

Supplementary Information

Flexoelectric behavior of bimesogenic liquid crystals in the nematic phase observation of a new self-assembly pattern at the twist-bend nematic and nematic interface.

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1. Additional Texture Images

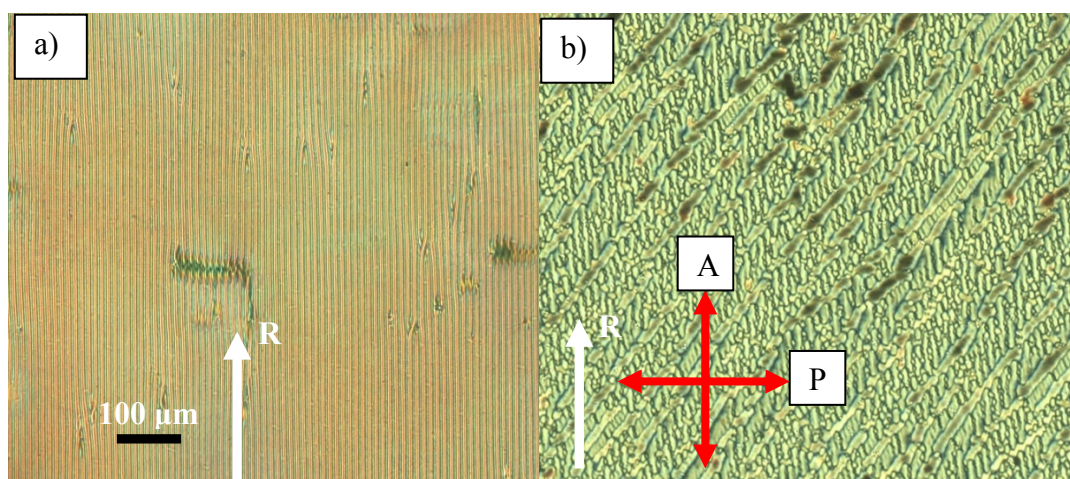


Figure ESI1: Textures obtained in the N_{tb} phase of CBC11CB in a planar aligned cell under crossed polarizers of a polarizing optical microscope (a) in the absence of chiral additive, length of black bar is $100\mu\text{m}$, white arrow depicts rubbing direction (R); (b) presence of 3% chiral agent R5011. Addition of the chiral agent dramatically affects the properties of the N_{tb} phase as seen from the non-uniform rope-like textures presented in Fig. ESI1(b). This is a topic for further investigations. The domains of opposite chirality [S1] are best studied in materials with negative $\Delta\epsilon'$, since in materials with $\Delta\epsilon' > 0$ the achievable contrast between the domains is limited by the freedericksz transition occurring at higher applied voltages.

2. Additional Figure

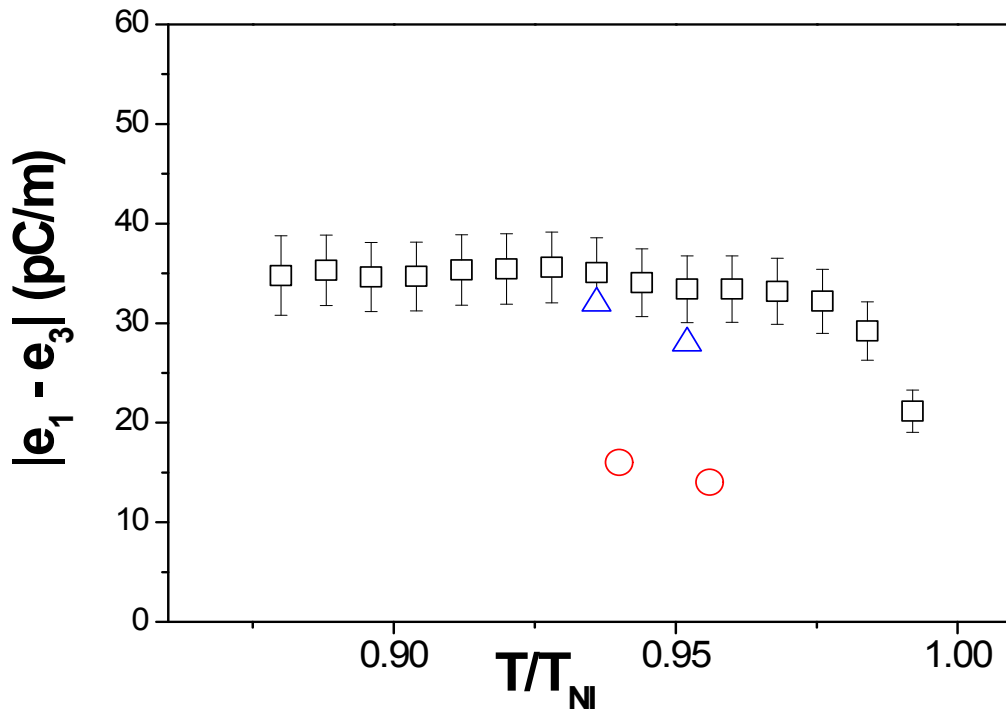


Figure ES12: The effective flexoelectric coefficient as a function of reduced temperature plotted for CBC11CB (black-open Squares). For comparison we have included the approximate values of $|e_1 - e_3|$ for the bimesogens FFO9OCB taken from Atkinson *et. al.*, Phys. Rev. E, 2012, **85**, 012701 [S2] (open blue triangles) and F3FE9ECB taken from Atkinson *et. al.*, Phys. Chem. Chem. Phys., 2012, **14**, 16377 [S3] (open red circles) for a few temperature points. Please note that the authors use $(e_s + e_b)$ notation in refs. [S2] and [S3] which is equivalent to $|e_1 - e_3|$ in our notation.

References

- [S1] V. P. Panov, R. Balachandran, M. Nagaraj, J. K. Vij, M. G. Tamba, A. Kohlmeier, and G. H. Mehl, *Appl. Phys. Lett.*, 2011, 99, 261903.
- [S2] K. L. Atkinson, S. M. Morris, F. Castles, M. M. Qasim, D. J. Gardiner, and H. J. Coles, Phys. Rev. E, 2012, **85**, 012701.
- [S3] K. L. Atkinson, S. M. Morris, M. M. Qasim, F. Castles, D. J. Gardiner, P. J. W. Hands, S. S. Choi, W.-S Kim and H. J. Coles, Phys. Chem. Chem. Phys., 2012, **14**, 16377.