Electronic Supplementary Material (ESI) for Soft Matter.

This file serves as a supplementary material for paper: "**Transient Evolution of Flow Profiles in a Shear Banding Wormlike Micellar Solution: Experimental Results and a Comparison with the VCM Model**" by Hadi Mohammadigoushki*[1], Alireza Dalili[1], Lin Zhou[2] and Pamela Cook[3]

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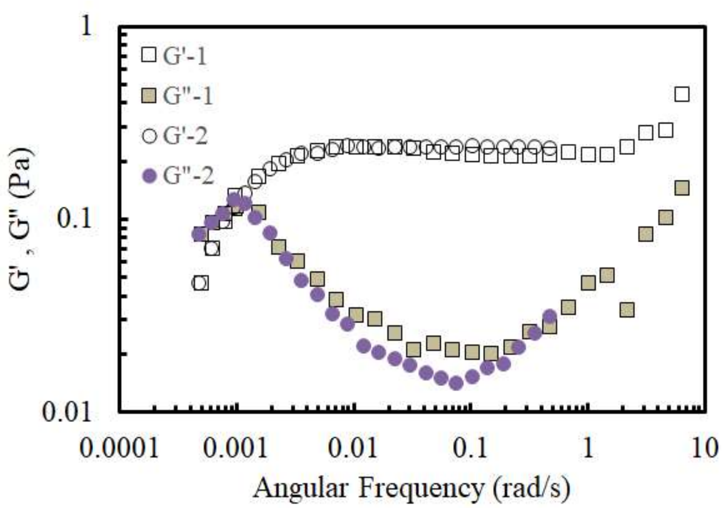

FIG. S1. Storage and loss moduli as a function of angular frequency for the wormlike micellar solution of CTAB/NaSal (9mM/9mM) obtained via two procedures. Experiment 1, corresponds to when angular frequency is gradually decreased, while in experiment 2, the frequency started at a very low value and was increased to its maximum value. Both procedures lead to similar results indicating evaporation has not played a role.

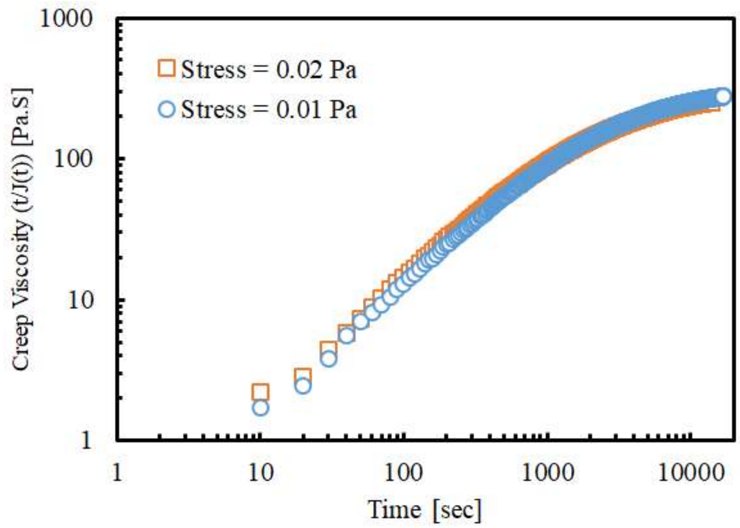

FIG. S2. Creep viscosity as a function of time for two imposed shear stresses of 0.02 and 0.01 Pa. The two experiment results are very close which confirms that the experiments are performed in the Linear Viscoelastic Regime (LVR). In addition, both experiments level off (after ~5 hrs) at a constant value, the terminal regime. According to Münstedt [J. Rheol. 58, 565 (2014)], the plateau in creep viscosity should be approximately the zero-shear rate viscosity of the fluid. Comparing this plateau with zero shear rate viscosity in the inset of Fig. 1b of the main paper shows good agreement between the measurements. Finally, the time required to reach this plateau is significantly long, thus confirming a long terminal relaxation time for this solution.

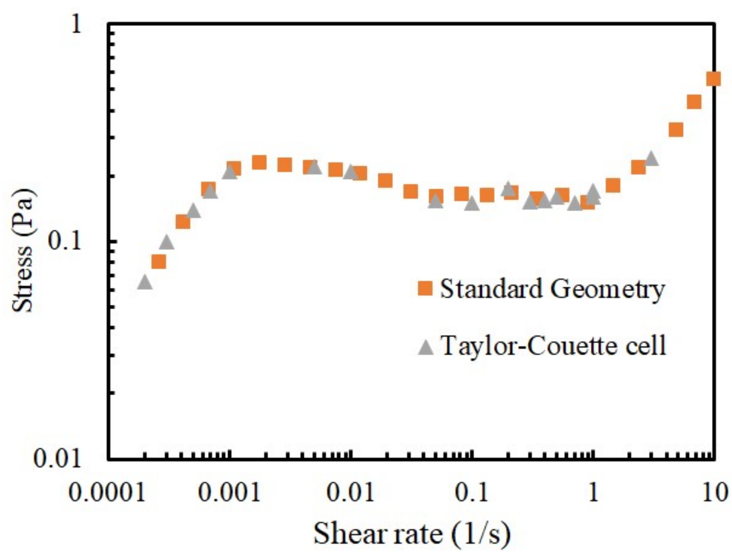

FIG. S3. Shear stress at the inner cylinder as a function of shear rate obtained from two experimental setups. To obtain these results, we performed step-shear (or startup of shear) experiments from rest to a range of imposed shear rates (10^{-4} -10 1/s) and monitored the shear stress as a function of time. The orange squares in Fig. S3 show the steady shear stress after such start-up of shear experiments. We note that after collecting about 4-5 data points with one sample, we replaced the fluid with a fresh sample. To ensure reproducibility, we have repeated last data point on each run with the fresh sample and results were repeatable. In addition, some of the data on Fig. S3 (gray triangles) correspond to the Rheo-PTV measurements in the TC cell. The steady stress data from those experiments also collapse to the flow curve obtained by the standard geometry.