Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Security use of chiral photonic film made of helical liquid crystal structures

Wongi Park,[a] Taewoo Ha,[bc] Taek Sun Jung,[d] Kyung Ik Sim,[d] Jae Hoon Kim,[d] Joanna M. Wolska,[e] Damian Pociecha,[e] Ewa Gorecka,[e] Teun-Teun Kim,*[bc] and Dong Ki Yoon*[af]

*To whom correspondence should be addressed.

E-mail: nandk@kaist.ac.kr and teun2000@gmail.com

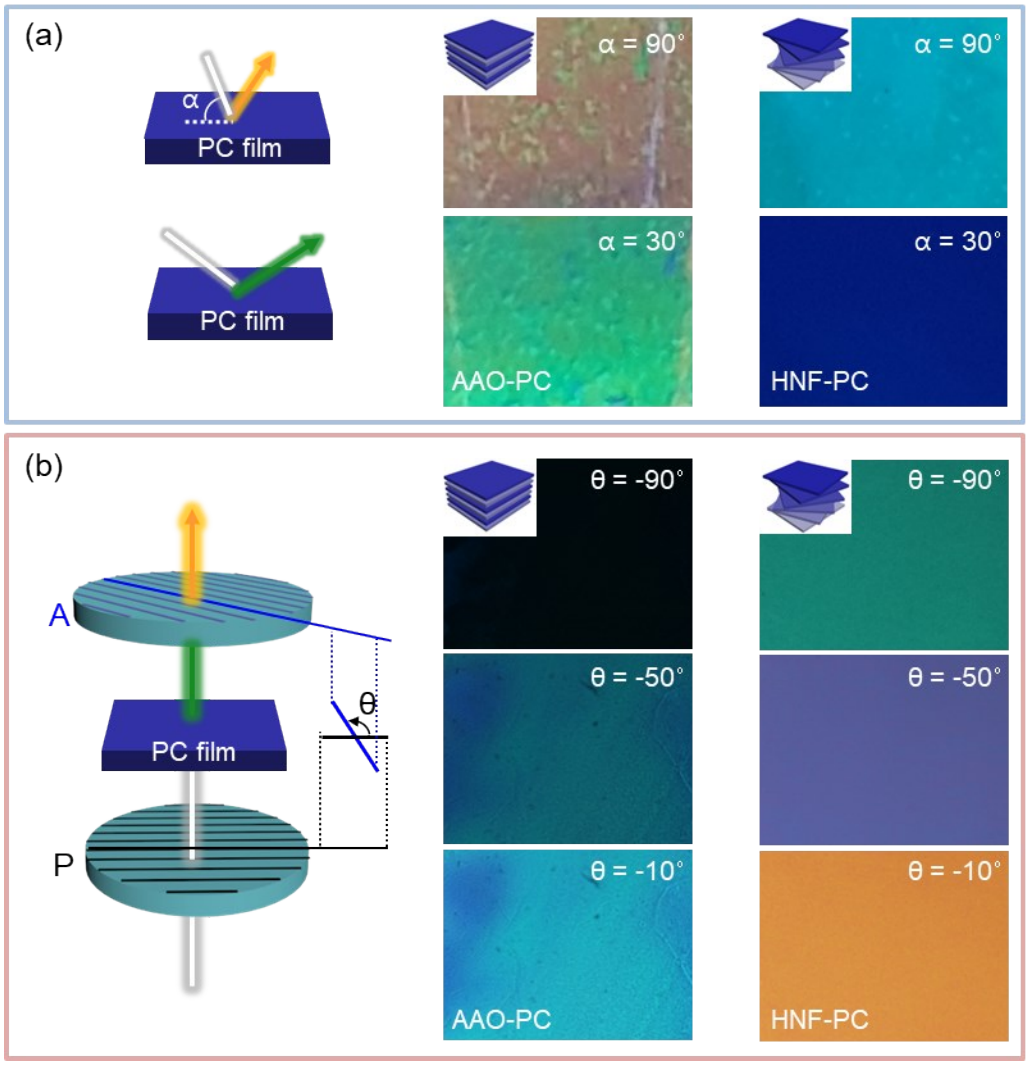

Fig. S1. (a) Viewing angle-dependent color changes of AAO-PC (non-chiral) and HNF-PC (chiral) in reflection mode. Both of the samples show viewing angle-dependent color change. (b) Polarization-dependent color changes of both PCs when polarizer rotates. Only the chiral sample shows the polarization-dependent color variations. Non-chiral film shows the brightness changes.

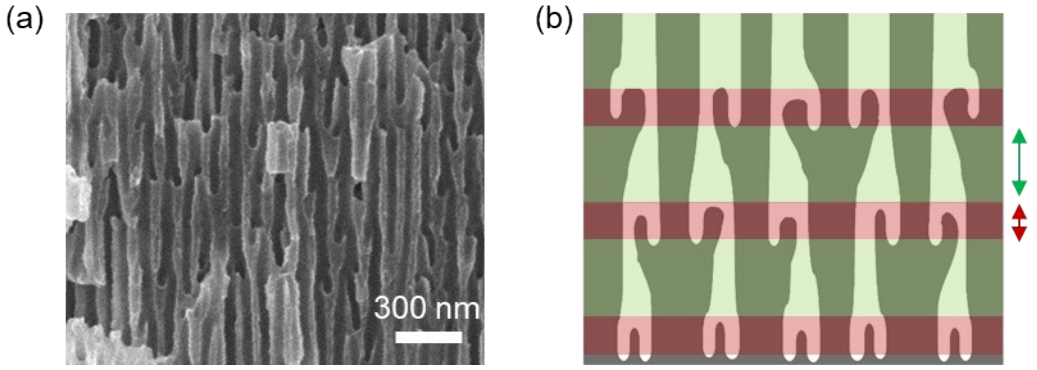

Fig. S2. (a) Cross-sectional SEM image of branched AAO film and (b) its schematic illustration. Pseudo layers with high and low air porosity are marked as red and green, respectively.

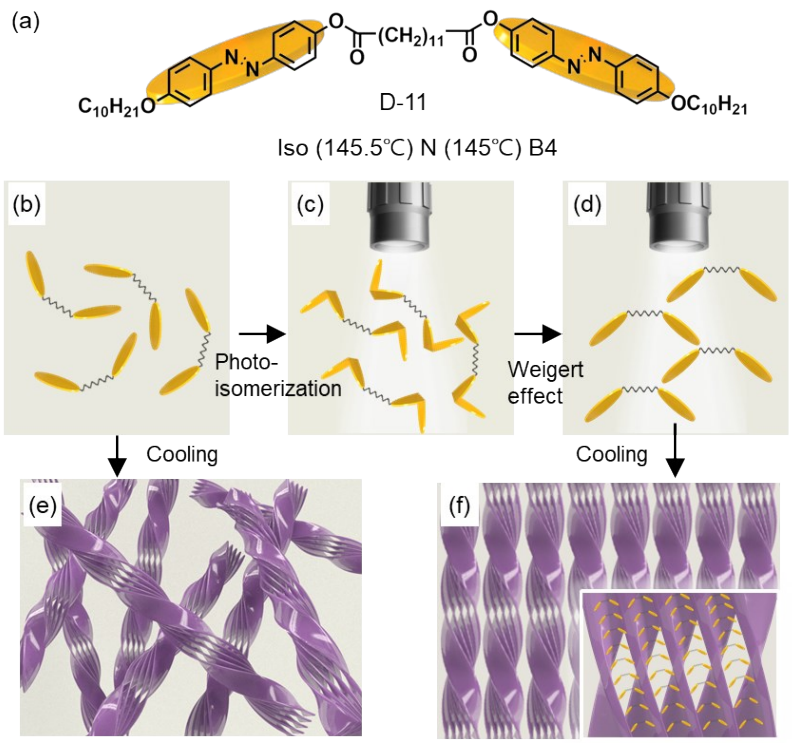

Fig. S3. Experimental procedure for fabricating aligned HNF film. (a) Chemical structure of D-11. (b-d) Schematic illustration of photoalignment process of D-11 molecules under shinning of UV light. HNFs are randomly or uniaxially aligned under (e) without UV or (f) UV condition.

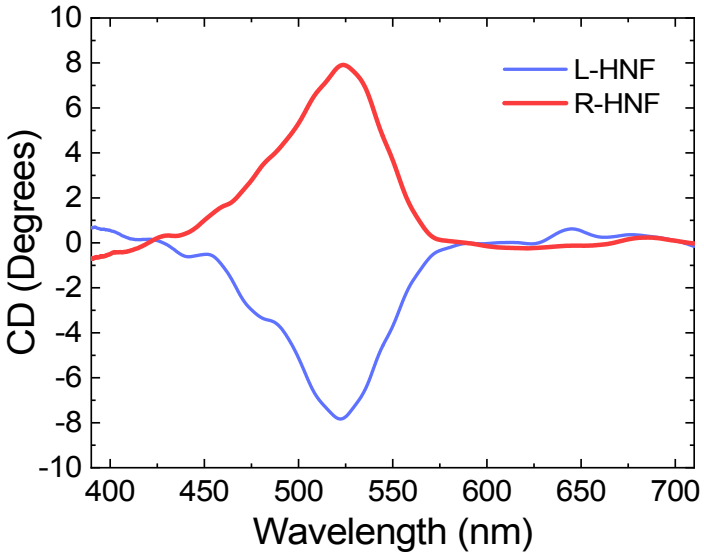

Fig. S4. CD results of HNF-PC film.

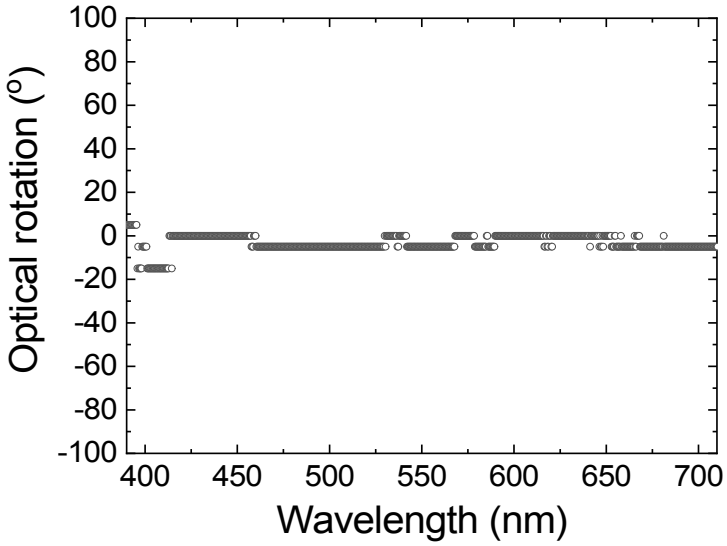

Fig. S5. Wavelength dependent optical rotation in AAO-PC film.