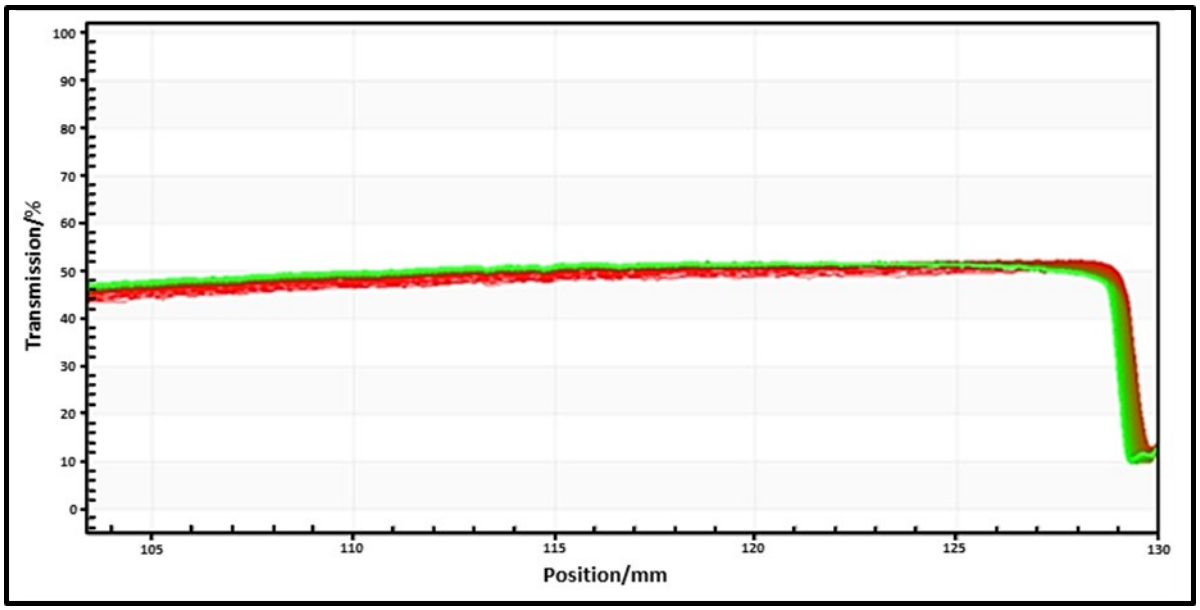
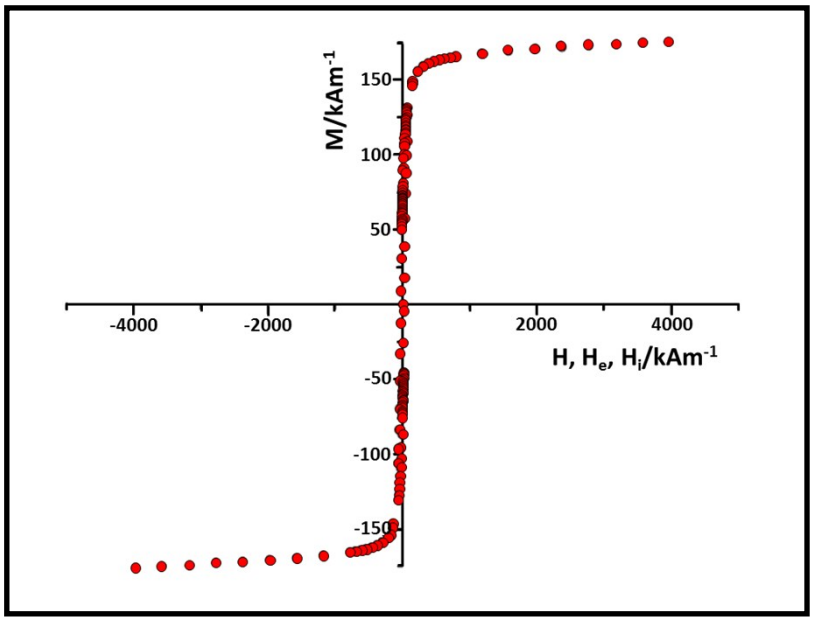
Supporting Information

Figure S1



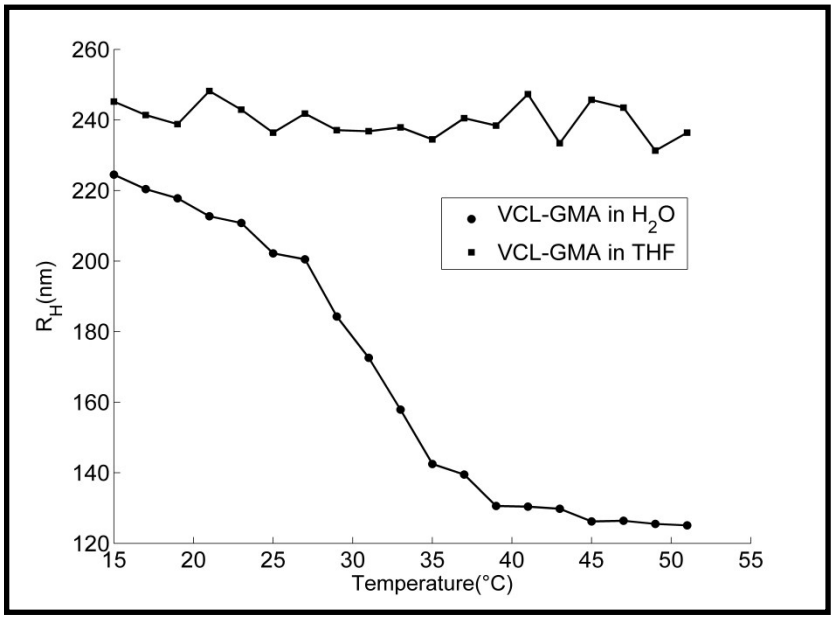
The dispersion stability analysis for the PVCL-GMA microgel with 2.5 mol% BIS is shown exemplary. The color coding stands for: red, the beginning of the experiment and green, for the end of the experiment. The difference in transmission after the experiment was only 7%, which implies that the particles were still stable in the solvent.

Figure S2



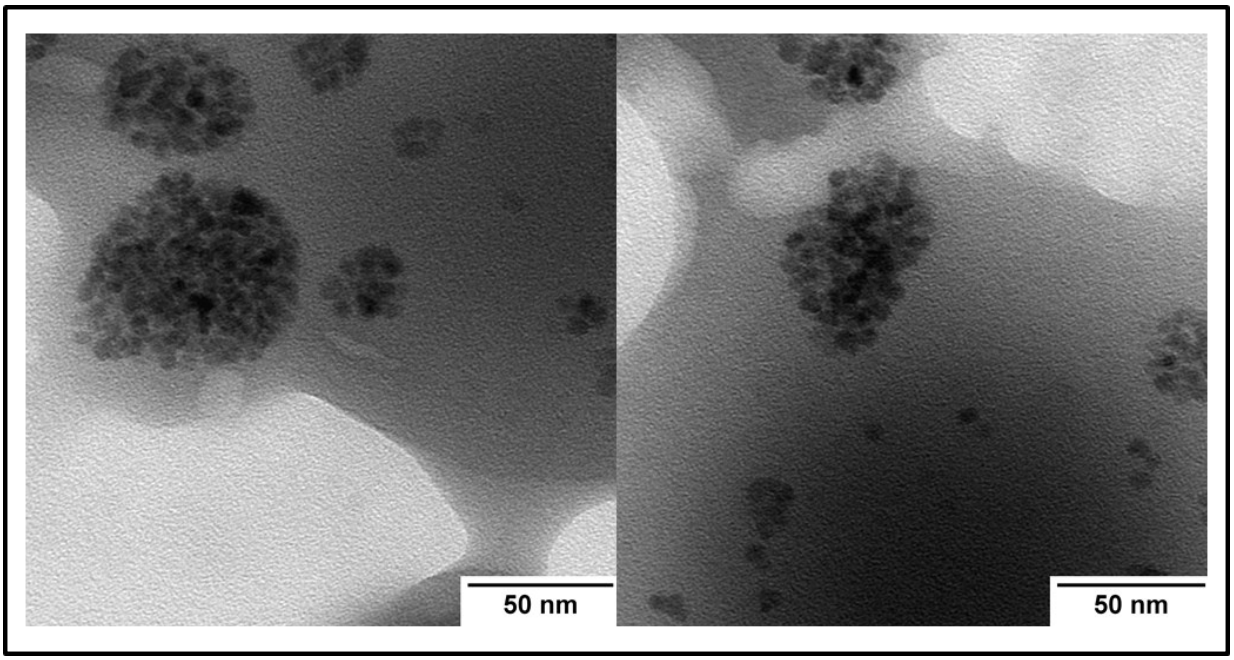
Hysteresis curve measured at 2 K for the oleic acid coated magnetite nanoparticles. The saturation magnetisation was found to be 32.06 emu/g.

Figure S3



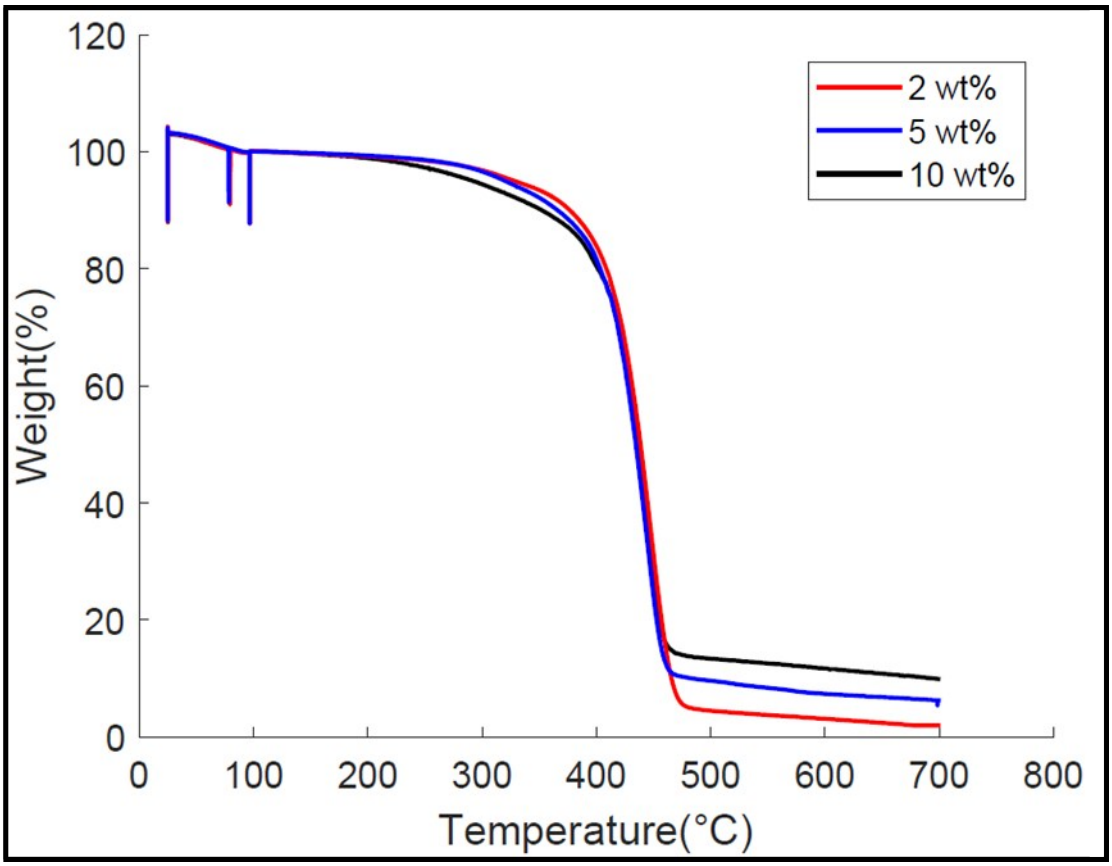
The temperature trends measured in water and THF with DLS for the PVCL-GMA microgel with 2.5 mol% BIS are shown. The data points shown here are averaged over 3 consecutive experiments.

Figure S4



Close-up on a magnetite nanoparticle cluster inside a VCL-GMA microgel with 4.5 mol% BIS and 10 wt% loading degree.

Figure S5



TGA measurements of the microgels with 2.5 mol% BIS and theoretical nanoparticle loading degree of 2, 5 and 10 wt%. The experimentally found values are shown in the table below.

Crosslink concentration /mmol	Theoretical Loading degree /wt%	TGA residual mass at 700 °C (wt%)
1	2	2.13
	5	5.43
	10	10.88
2.5	2	2.00
	5	5.98
	10	11.07
4.5	2	2.67
	5	5.86
	10	11.23