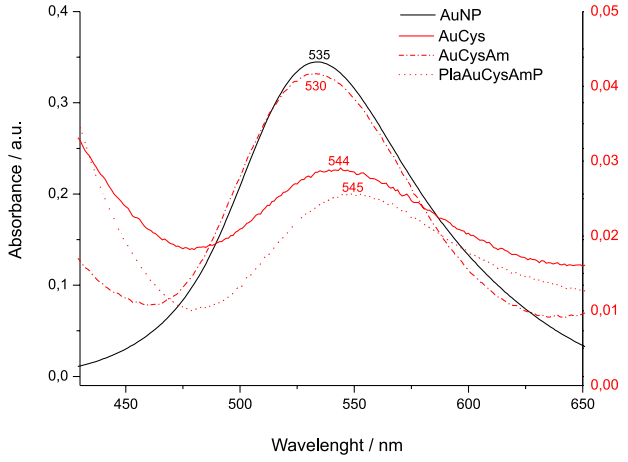

Figure S1. UV-Vis spectra of the nanoparticle suspensions: AuNP (reference, 535 nm), AuCys (Au with cysteine), AuCysAm (Au with cysteamine) and PLAAuCysAmPEG (Au with PLA, cysteamine and PEG–SH).

TGA analysis of the sample PLA6-AuCysAmPEG–SH

The content of PLA6 used in the preparation (Table 2 from the main article) of the PLA6-AuCysAmPEG–SH sample was 5.6 mg and the residue contained in the pristine PLA, as verified by thermogravimetry analysis (TGA) was 1.17 wt.%. So, by subtracting 1.17 wt.% of residue from the amount of the used PLA6 in the PLA6-AuCysAmPEG–SH formulation, the pure used PLA content was calculated as 5.5 mg. The sample PLA6-AuCysAmPEG–SH was prepared with 1.0 mg of $HAuCl_3$, in which 0.5 mg was only Au. By taking into account the mass of Au employed in the reaction and the PLA mass (5.5 mg, residue free mass), the Au/PLA weight ratio in the reaction was 1/11. By the TGA analysis of 1.806 mg of PLA6-AuCysAmPEG–SH sample, the residue was 7.86 wt.%, it means that the sample was composed by 1.664 mg of PLA and 0.142 mg of residue.

It is not possible, in this case, to refer the residue only as Au because the other components (PEG–SH and cysteamine) were not analyzed separately. It is preferable refer the 7.86 wt.% of residue as inorganic products (IP). Then, the IP/PLA weight ratio was 1/11.7 and by comparing this ratio with that of the formulation (1/11), the difference is 0.7 that could be attributed to the residues from PEG–SH and cysteamine, signifying that all Au^{+3} used in the synthesis was reduced to Au^0.

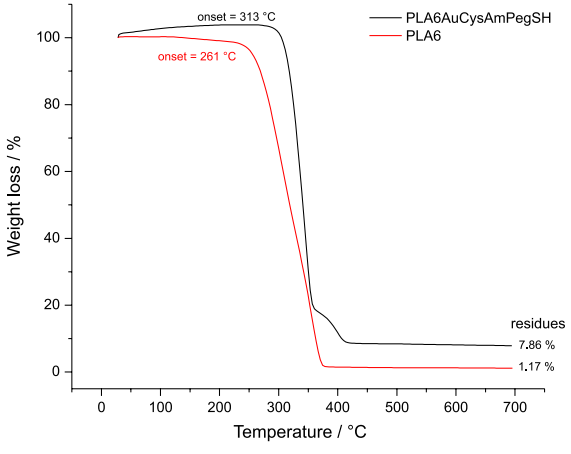

Figure S2. Thermograms of the samples: PLA 6 and PLA6-AuCysAmPeg–SH.

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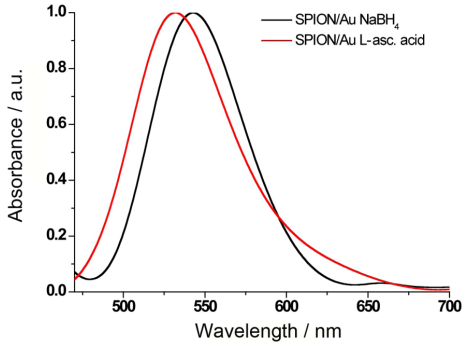

Figure S3. Normalized UV-Vis spectra of SPION@Au nanoparticles obtained by reduction with $NaBH_4$ and l-ascorbic acid, respectively.