Supporting Information

Beyond mechanochromism: Programmable multimodal actuation in cholesteric liquid crystal elastomer hollow fibers

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Supporting Figures:

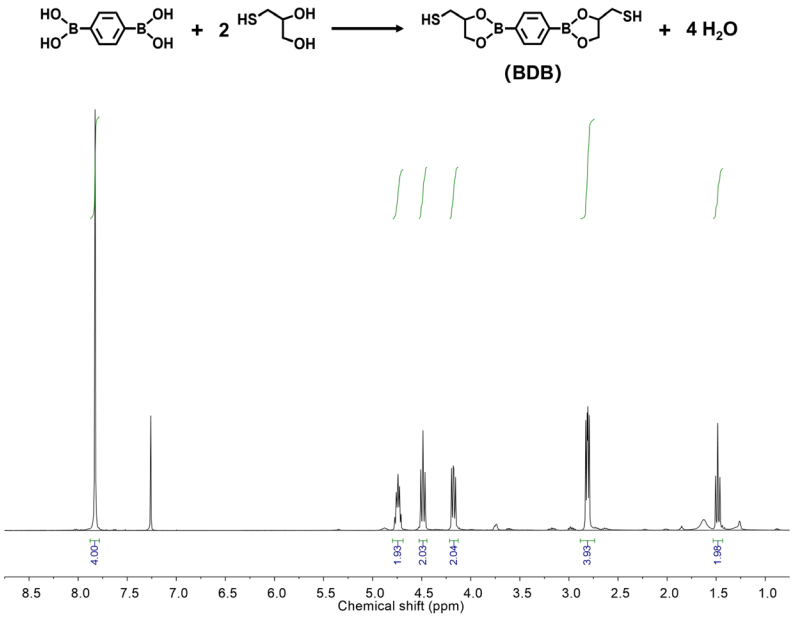


Figure S1. Reaction scheme and ^{1}H NMR spectrum of BDB.

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.83 (s, 4H), 4.80 – 4.69 (m, 2H), 4.49 (t, J = 8.6 Hz, 2H), 4.18 (dd, J = 9.1, 6.6 Hz, 2H), 2.81 (dd, J = 8.6, 5.4 Hz, 4H), 1.48 (t, J = 8.7 Hz, 2H).

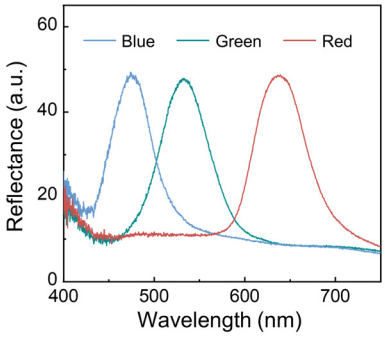
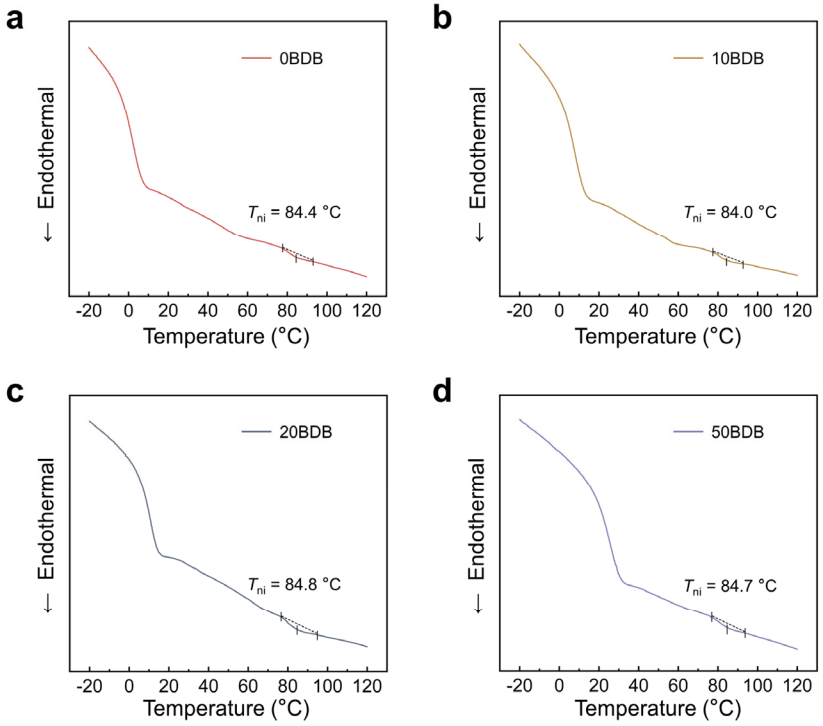


Figure S2. Reflectance spectra of three CLCE hollow fibers that show red, green and blue.



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29 **Figure S3.** Differential scanning calorimetry characterization of CLCE hollow fibers with

30 different molar ratios of BDB.

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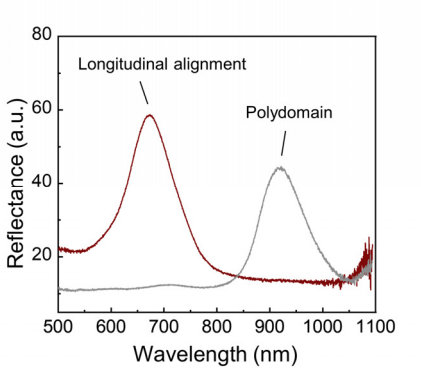

Figure S4. Reflectance spectra of the longitudinally aligned CLCE hollow fiber before and after programming.

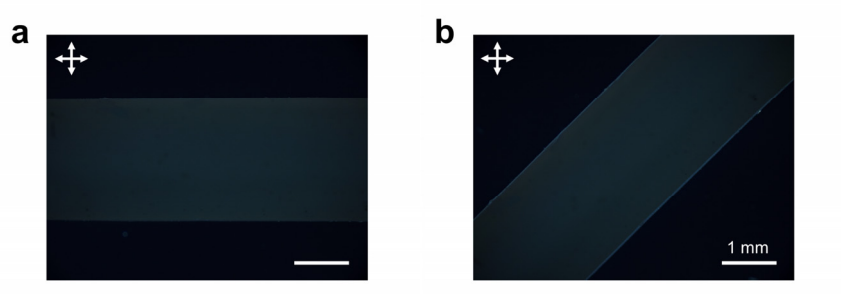

Figure S5. POM of the longitudinally aligned CLCE hollow fiber before programming.

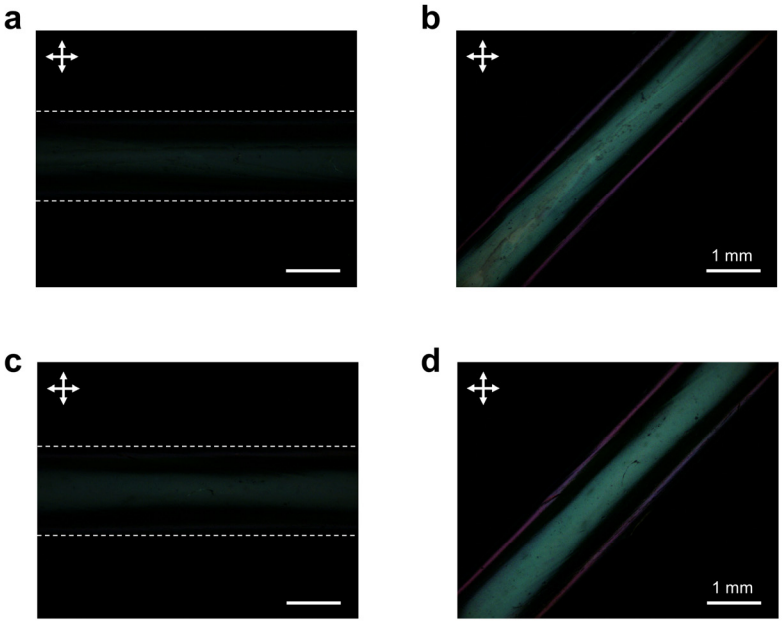

Figure S6. POM images of the twisted CLCE hollow fibers with (a and b) 9° mm^{-1} and (c and d) 18° mm^{-1} right-handed twist, respectively.

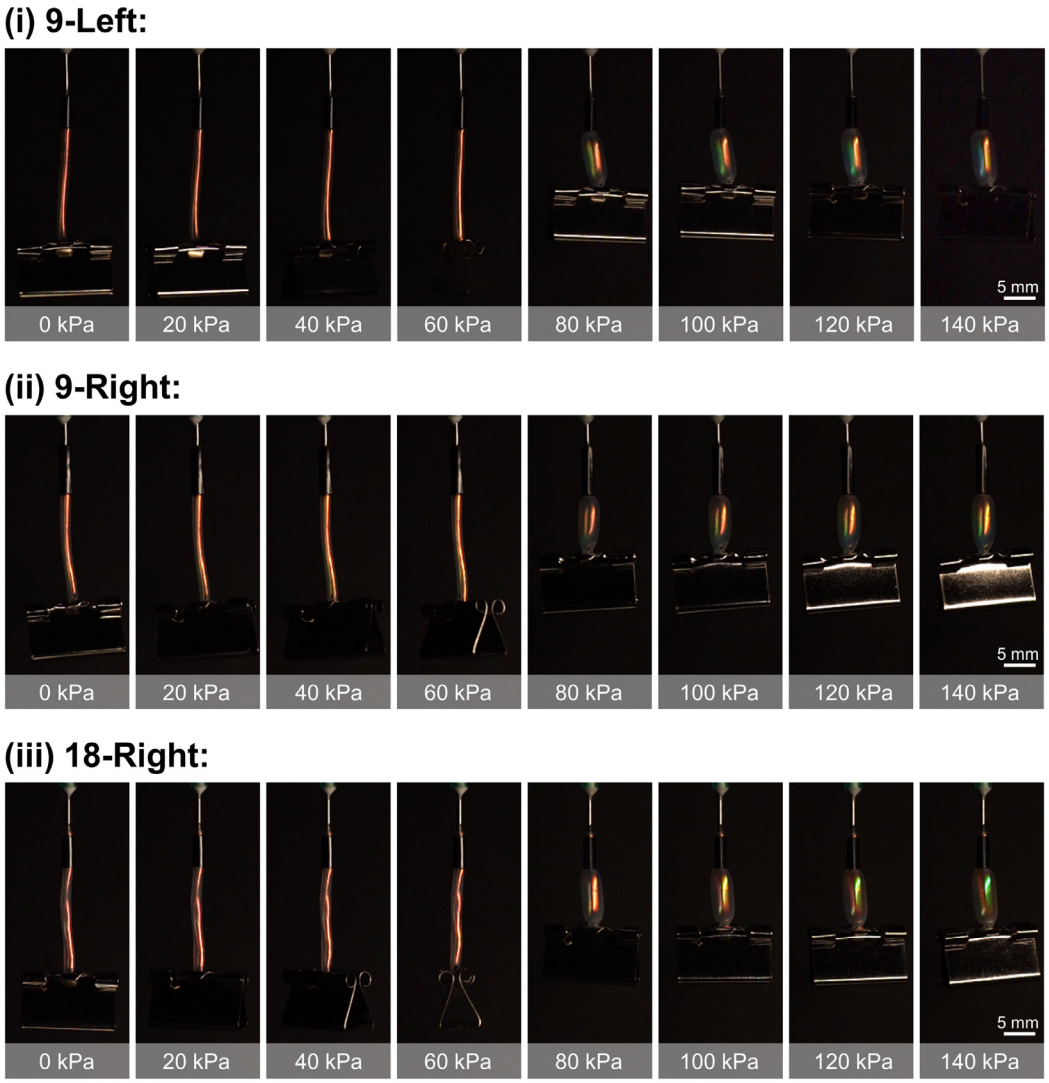

Figure S7. Pneumatic response of the twisted CLCE hollow fibers with (a) 9° mm^{-1} left-handed twist, (b) 9° mm^{-1} right-handed twist, and (c) 18° mm^{-1} right-handed twist, respectively.

Supporting Movies:

Movie S1. Pneumatic response of a polydomain CLCE hollow fiber. The air pressure was set directly to 100 kPa, and the valve was opened for rapid inflation.

Movie S2. Pneumatic response of a longitudinally aligned CLCE hollow fiber. The air pressure was first set to 80 kPa, and the valve was opened to begin inflation. Once the shape and color of the fiber no longer changed, the air pressure was then increased to 120 kPa for further inflation.

Movie S3. Pneumatic response of a circumferentially aligned CLCE hollow fiber. The air pressure was set directly to 200 kPa, and the valve was opened for rapid inflation.

Movie S4. Pneumatic response of a CLCE hollow fiber with 18° mm^{-1} left-handed twist. The air pressure was first set to 80 kPa, and the valve was opened to begin inflation. Once the shape and color of the fiber no longer changed, the air pressure was then increased to 140 kPa for further inflation.