Studying Orthogonal Self-Assembled Systems:
Phase Behaviour and Rheology of Gelled Microemulsions

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– Supporting Information –

Solubility of 12-HOA in n-decane

We saw during the rheology experiments that solvent is expelled out of a 12-HOA gel upon mechanical strain. Hence, we prepared in a test tube 3 ml of the binary gel n-decane / 12-HOA with 5.0 wt.% gelator (η = 0.050) and centrifuged it at room temperature with 3500 rpm for about 60 min. This treatment resulted in a compact gel layer at the bottom of the test tube and a supernatant liquid layer of n-decane. To study whether monomeric 12-HOA was dissolved in the supernatant we decanted the latter (yielding 0.9 ml) and measured its density with a DMA 5000 M density meter from Anton Paar. We obtained a value of 0.73018 g/cm³ (at 20 °C) while for the density of pure n-decane we measured 0.72994 g/cm³. Afterwards we used the decanted n-decane* to prepare a H₂O – n-decane* – C₁₀E₄ microemulsion and measured the phase boundaries (Fig. 1). The phase transition temperatures shifted by about 0.4 K down to lower temperatures compared to the phase diagram of the microemulsion with pure n-decane. Together with the observed density increase this shows that at least a small amount of the gelator 12-HOA monomerically dissolves in n-decane.
Fig. 1  $T$-$\gamma$ phase diagram of the microemulsion $\text{H}_2\text{O} - n$-decane – $\text{C}_{10}\text{E}_4$. We first employed pure $n$-decane (triangles) and then the $n$-decane which we had obtained as supernatant when centrifuging a $n$-decane / 12-HOA binary gel with 5 wt.% gelator (stars). Equal volumes of water and oil were used, i.e. $\phi = 0.05$. 

Electronic Supplementary Material (ESI) for Soft Matter
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