Supporting Information: Exploring Water in Oil Emulsions simultaneously stabilized by solid hydrophobic Silica Nanospheres and hydrophilic soft PNIPAM Microgel

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S1 particle density

The following function describes the dependence of the reciprocal total suspension density ρ_{tot} of the particle mass fraction x_{p}. The total mass of the dispersion m_{tot} is the addition of the mass of the liquid m_{l} and the mass of the solid dispersant $m_{\mathrm{p,tot}}$:

$$\frac{1}{\rho_{\mathrm{tot}}} = \frac{1}{\rho_{\mathrm{l}}} - \frac{\rho_{\mathrm{p}} - \rho_{\mathrm{l}}}{\rho_{\mathrm{p}} \cdot \rho_{\mathrm{l}}} x_{\mathrm{p}} \tag{S1}$$

With the particle mass fraction x_p is defined as $x_\mathrm{p} = \frac{m_\mathrm{p,tot}}{m_\mathrm{tot}}$. ρ_p is the desired density of the solid part and ρ_l is the density of the liquid, respectively. ρ_p was determined from the slope of the reciprocal total density curve.

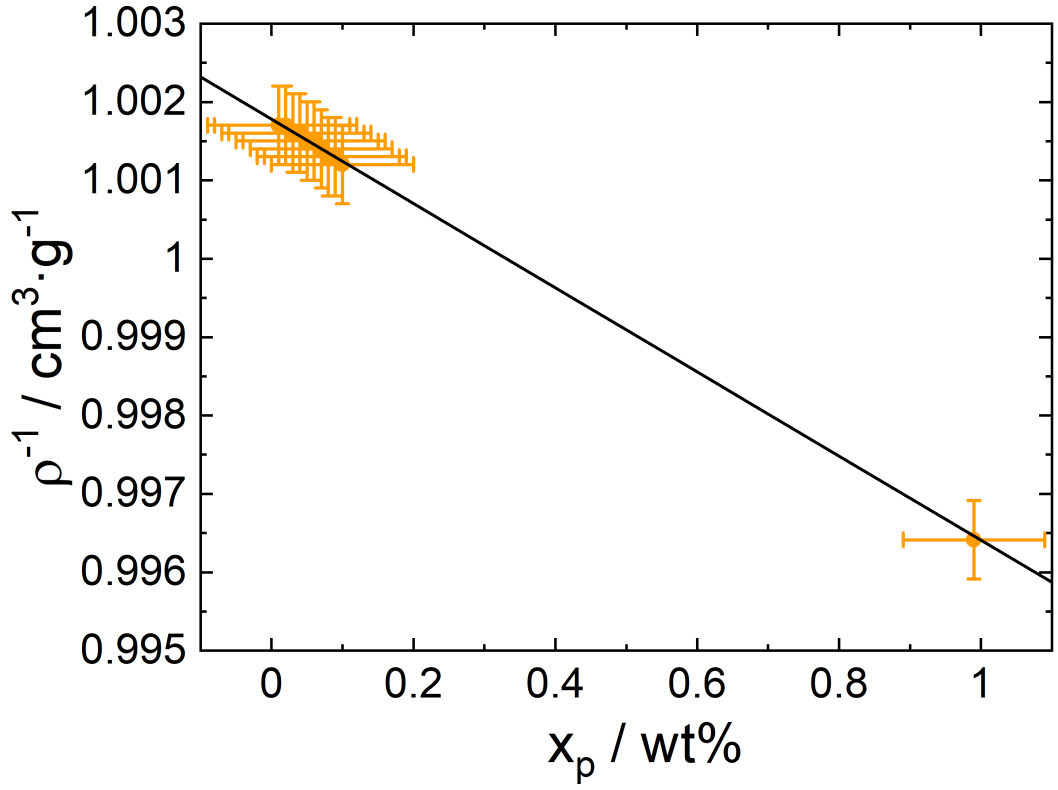

Figure S1: Measured reciprocal density of the pristine LudoxTM40 dispersion in water. The single particle density is calculated using eq. S1 from the slope. The error bars were estimated regarding the accuracy of weighting in the particle dispersion. The value for the density obtained from the fit is $\rho = (2.15 \pm 0.02)\ \frac{\mathrm{g}}{\mathrm{cm}^3}$

S2 Microgel Durability Test

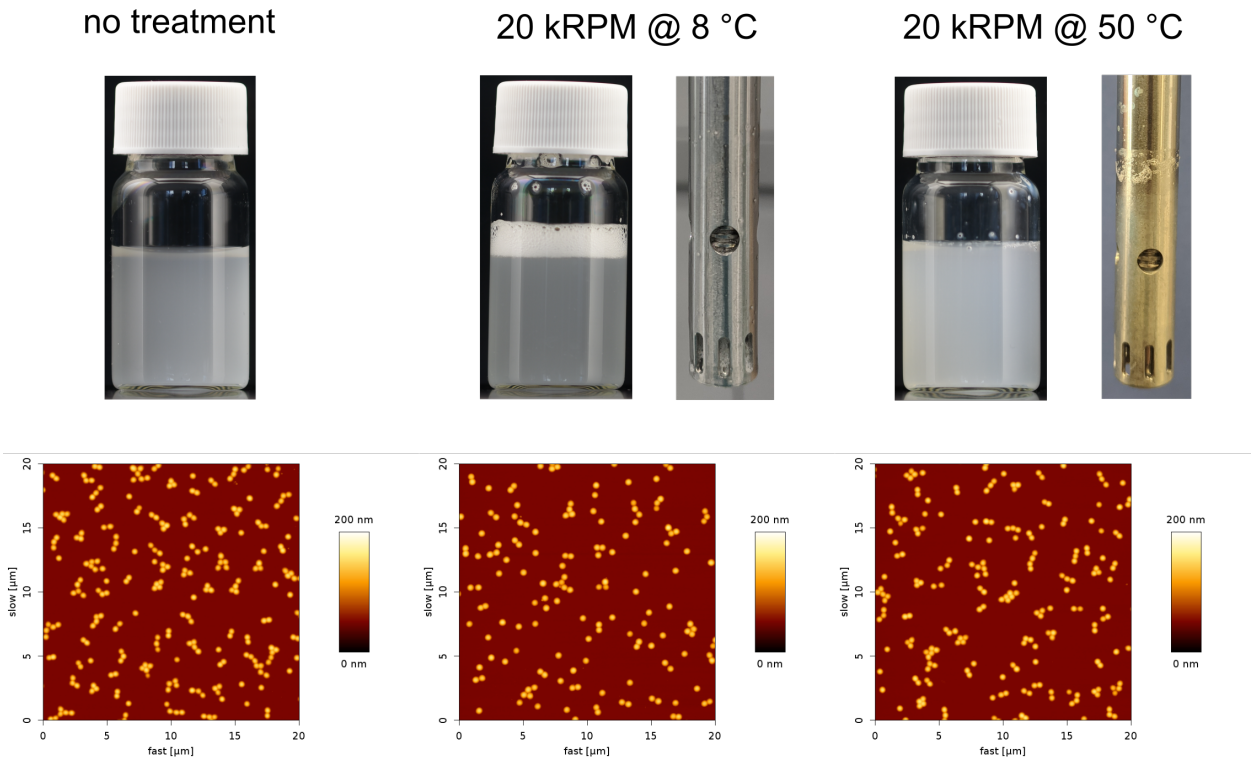

Figure S2: In order to test the durability of the soft microgel (MG) against stirring with the Ultra Turrax homogenizer MG solutions were stirred (5 min, 20 kRPM) at 8 °C and 50 °, respectively and compared to a sample with no treatment. The amount of MG was 10 mg in a volume of 12.55 ml, which represents the concentration of the prepared emulsions. Heavy foaming occured during the preparation at 8 °C while only a low amount of instantly collapsing foam was seen during stirring at 50 °C. In both cases the stirrer tip stayed clean. Only a low amount of foam or aggregated MG accumulated on the place where the unstable foam collapsed at 50 °C. The corresponding AFM pictures taken from a spin coated particle layer (selection out of at least 4 scanned spots out of 2 prepared samples) show no visible damage to the MGs.

S3 Redispersability after Sedimentation of Emulsions

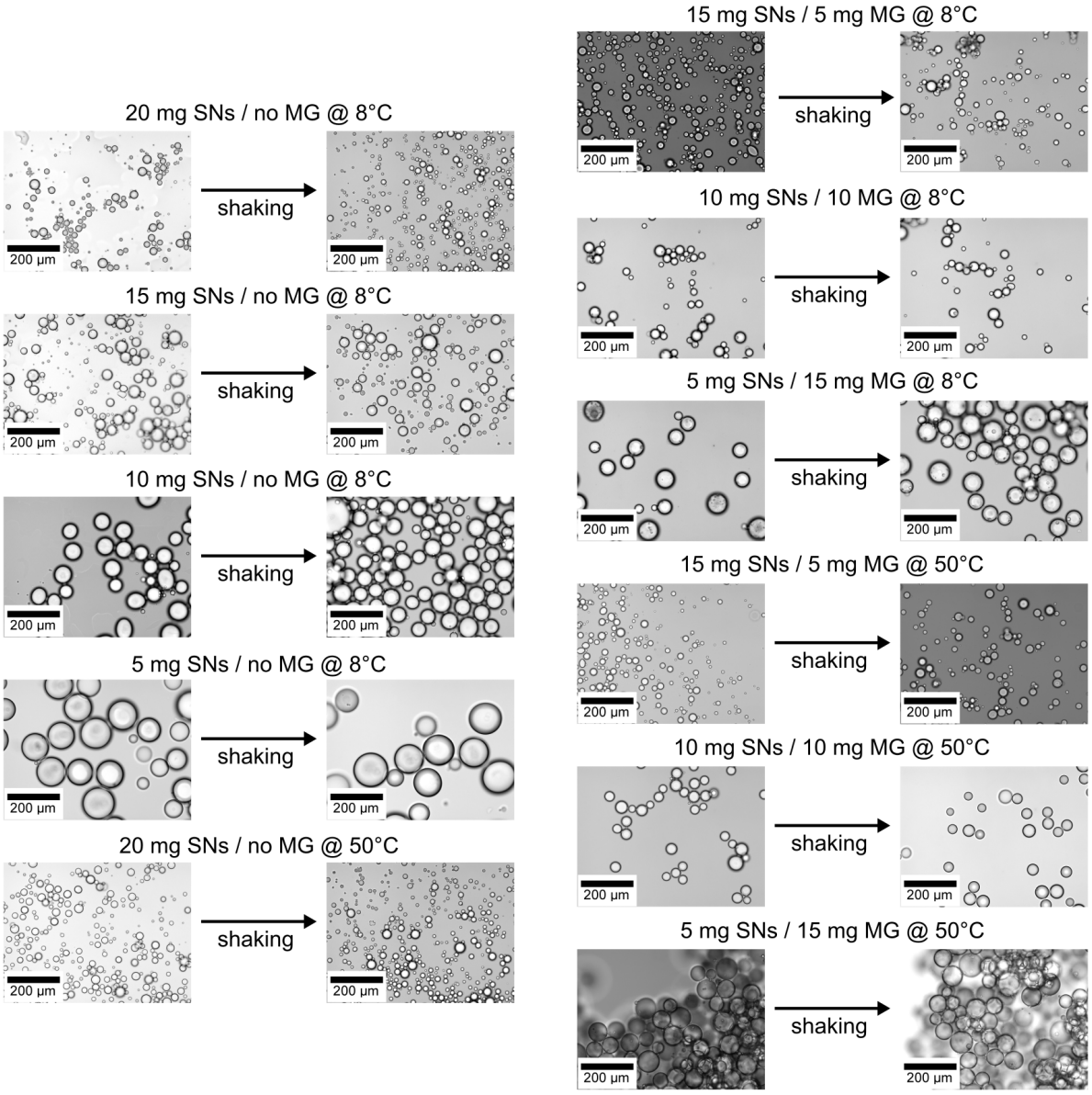

Figure S3: For every sample microscopy images were taken directly after preparation and after letting the emulsion sediment down and shake the emulsion up again for several times. Sedimentation and gentle shaking did not harm the droplets: The droplets stay stable during sedimentation and are easily residpersible without noticeable difference neither in droplet size nor shape and no formation of an excess-water phase.