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Supporting information

HTP measurement of Chol6Azo

N*LC composed of 6.7 mg Chol6Azo and 101.3 mg E7 (mole ratio: 1/100) was used to measure the HTP of Chol6Azo. A wedge LC cell was made as previous work1,2 and illustrated in Fig S1a. The POM observation of the parallel disclination lines is shown in Fig S1b and the distance R between the two parallel disclination line could be calculated (R=562μm, 439μm, 433μm in Fig S1b). Combining related equations in Fig S1c, the HTP of Chol6Azo could be calculated (HTP=6.7μm^{-1}, 8.5μm^{-1}, 8.6 μm^{-1}). Besides, under a long time (5 minutes) UV irradiation lower than 15.0 mW cm^{-2}, the *trans*-Chol6Azo isomerized to the *cis*-Chol6Azo, the disclination lines moved to the thinner region and R was unchanged, so the HTP of the *cis*-Chol6Azo is nearly the same with the *trans*-Chol6Azo. With a strong UV irradiation more than 20.0 mW cm^{-2}, the disclination lines were covered with LC textures in seconds and the N*LC was disrupted into an isotropic phase. The HTP values[3] of the two chiral dopants are listed in Table S1.

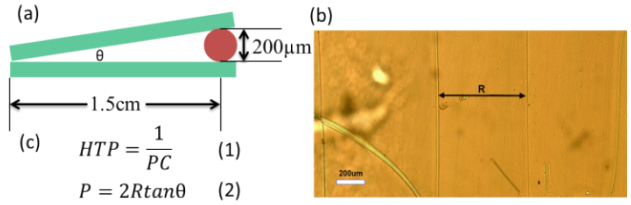

Fig. S1 HTP measurement of Chol0Azo in a N*LC (Chol6Azo and E7 at a mole ration of 1/100) (a) Schematic illustration of a wedge cell. (b) POM observation of the N*LC disclination lines. (c) Equations[4] to calculate HTP of Chol6Azo.

Table S1 The corresponding BP temperature range of the liquid crystalline composites prepared by doping Chol0Azo or Chol2Azo into N*LC.

Chiral Dopant	HTP (μm^{-1})
S811	11.0
trans-Chol6Azo	6.7~8.6
cis-Chol6Azo	6.7~8.6

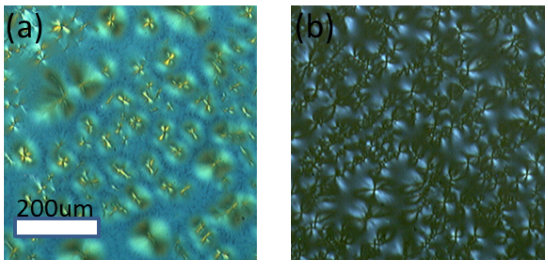

Fig. S2 Typical POM textures for two samples (a) sample A3 (60.7 wt% E7, 35.3 wt% S811 and 4.0 wt% Chol0Azo) at 29.3 °C. (b) sample C3 (60.7 wt% E7, 35.3 wt% S811 and 4.0 wt% Chol2Azo) at 33.1 °C, the cooling rate is 0.1 °C min^{-1}.

Table S2 The corresponding BP temperature range of the liquid crystalline composites prepared by doping Chol0Azo or Chol2Azo into N*LC.

Sample	Chol0Azo (wt%)	Chol2Azo (wt%)	T_{ISO-BP}(°C)	T_{BP-N*}(°C)	Temperature Range(°C)
A1	1.0	—	23.7	22.6	1.1
A2	2.0	—	—	—	—
A3	4.0	—	—	—	—
C1	—	1.0	28.9	27.6	1.3
C2	—	2.0	—	—	—
C3	—	4.0	—	—	—

T_{ISO-BP}: phase transition temperature from isotropic phase to BPs. T_{BP-N*}: phase transition temperature from BPs to N*LC.

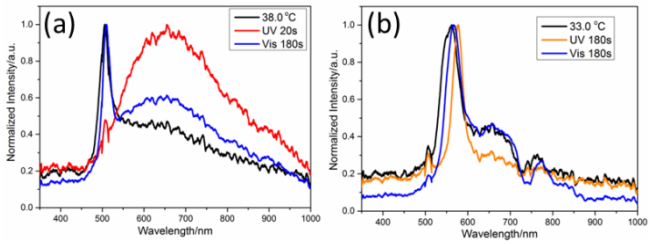

Fig. S3 Reflection spectra of sample B3 under UV and white light irradiation at two temperatures (a) 38.0 °C, (b) 33.0 °C.

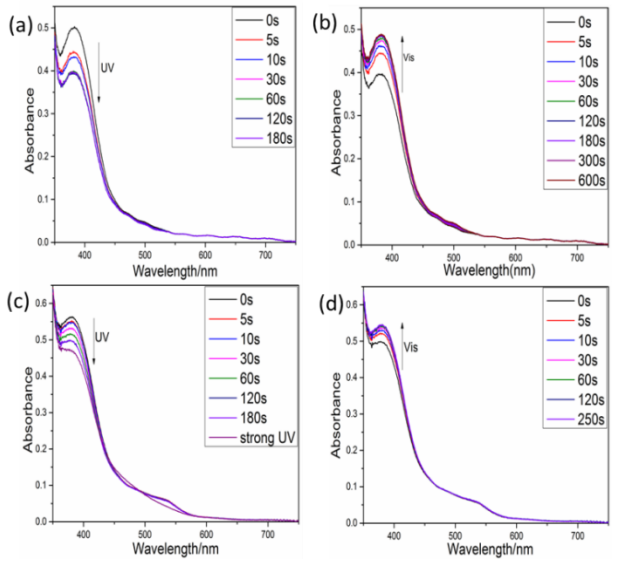

Fig. S4 UV-Vis absorption spectra of the sample B3: irradiating of the sample with (a) UV light and (b) white light at 38.0 °C, irradiating of the sample with (c) UV light and (d) white light at 33.0 °C.

References

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