Supporting Information

Effect of chain length in the terminal group on mesomorphic behavior of novel (-)-menthol-based chiral liquid crystal compounds with blue phase

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3.2 Mesomorphic properties

(iv) Comparison of compound O, series I and series II.

The free energy per unit length of a single disclination line *F* for a lattice of defects is expressed by four terms[7]:

$$F = a(T_{iso} - T)\pi R^2 + 2\sigma\pi R + \frac{1}{4}\pi K \ln(R_{\max} / R) - \pi(K_{22} + K_{24}) \quad \text{(S1)}$$

Herein, α is the constant including the Boltzmann constant, T_{iso} is the clearing point, T is a temperature near T_{iso}, K is the Oseen-Frank elastic constant concerning the splay, twist and bend distortions of the director, σ is the surface tension of the disclination core, R is the disclination core radius, R_{max} is the cut-off radius of the disclination core, and K_{22} and K_{24} are the elastic constants of the twist and saddle-splay distortions, respectively.