

**Amphiphilic and magnetic behavior of Fe<sub>3</sub>O<sub>4</sub> nanocrystals**

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- 1) Preparation of magnetite nanocrystals
- 2) Dynamic light scattering of nanocrystals
- 3) GPC of the stabilizing polymer

1) Preparation of nanocrystals

Nanoscale iron oxide was prepared (following Asher et al.<sup>1</sup>) by the coprecipitation of ferric and ferrous ions in ammonium hydroxide solution. A 10.8 g portion of  $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$  (J. T. Baker) and 4.0 g of  $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$  (Sigma) were dissolved in 50 mL of water. The resulting solution was poured with vigorous stirring into 500 mL of a 1.0 M  $\text{NH}_4\text{OH}$  solution. The resulting black precipitate was collected with a magnet. A 500 mL portion of 1 M tetramethylammonium hydroxide (Aldrich) solution was added to the precipitate, and the mixture was sonicated for 1 h. After that, 1 g of our stabilizing polymer per 1 g precipitate was added. The product was separated by means of a magnet, washed with methanol and dried in a desiccator.

2) Dynamic light scattering of nanocrystals

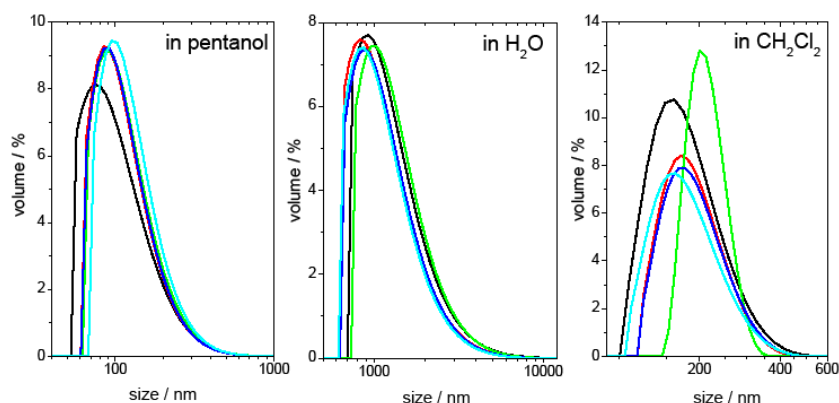


Figure S1. DLS-graphs of magnetite nanocrystals in three solvents; “size” in the diagrams is solvodynamic diameter

Table S1. Results of DLS measurements of magnetite nanoparticles in different solvents

Measurement	Solvodynamic diameter, nm		
	$\text{Fe}_3\text{O}_4$ in pentanol	$\text{Fe}_3\text{O}_4$ in $\text{H}_2\text{O}$	$\text{Fe}_3\text{O}_4$ in $\text{CH}_2\text{Cl}_2$
1	231	3054	224
2	228	2467	224
3	217	2747	229
4	220	2364	232
5	224	2616	227
average	<b>224</b>	<b>2650</b>	<b>227</b>

- 3) Gel permeation chromatogram of the stabilizing polymer obtained using poly4-vinylpyridine as a standard.

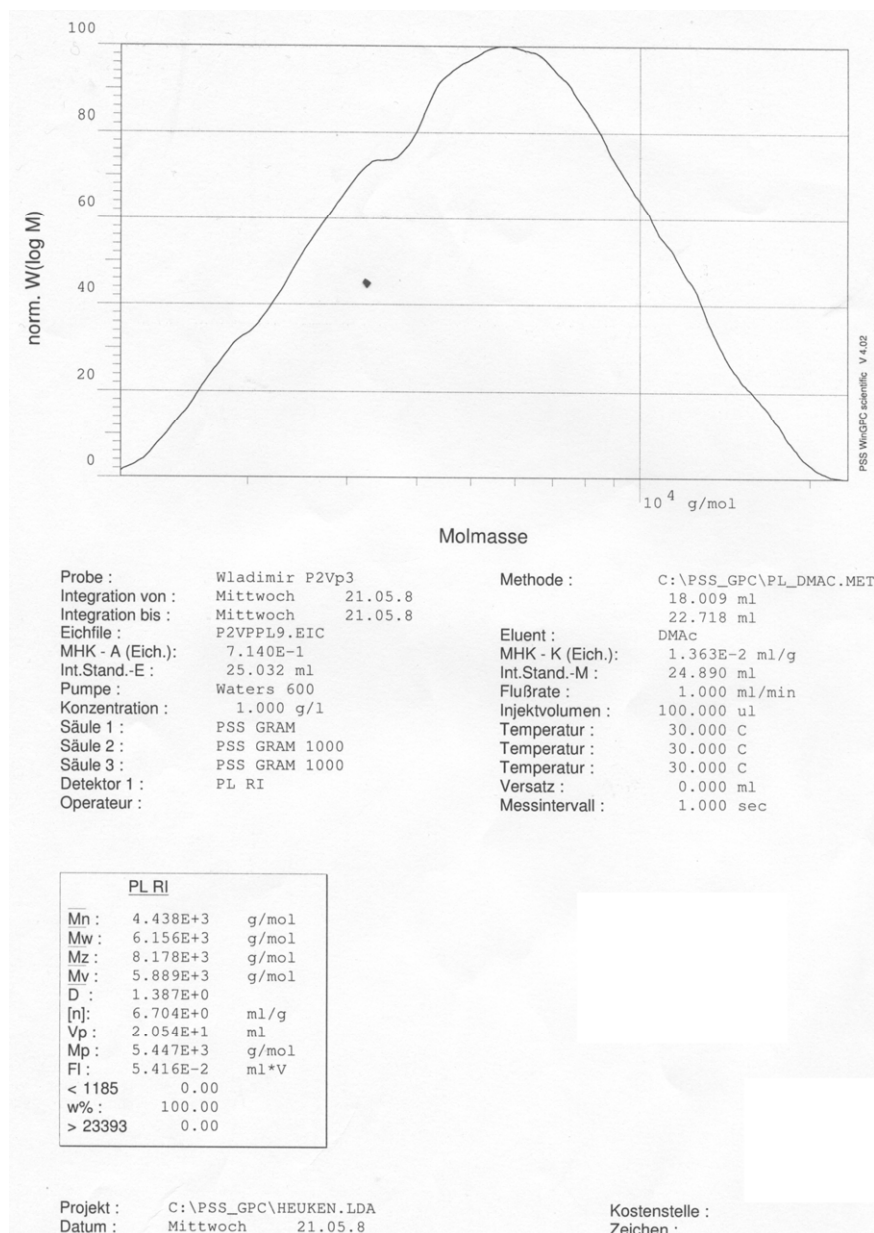


Figure S2: GPC of the stabilizing polymer prepared via controlled radical copolymerization of 4-vinylpyridine (60 mmol), monomer 2 (10 mmol), monomer 3 (15 mmol) and monomer 4 (15 mmol) using TIPNO-alkoxyamine (2,2,5-trimethyl-4-phenyl-3-azahexane-3-nitroxide, 1 mmol) as the initiator.<sup>2</sup>

## References

- (1) Xu, X.; Friedman, G.; Humfield, K. D.; Majetich, S. A.; Asher, S. A. *Chem. Mater.* 2002, **14**, 1249–1256.
- (2) D. Benoit, V. Chaplinski, R. Braslau, C. J. Hawker, *J. Am. Chem. Soc.* 1999, **121**, 3904.