Electronic Supplemental Information: "Structuralization of magentic nanoparticels in 5CB liquid crystals"

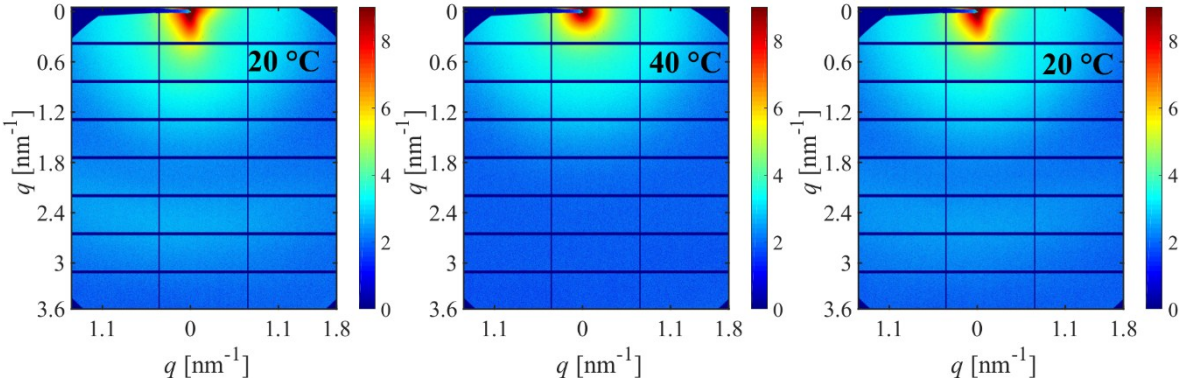

Figure S1: Two-dimensional SAXS patterns of sample B at T = 20 °C, 40 °C and after cooling back to T = 20 °C.

Fig. S1 shows the two-dimensional SAXS pattern of sample B at different temperatures. Similar to sample A, the transition from nematic to isotropic for heating and its reverse can be seen. Due to the lower particle concentration, the effect of alignment of the aggregates is lower than for sample A but qualitatively similar.

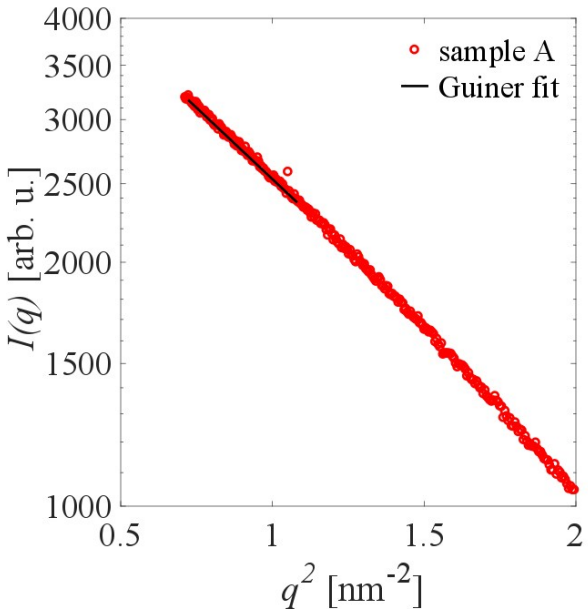

Fig. S2: Guinier plot of the small particle in sample A at T = 40 °C. Black solid line is the corresponding fit.

In order to check if the SAXS curves in the mid-q range correspond to that of a small particle species, the Guinier plot (q^2 vs log($I(q)$)) was analyzed (Fig. S1). As can be seen, there is a linear slope, indicating the presence of a particle form factor.

Refinement of this data was done using the Guinier approximation, $I(q) = I(0) \exp(-R_g^2 q^2/3)$, where $I(0)$ denotes the extrapolated forward scattering at zero angle and R_g the radius of gyration [1]. The Guinier analysis yields $R_g = 1.56$ nm, which is in accord with the other results.

References

[1] A. Guinier, *Ann. Phys. (Paris),* 1939. **11**, 161-237.