

**Supplementary information to:**

**Photoresponsive behaviors of smectic liquid crystals tuned by an azobenzene chromophore**

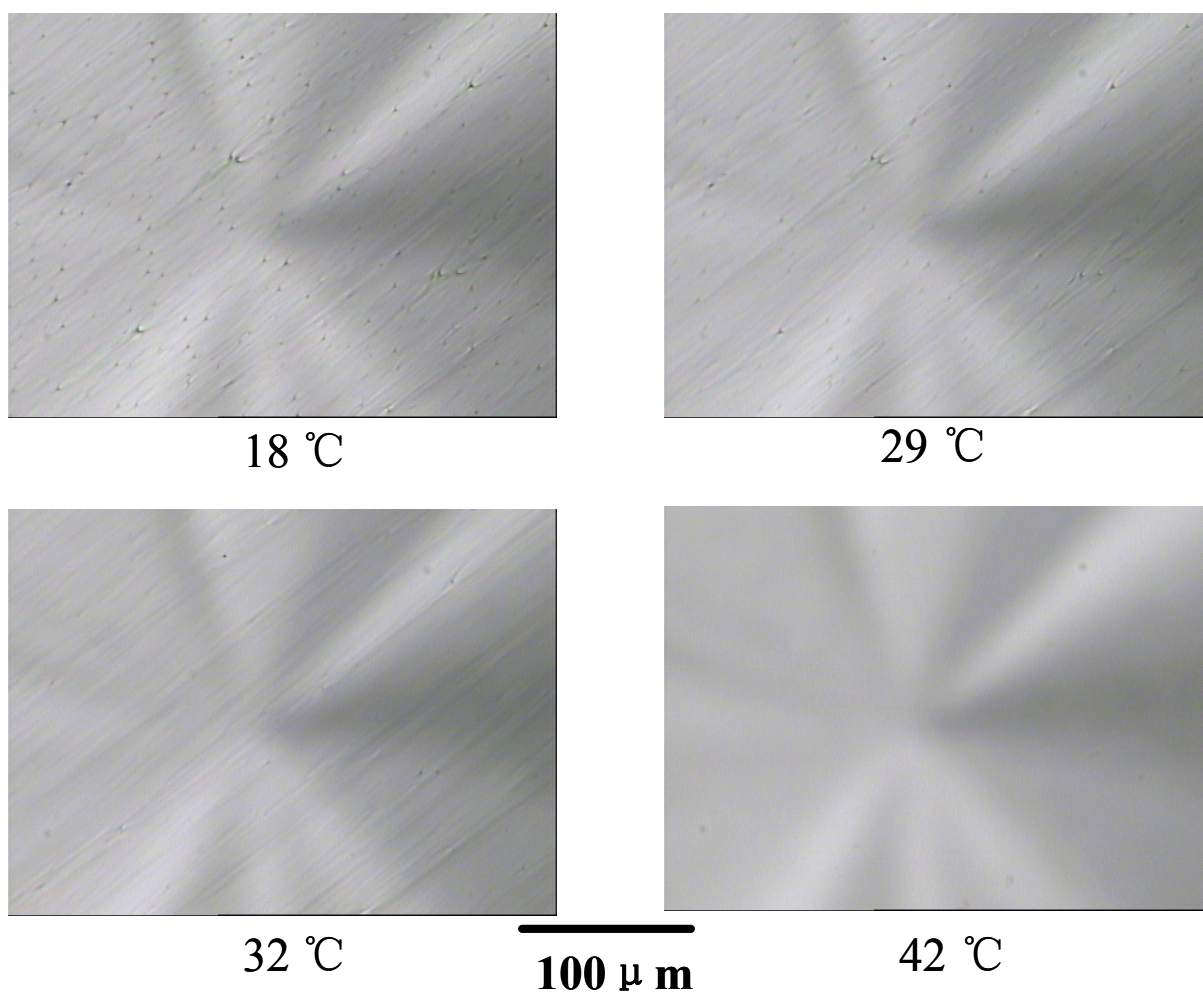
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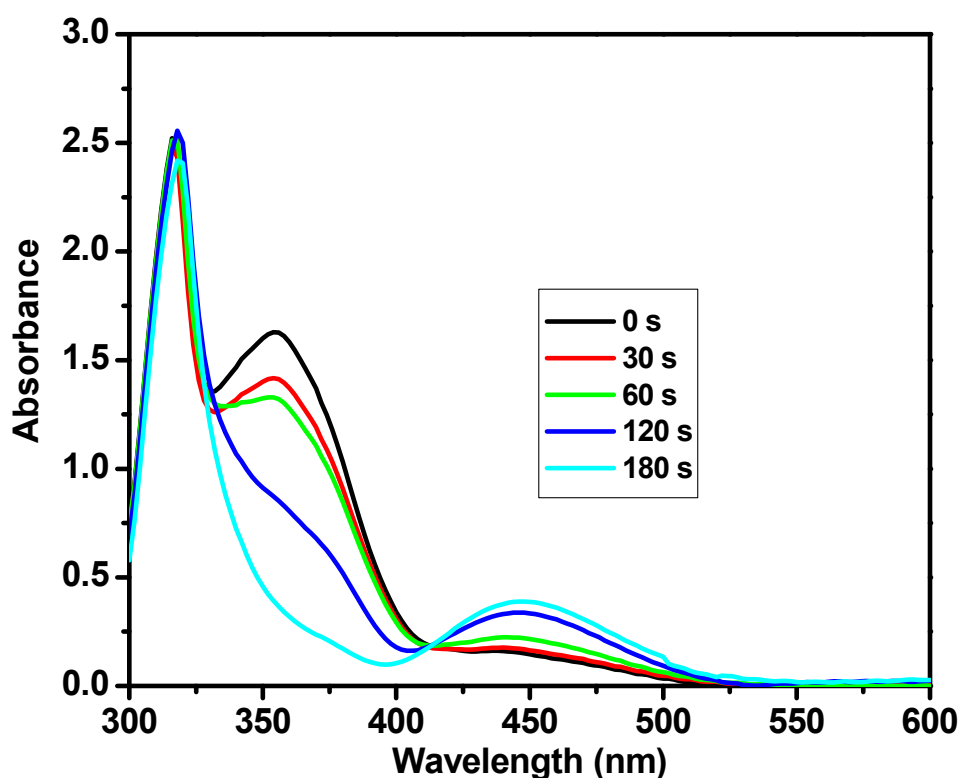
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**Figure S1.** Polarized optical micrographs of 8CB at different temperatures. The smectic textures are shown in graphs at 18°C and 29°C; the nematic texture is shown in graph at 32 °C; the isotropic is shown at 42°C.



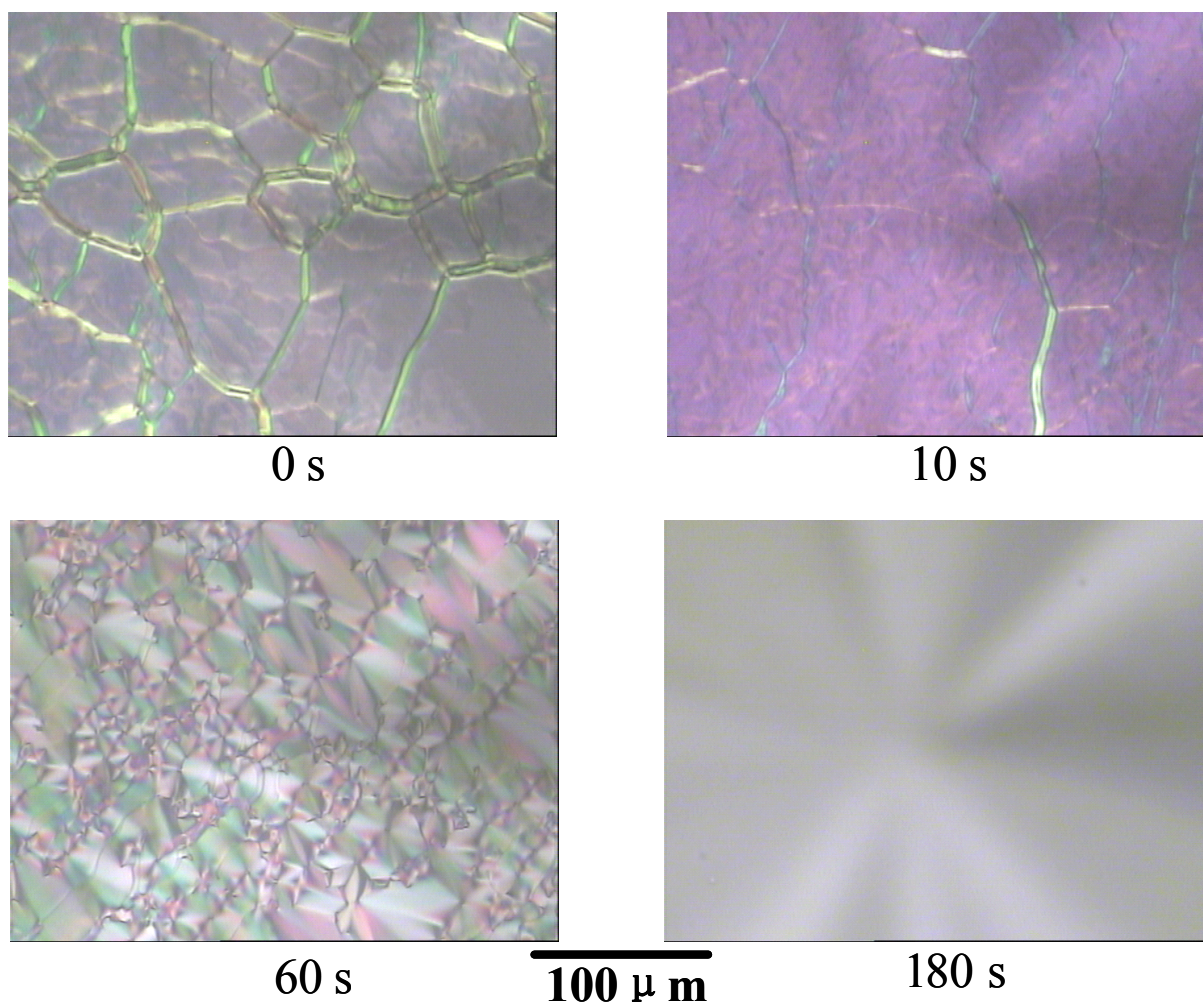
**Figure S2.** UV-Vis absorption spectra of LC-A<sub>2</sub> (95% of 8CB, 5% of the azobenzene AB) under UV irradiation (365 nm, 10 mw/cm<sup>2</sup>) for 0, 30, 60, 120, and 180 s, at 21 °C.

The *cis* isomer fraction  $Y^1$  was determined from the absorbance by

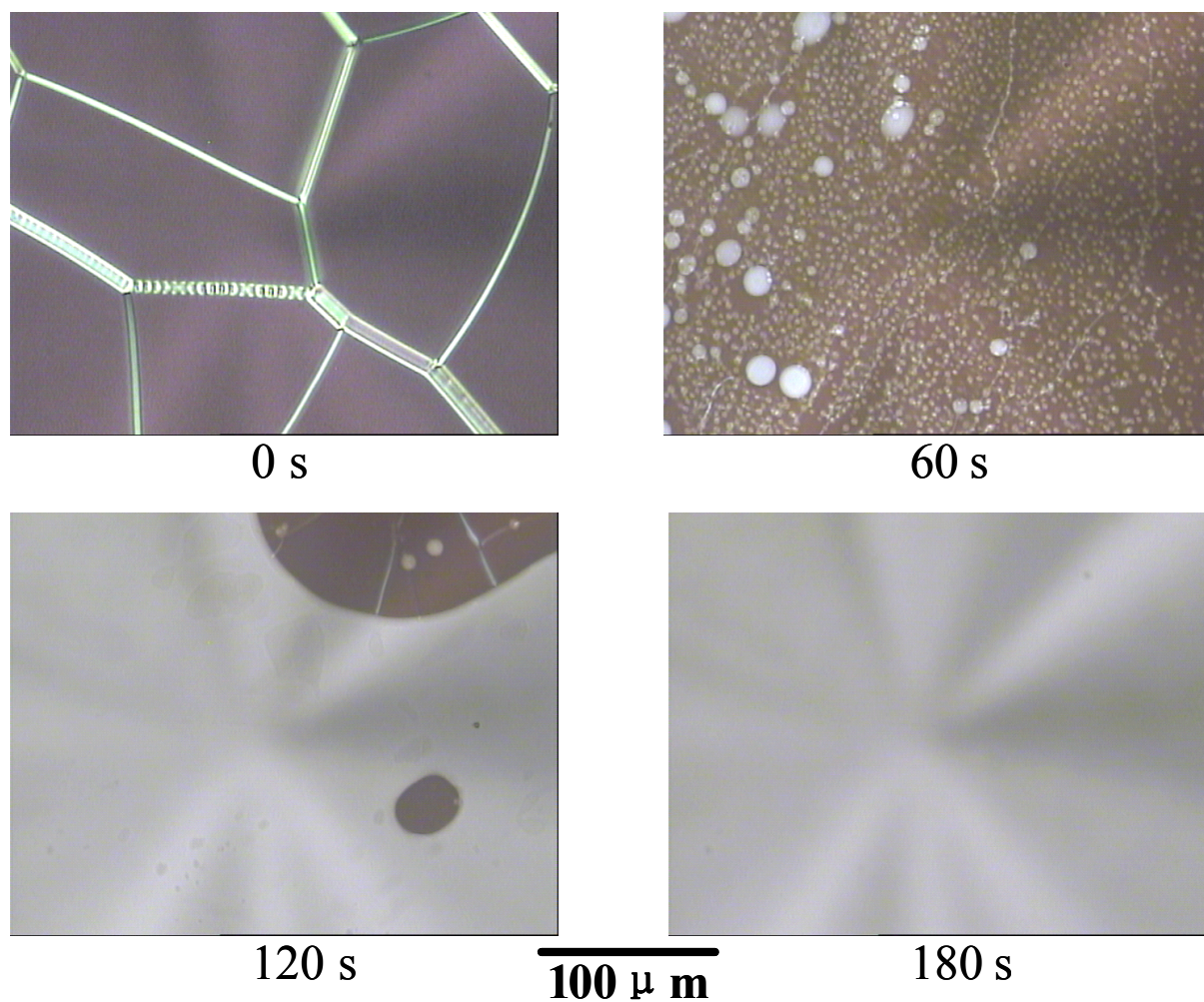
$$Y = 1.05 \times (1 - A/A_0)$$

Where  $A_0$  and  $A$  are the maximum absorbance at the  $\pi$ - $\pi^*$  transition band before and after UV irradiation, respectively.

A photostationary state for the sample LC-A<sub>1</sub> was reached upon UV irradiation for 180s, shown in Figure 2S. The *cis* isomer fractions were measured to be 0%, 14%, 19%, 49%, and 80% upon UV irradiation for 0 s, 30 s, 60 s, 120 s, and 180 s, respectively.



**Figure S3.** Polarized optical micrographs of LC mixture LC-A-B<sub>3</sub> (92.5% of 8CB, 5% of AB, 2.5% of BD) under UV irradiation (365 nm, 10 mw/cm<sup>2</sup>) for 0, 10, 60 and 180s, at 28°C.



**Figure S4.** Polarized optical micrographs of LC mixture LC-A-B<sub>5</sub> (90% of 8CB, 5% of AB, 5% of BD) under UV irradiation (365 nm, 10 mw/cm<sup>2</sup>) for 0, 60, 120 and 180s, at 28°C.

#### Reference

- (1) Victor, J. G.; Torkelson, J. M. *Macromolecules* 1987, **20**, 2951–2954.