Supporting Information

Jeong et al. 10.1073/pnas.1423220112

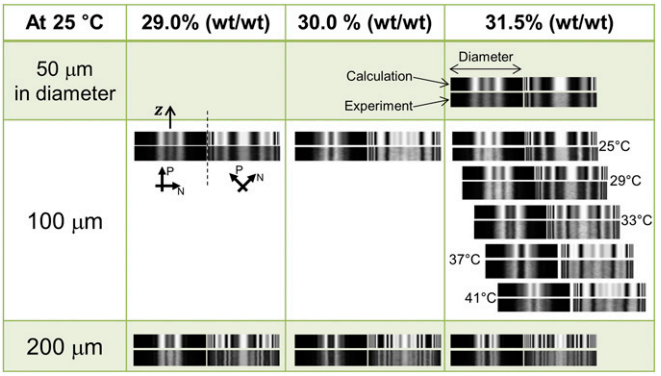


Fig. S1. POM images and simulated patterns of nematic SSY in a cylinder between crossed polarizers according to the diameter, concentration, and temperature of the SSY sample; *z* is parallel to the cylindrical axis of the capillary. The left and right columns of each set have different directions of crossed polarizers; the pass axis directions of a polarizer (P) and an analyzer (N) are shown as arrows. The lower row in each set of POM images shows the experimental images taken under monochromatic illumination (wavelength = 650 nm), and the upper row corresponds to POM patterns simulated by Jones matrix calculations of director-field models. *Materials and Methods* discusses the calculation of director fields. Within these ranges of concentration and temperature, nematic SSY adopts TER director configurations.

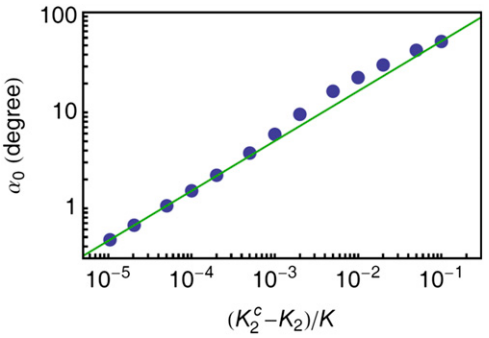


Fig. S2. Numerical calculation of twist angle $\alpha_0 = \alpha(r = 0)$ for various values of the twist elastic modulus K_2 when splay (K_1) and bend (K_3) moduli are equal to K. When K_2 surpasses the critical value, $K_2^c \approx 0.27K$, no twist solution with finite α_0 exists. The solid line is a linear fit in the log–log scale and indicates that α_0 in the vicinity of the critical point is well-described by a power law $\alpha_0 \sim (K_2^c - K_2)^\beta$, where the critical exponent-$\beta \sim 0.5$.

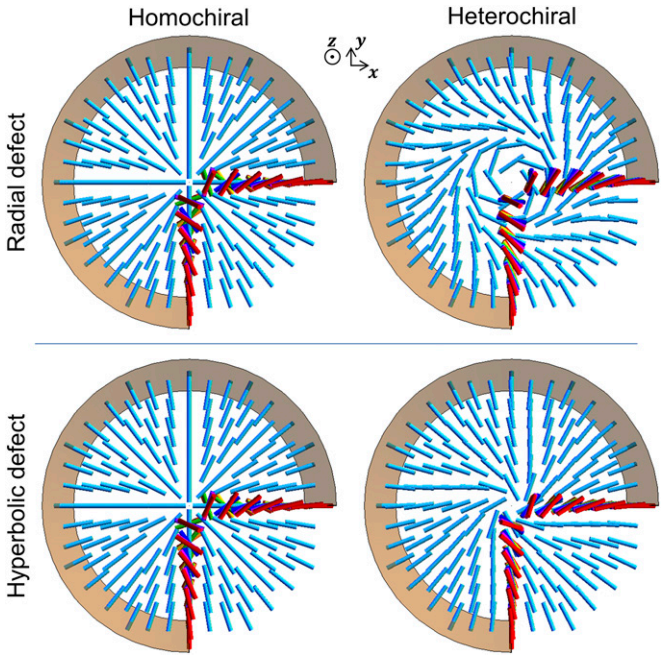


Fig. S3. Schematic diagrams of the (*Upper*) radial and (*Lower*) hyperbolic defect configurations of (*Left*) homochirality and (*Right*) heterochirality near the defect plane. Colored rods correspond to nematic directors, and the directors in the defect plane ($z = 0$) are shown in the all quadrants. Clearly, homochiral defects exhibit pure splay deformation within their defect planes, whereas heterochiral defects replace the costly splay deformation within the defect plane with some bend deformation. The overlapping directors on the positive x axis and the negative y axis show how the directors twist along the z axis passing through the defect plane ($z = 0$), where different colors represent different z positions. The heterochiral defects have less twist deformation (i.e., more parallel directors) than the homochiral defects.

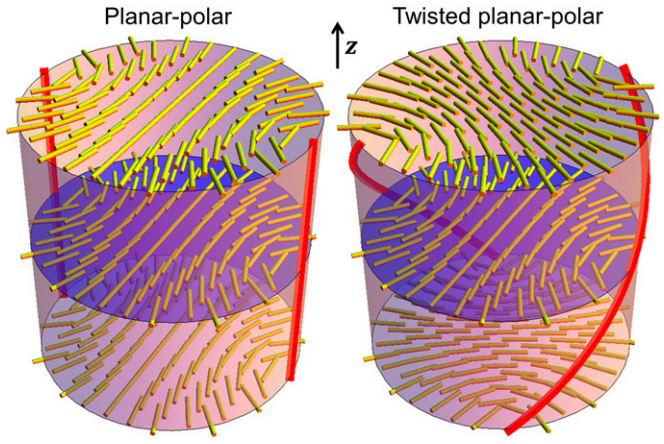
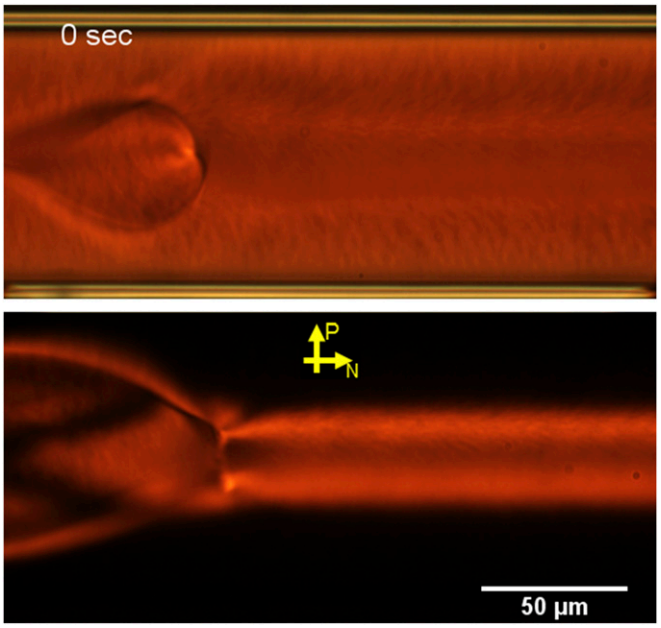


Fig. S4. Hypothesized schematic diagrams of the (*Left*) planar–polar and (*Right*) twisted planar–polar configurations. The z axis is parallel to the cylindrical axis of the capillary. Yellow rods correspond to the nematic directors at each cross-section of the capillary, and thick red lines represent (*Left*) straight and (*Right*) helical disclinations.



Movie S1. Optical microscopy images of double helices of disclinations slowly growing from the left side while replacing the TER configuration on the right side. *Upper* shows bright-field images of a growing helix, and *Lower* shows another helix's POM images taken under polychromatic illumination; the pass axis directions of a polarizer (P) and an analyzer (N) are shown as arrows.

Movie S1