

Electronic Supplementary Information for

**Strain Induced Recognition of Molecular and Chirality in Cholesteric
Liquid Crystal Droplets for Distance and Curvature Sensing**

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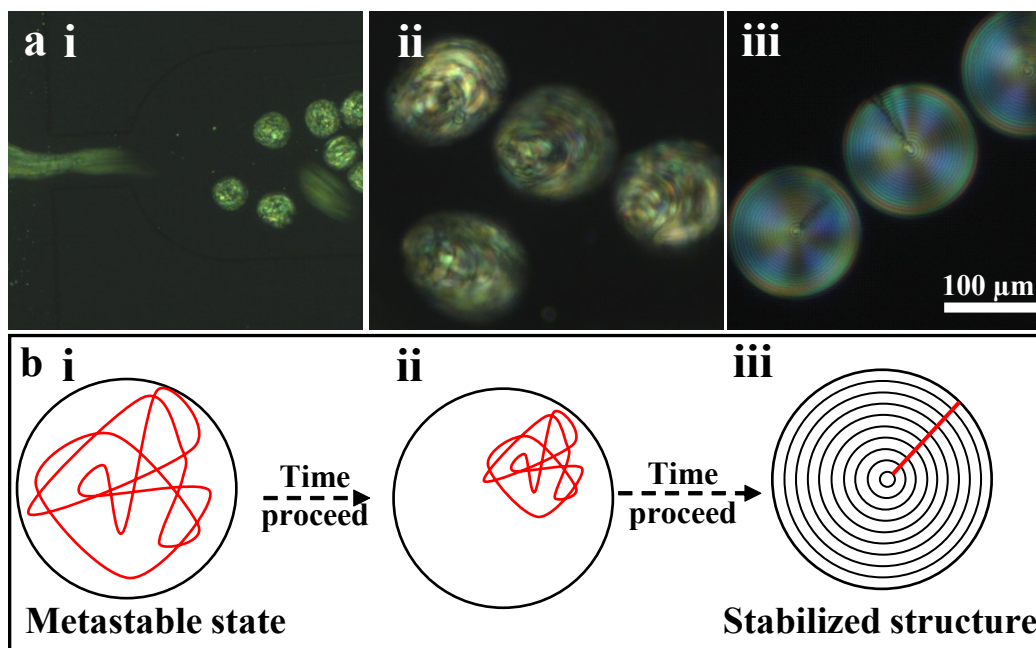


Figure S1 Time sequence of the stabilizing configuration process of onion-like Ch-LC droplets. (a) POM images at initial metastable state (i), intermediate state (ii), and stabilized structure (iii); (b) corresponding schematic illustration of molecular state at different stages. The red curved lines in (b) represent the disclination lines.

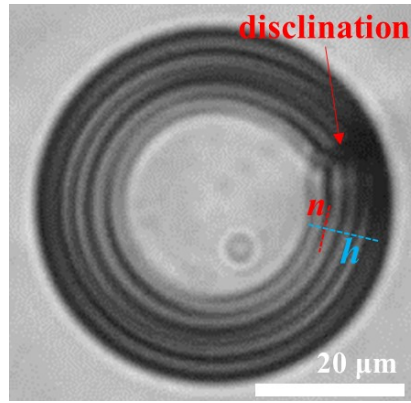


Figure S2 An transmitted OM image of the Ch-LC droplet showing \mathbf{n} and \mathbf{h} maintained perpendicular to each other in the shell.

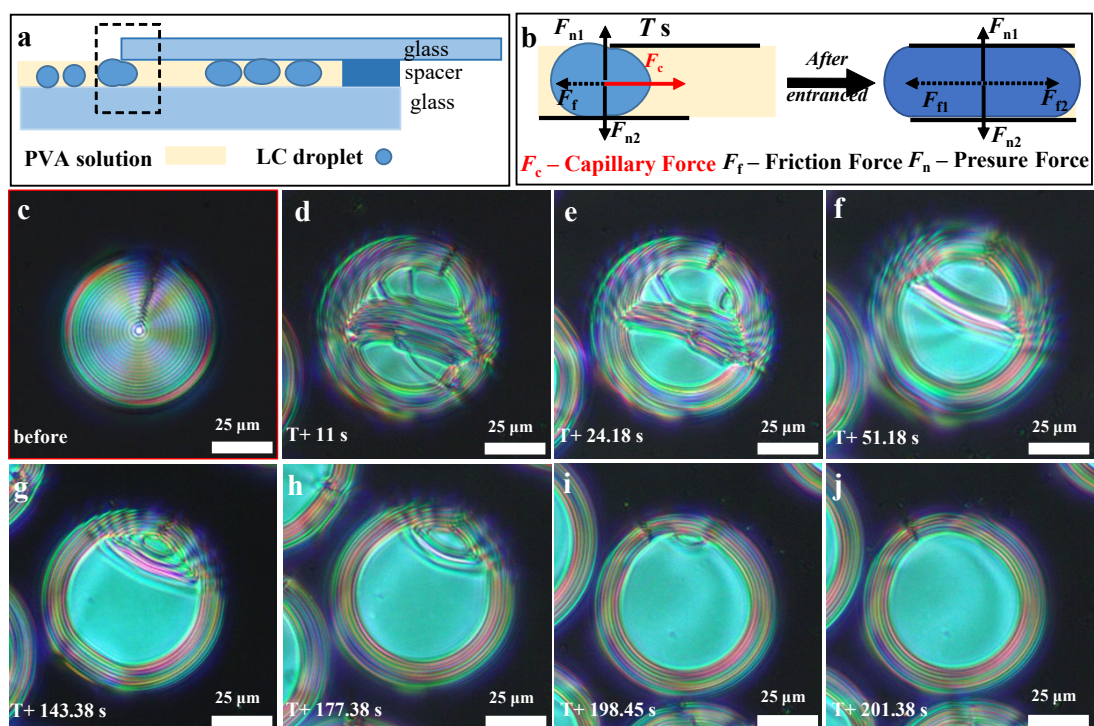


Figure S3 The transformation progress of Ch-LC droplets ($D= 54.8 \mu\text{m}$) entering a homemade device. **(a-b)** Schematic illustration of the progress (a) and the force diagram of a droplet (b). **(c-h)** POM images of a droplet at different period during the progress.

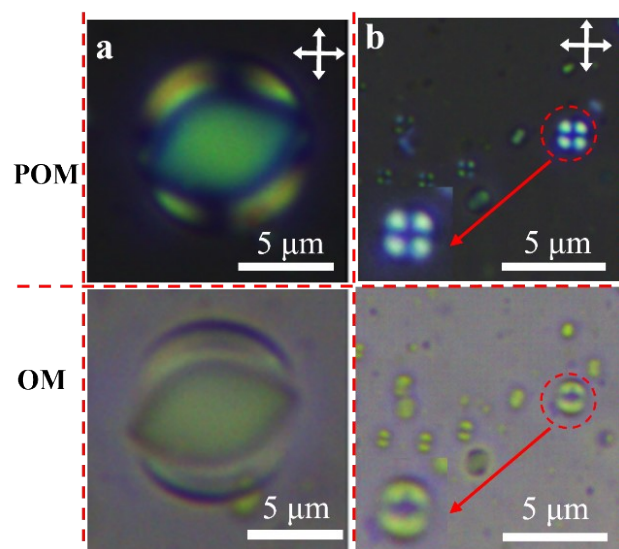


Figure S4 POM and OM images of Ch-LC droplet with diameter of (a) 8 μm, (b) <5 μm.

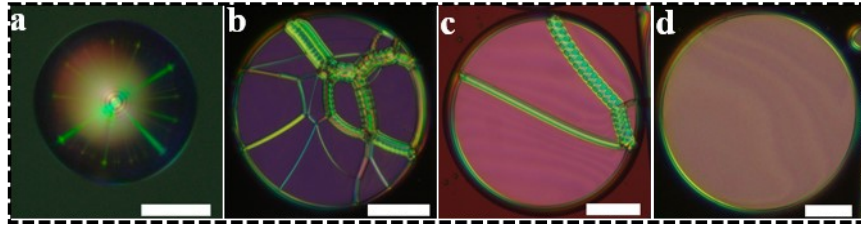


Figure S5 Structure diversity of a high-chirality Ch-LC droplet ($D = 33.3 \mu\text{m}$) with RSS structure under different strain (ε) of (a) 0, (b) 1.4, (c) 3.6, (d) 7.8. Scale bars represent $20 \mu\text{m}$.

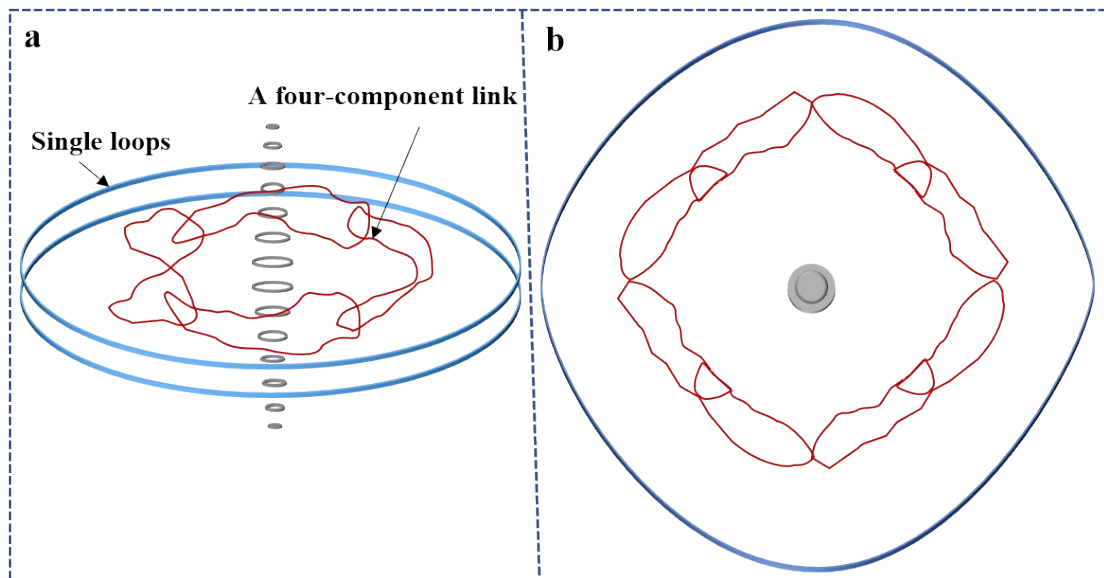


Figure S6 Schematic illustration of lateral (a) and top (b) view of the knots of the RSS with inner pseudo-nematic structure. A series of single unlinked loops along the diametrical axis (gray); two unlinked single loops in the outer region (blue); and a four-component link consists of three connected Hopf links (red).

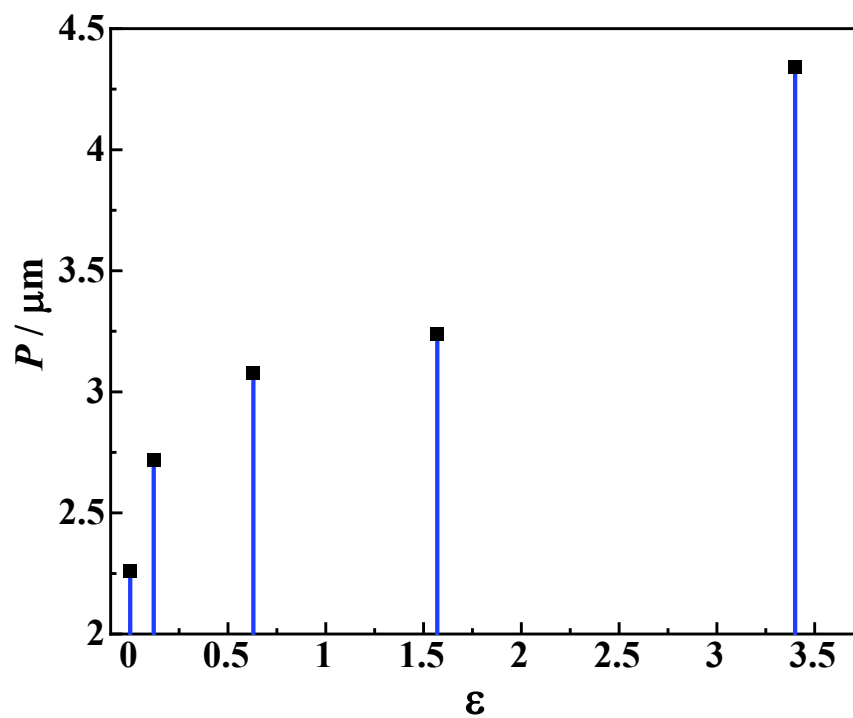


Figure S7 The pitch value of the Ch-LC droplet ($D = 54.8 \mu\text{m}$) under different strain (ϵ).

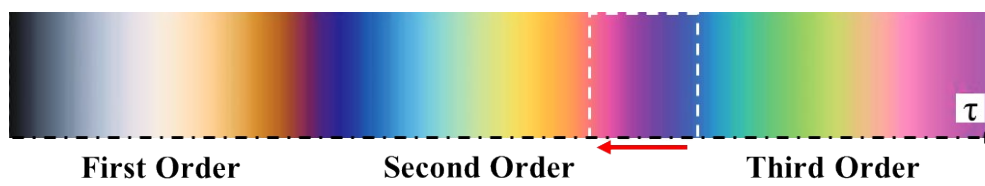


Figure S8 Michel-Lévy birefringence chart, relating the light retardation. White dotted lines mark the approximate changed values of birefringence for images insets in **Figure 4a**.

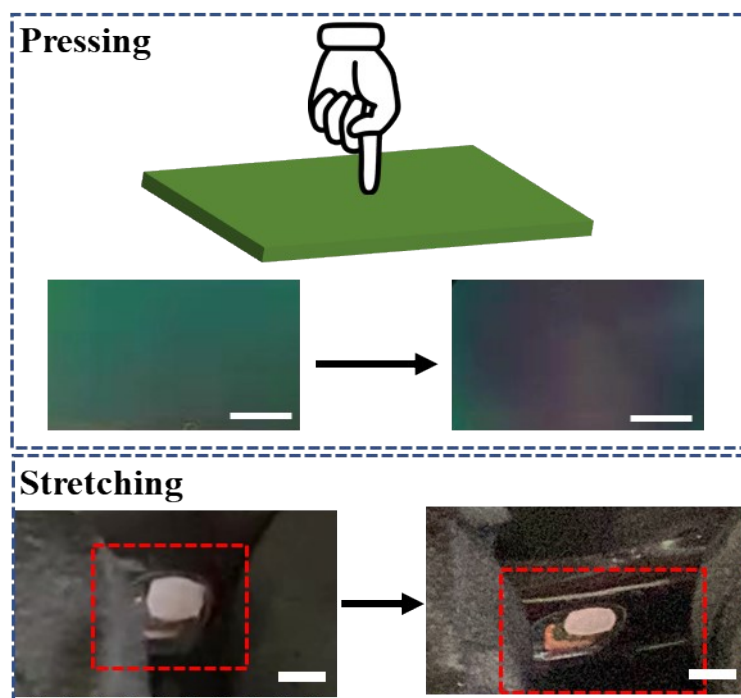


Figure S9 Optical snaps of the flexible device under pressing and stretching. Scale bars represent 1 cm.

Captions for Movie S1 to S2

Video S1. Movie of a flexible device filled with Ch-LC droplet under pressing.

Video S2. Movie of a flexible device filled with Ch-LC droplet under stretching.