

Electronic Supplementary Information

Chiral lyotropic chromonic liquid crystal composed of disodium cromoglycate doped with water-soluble chiral additives

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FFTEM (freeze-fractured transmission electron microscopy) observation

Method

The samples were sandwiched between 2 mm × 3 mm glass planchettes with untreated surfaces and quenched from N or N* phase at room temperature to -180°C by sudden immersion in liquid propane. They were subsequently fractured under high vacuum at -140°C by a freeze-etching system (BAF 060, BAL-TEC). The fractured surfaces were then deposited with a 2 nm-thick layer of platinum at an oblique angle (45°) and ≈ 20 nm of carbon layer (at 90°) to create the Pt-C replicas for TEM (CM10, Philips) observations. Images were taken with a TEM-mounted 1K × 1K Gatan Bioscan digital camera. The surfaces facing the platinum depositing direction appear darker and thus make the contrast in the TEM images. The images were analyzed using a free software ImageJ.

Results

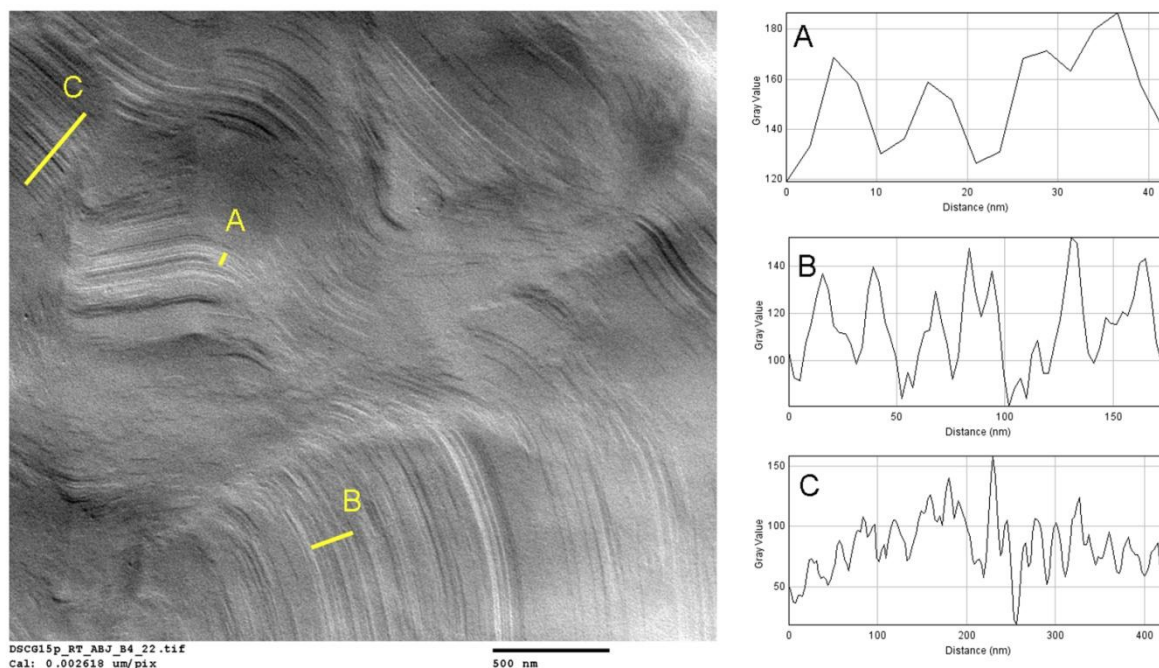


Fig. S1. Nematic (N) phase of 15 wt% DSCG/water (magnification 34000x). The height variation profiles along the A, B, C lines are also shown, with the mean stripe widths of 11.2 , 12.5, 14.7 nm, respectively.

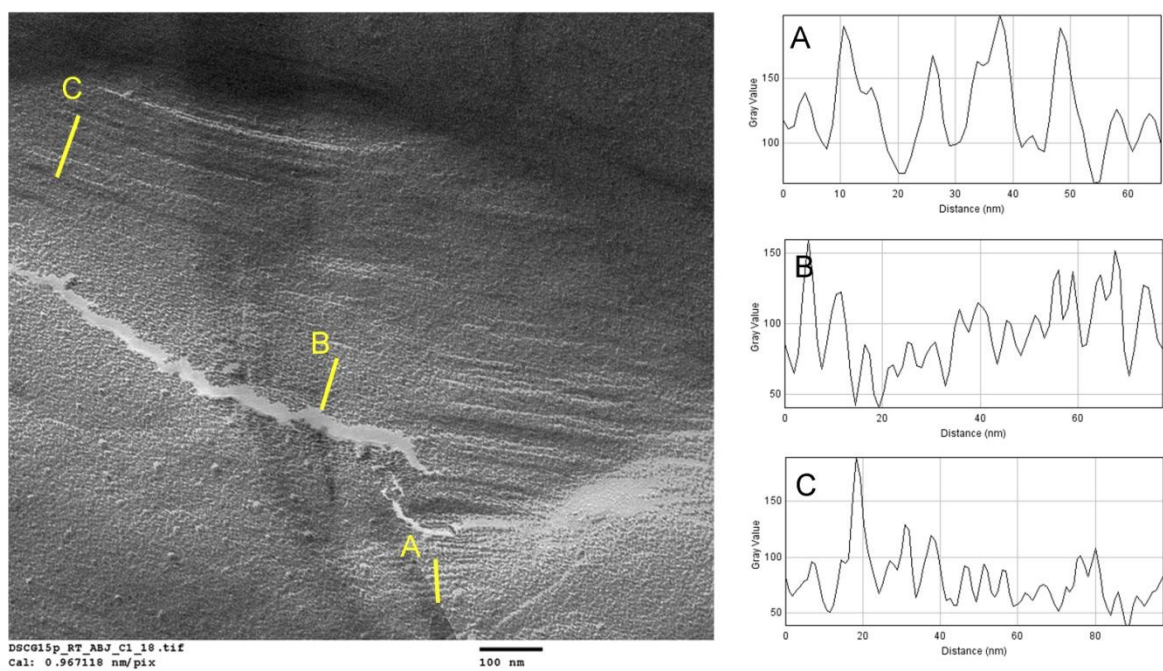


Fig. S2. Another sample of N phase of 15 wt% DSCG/water observed at a larger magnification (92000x). The height variation profiles along the A, B, C lines are also shown, with the mean stripe widths of 6.5, 5.0, 5.2 nm, respectively.

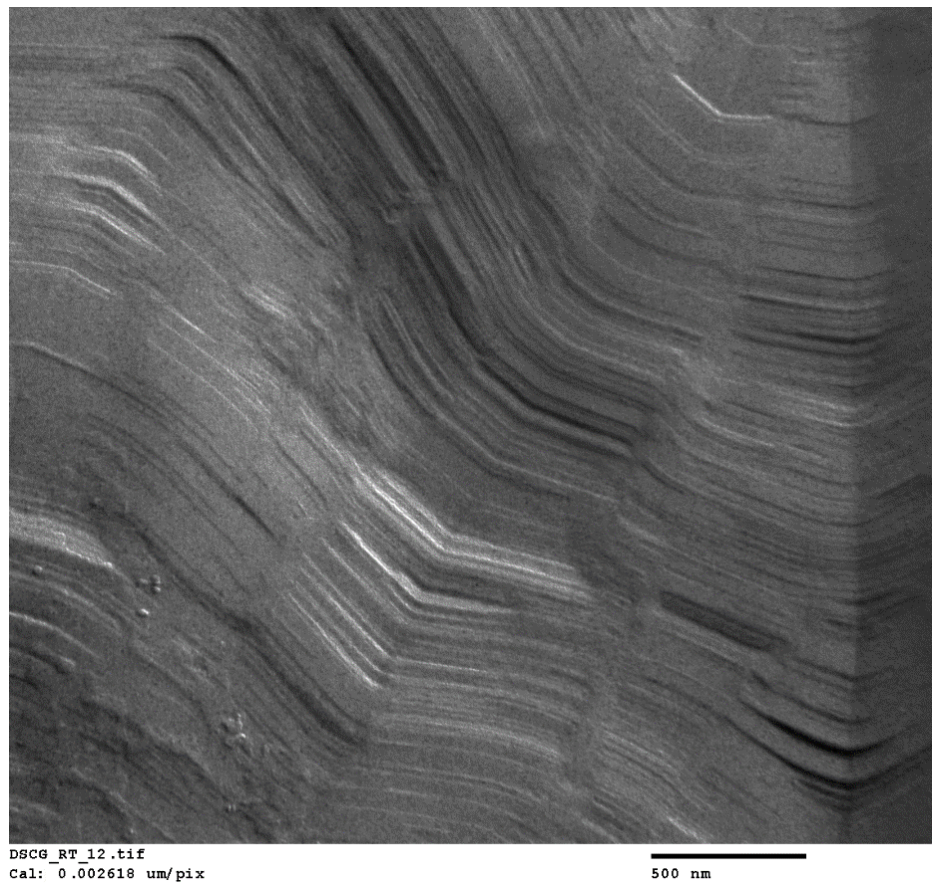


Fig. S3. The columnar (M) phase shows stronger stripe patterning, where the stripes are more regular, and tend to extend much longer along the column direction than in the N phase.

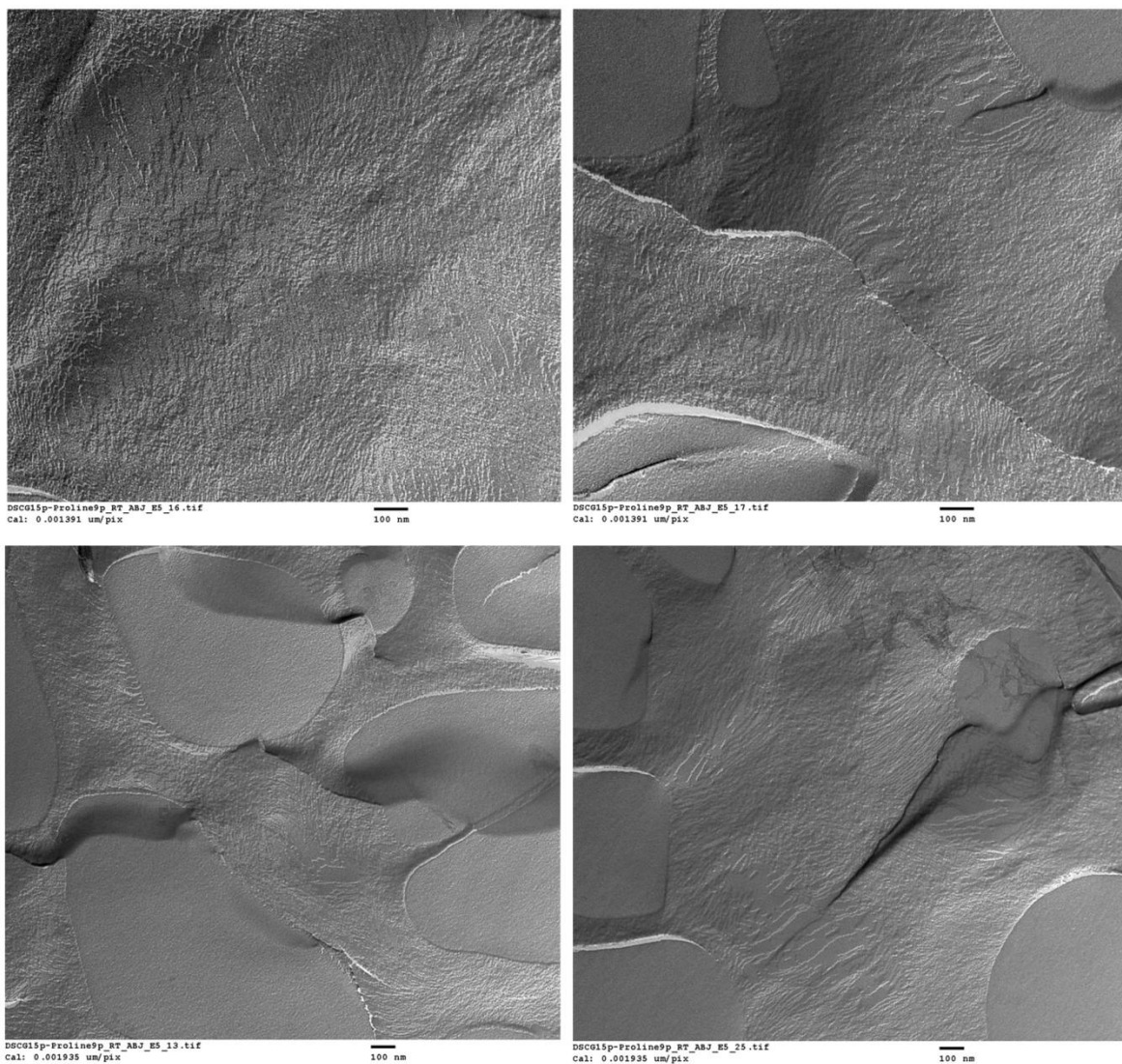


Fig. S4. Cholesteric (N*) sample of 9 wt% trans-4-Hydroxy-L-proline in 15 wt% DSCG/water observed at different positions. Comparing with the N samples, the aggregates/bundles of aggregates orient more randomly. Domains with no stripes were sometimes observed, although the reason behind is still unclear to us. Note that the N* pitch is 8.7 μm , which is very much larger than the dimension of the image.