

Supporting Information

Magnetic nanoparticle-based hydrogels as reliable platforms to investigate magnetic interactions

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Figure S1. TEM images of the polymer-coated nanoparticles with dodecylamine or octylamine as side chains and different amounts of polymer: 100 μ L and 400 μ L and of the scale-up procedure. All the samples shown have been coated via magnetic stirring (MS).

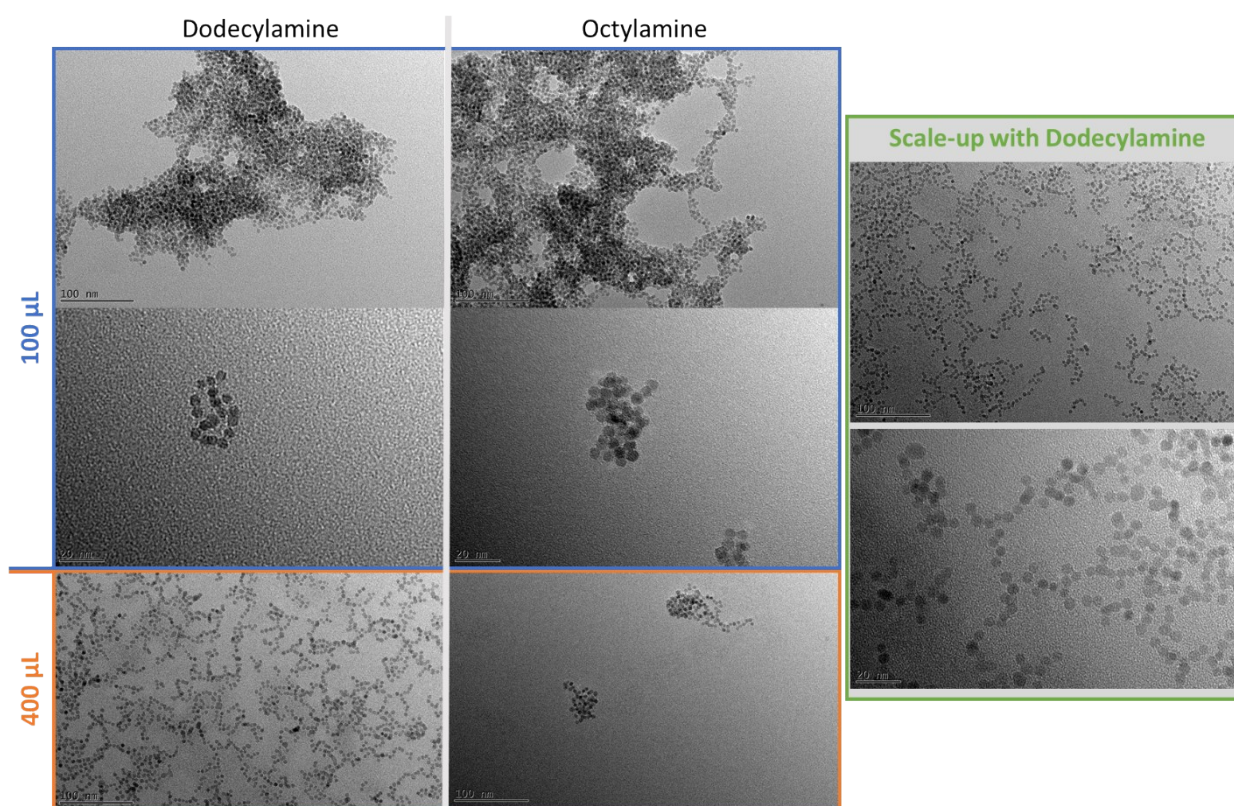
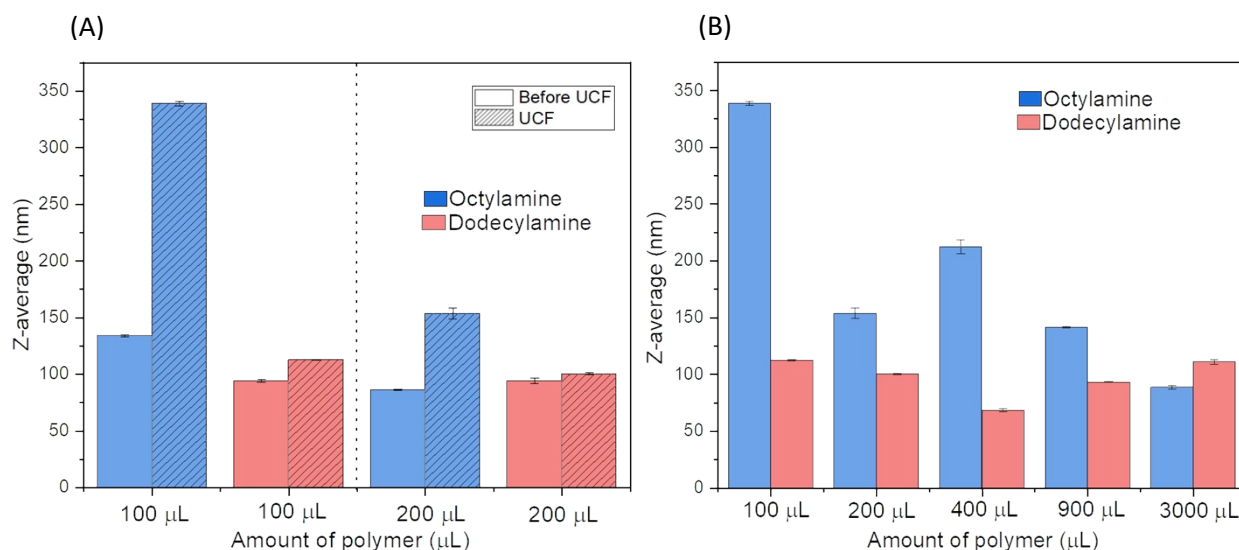


Figure S2. Hydrodynamic sizes of the polymer-coated NPs using the ultrasonic bath measured by DLS, before and after the ultracentrifugation step (A) and of all the samples after ultracentrifugation (B). The results are comparable to the ones described for the magnetically stirred polymer-coated NPs.



The error bars represent the standard deviation determined from triplicate DLS measurements.

Table S1. Polymer-coating conditions and amount of monomer. The polymer concentration is 0.5 M with respect to the monomer units.

Sample	Nanoparticle concentration (mg/mL)	Nanoparticle volume (mL)	Polymer Volume (mL)	Monomer (per nanoparticle/per nm ²)
5 nm IONPs	18.8	0.3	0.1	1.4/0.02
			0.2	2.8/0.03
			0.4	5.6/0.07
			0.9	12.6/0.16
			3	42/0.53
Scale-up	18.8	3	4	4.2/0.05

Figure S3. Hydrogels formed from the scale-up polymer-coated NPs (with dodecylamine) after 24 h upon the addition of different amounts of 2 M $\text{Ca}(\text{NO}_3)_2$ solution. TEM of the resulting hydrogels prepared by drop casting the hydrogels on the TEM grid and drying under ambient conditions.

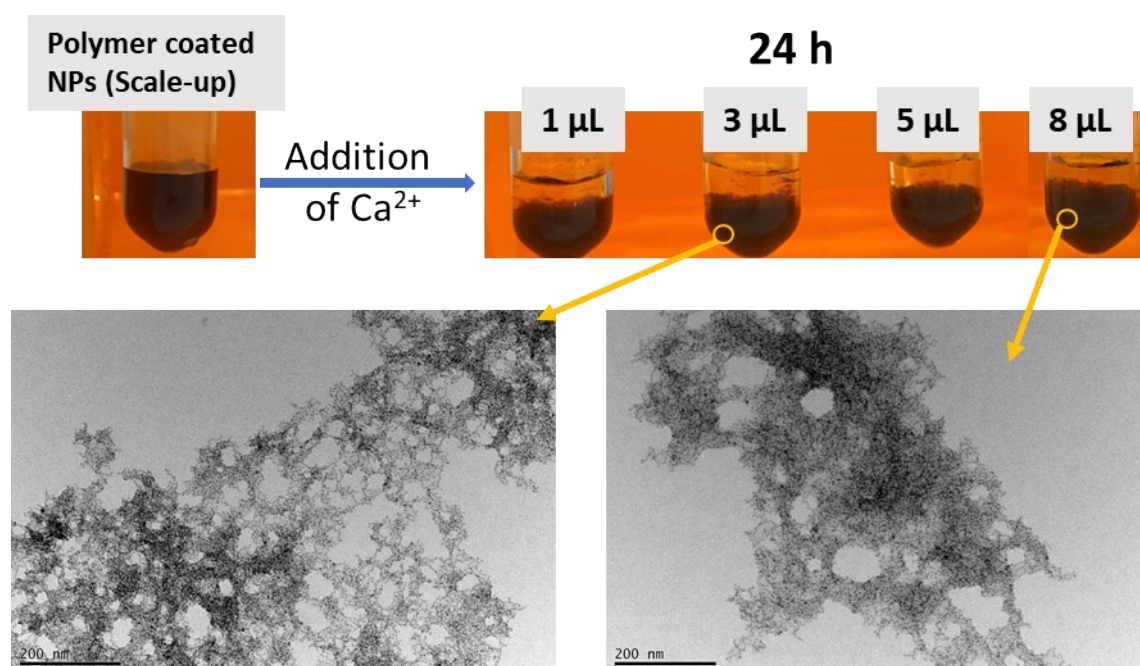


Figure S4. TEM of the hydrogels fabricated from the nanoparticles coated with 900 μL of PMA-Dod via magnetic stirring or ultrasonic bath.

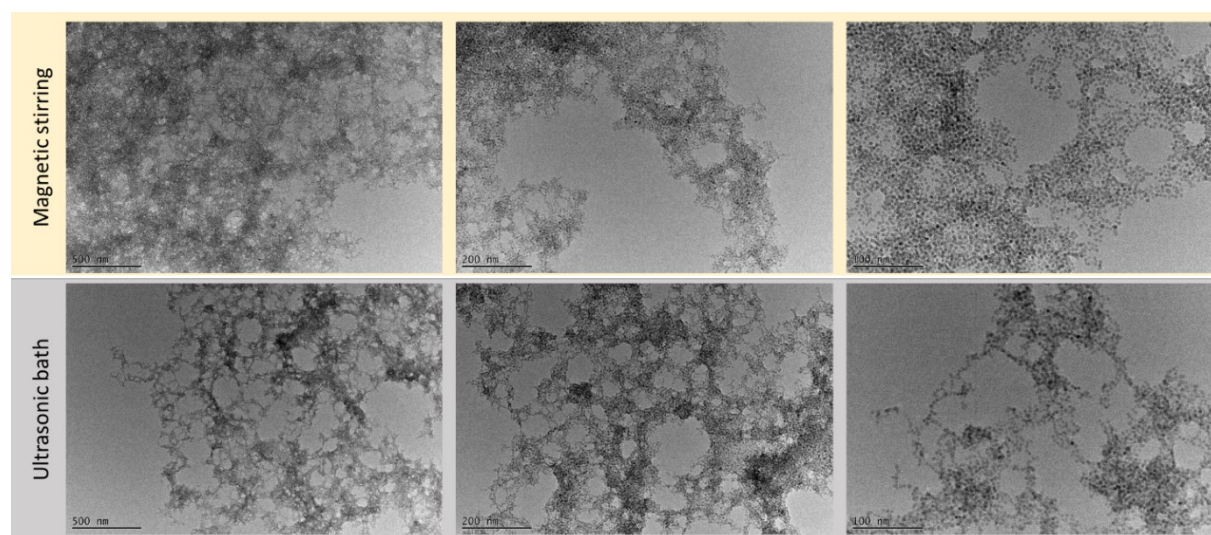


Figure S5. Hydrodynamic sizes of the magnetically stirred polymer coated NPs measured by DLS (left) and their blocking temperatures (right). The Z-average vs. polymer amount is shown here again to facilitate the comparison.

