Electronic Supplementary Information

Achiral straight-rod liquid crystals indicating local biaxiality and ferroelectric switching behavior in the smectic A and nematic phases

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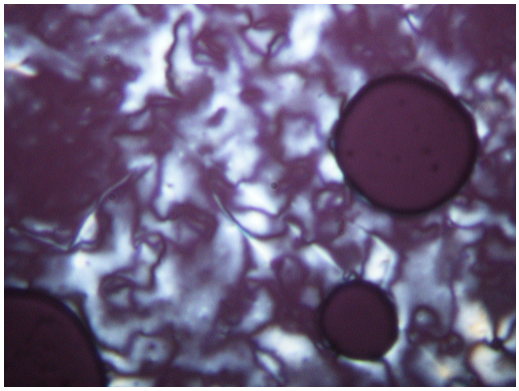

Fig. S1 The texture of the *N* phase of **1b** under an applied magnetic field (190 °C, the direction of magnetic field (3500 gauss) is perpendicular to the glass surface).

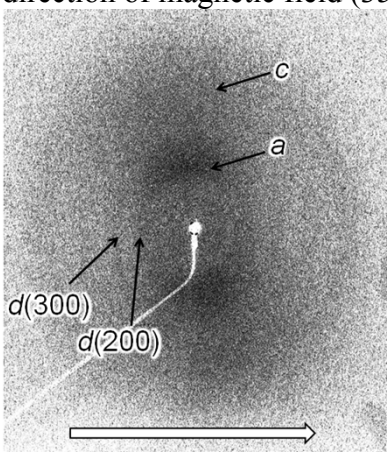

Fig. S2 2D-XRD profile of **1b** in the *N* phase (200 °C) under applying a magnetic field (3500 gauss). The interlayer distances (*d*(200) and *d*(300)) and the lateral repeat distances (*a* and *c*) are indicated with black arrows. The magnetic field was indicated with a large white arrow.

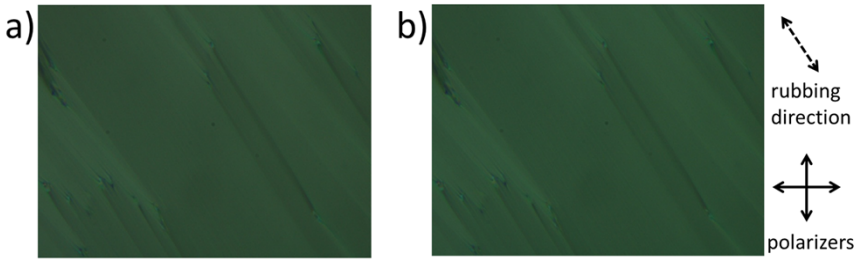

Fig. S3 Polarized light microphotographs of **1a** in the *SmA* phase (220 °C) at (a) 0 V and (b) +50V, respectively. The sample was sandwiched between two glass plates with ITO-thin layer covered with polyimide (cell gap: 5μm, ITO area: 10 mm x 10 mm). The arrows with broken and solid lines indicate the directions of rubbing and polarizers, respectively.

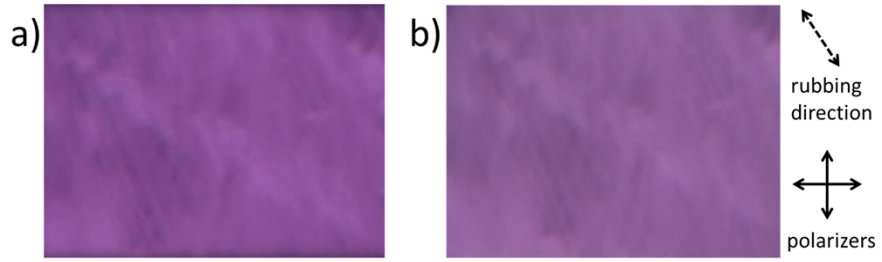

Fig. S4 Polarized light microphotographs of **1a** in the *N* phase (270 °C) at (a) 0 V and (b) +50V, respectively. The sample was sandwiched between two glass plates with an ITO-thin layer covered with polyimide (cell gap: 5μm, ITO area: 10 mm x 10 mm). The arrows with broken and solid lines indicate the directions of rubbing and polarizers, respectively.

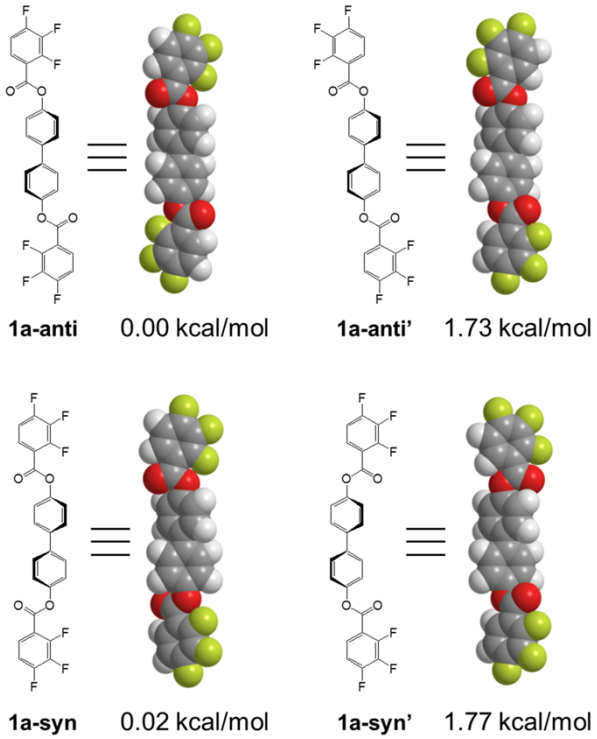

Fig. S5 Four stable conformers of **1a** obtained by geometry optimization using the density functional theory (DFT) method with B3LYP functional and 6-31G(d) basis set. As the result, **1a-anti** and **1a-syn** were obtained as the two stable conformers. The energies of conformers **1a-anti'** and **1a-syn'** are higher than those of **1a-anti** and **1a-syn**, respectively.