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 ($\eta = 0.050$) 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/cm^3 (at 20 °C) while for the density of pure *n*-decane we measured 0.72994 g/cm^3. Afterwards we used the decanted *n*-decane* to prepare a H_2O – *n*-decane* – $C_{10}E_4$ 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.

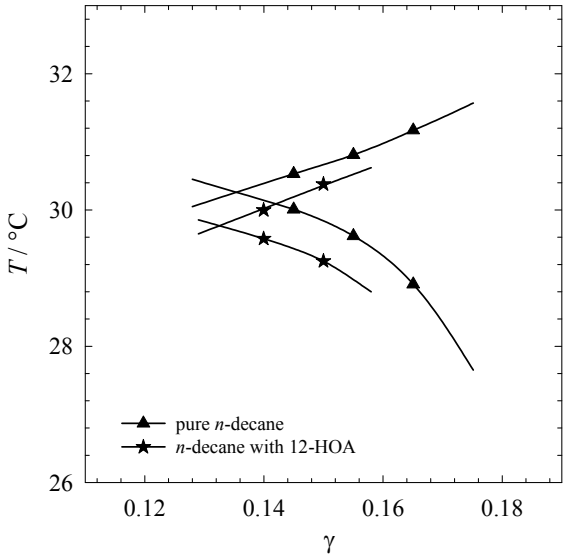

Fig. 1 *T*-γ phase diagram of the microemulsion H_2O – *n*-decane – $C_{10}E_4$. We first employed pure *n*-decane (triangles) and then the *n*-decane which we had obtained as supernatant when centrifuging a *n*-decane / 12-HOA binary gel with 5 wt.% gelator (stars). Equal volumes of water and oil were used, *i.e.* $\phi = 0.05$.