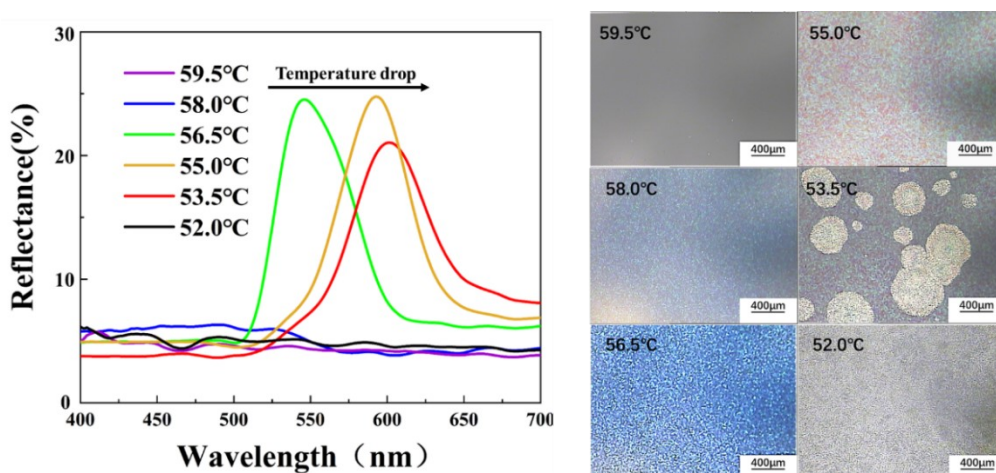# Supporting information

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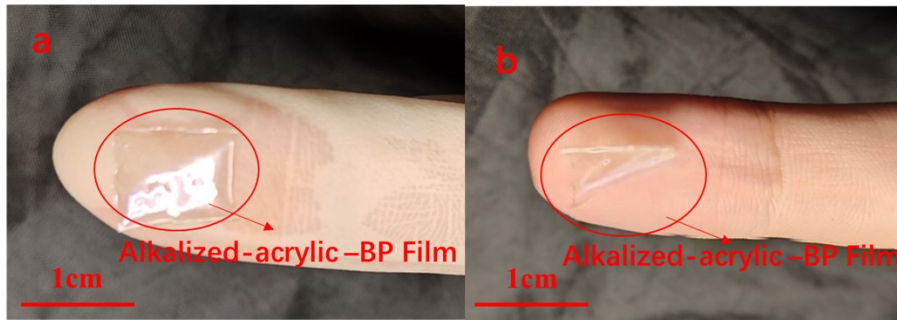
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Figure S1. Reflection spectra and POM of blue phase liquid crystal polymer films at different temperatures with 6.0wt% chiral content.
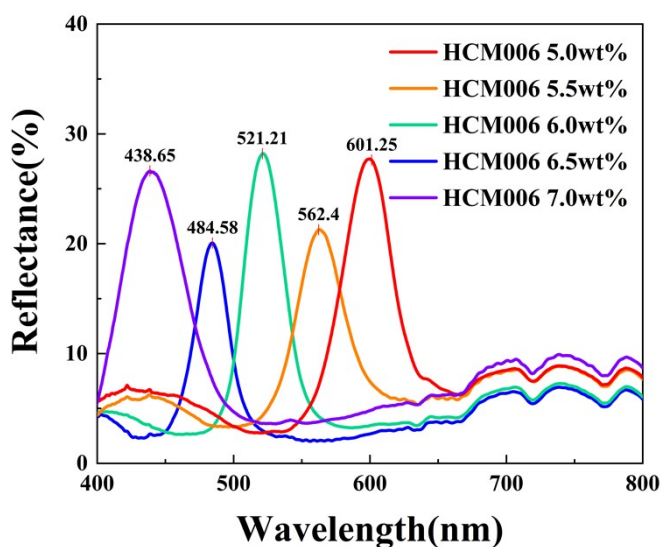
Figure S2. Comparison of reflection spectra of blue phase liquid crystal polymer films with different chiral contents.

Figure S3. (a) An Alkalized acrylic - BP film on a gloved hand without bending. (b) An alkaline acrylate-BP membrane bent over a bare finger.
Alkalized acrylic - BP film was placed on a steel plate with ground wire to remove static electricity. (Film size: 0.5cm × 1.0cm, thickness: 70μm)

S2. Experimental design

Range analysis

In the range analysis, the influence of each factor on the experimental index is ranked from small to large. In general, within the experimental range, the larger the range of factors on the experimental indicators greater impact. The calculation formula of the interval is shown in Equation 1:

$$D_J = \max\min\left\{\frac{I_J}{K_J}, \frac{II_J}{K_J}, \Lambda\Lambda\right\} \qquad \text{Eq. 1}$$

I_J is the sum of the experimental indices corresponding to the "1" layer in column J. II_J is the sum of the experimental indices corresponding to layer "2" in column J. K_J is the number of occurrences of the same level in column J, which is equal to the number of experiences divided by the number of levels in column J. $\circ$ Kavg $= \frac{I_J}{K_J}$ is the average value of the experimental index corresponding to the level of "1" in column J.

S3. Curvature calculation process
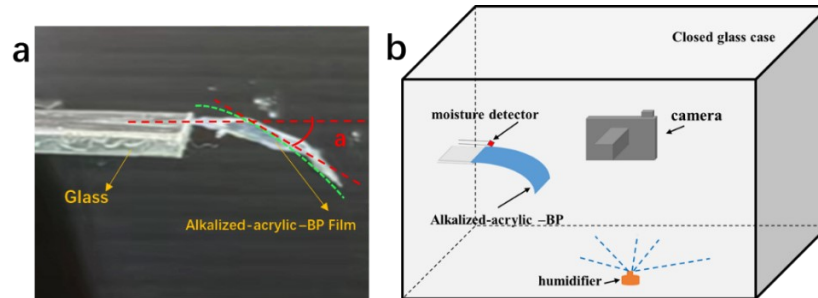
Figure S4. a) Experimental apparatus for the effect of bending curvature. b) Self-made humidity chamber diagram.

In order to position the sample, secure the right edge of the sample film with glass. The green dotted line represents the outline of the Alkalized acrylic - BP film, and the red dotted line represents the initial position of the film and the Angle resulting from the bending change. The curvature is calculated as follows: $k = \pi\alpha/180L$, where α is the deflection Angle and L is the effective free bending length of the film. (L = 0.9 cm).
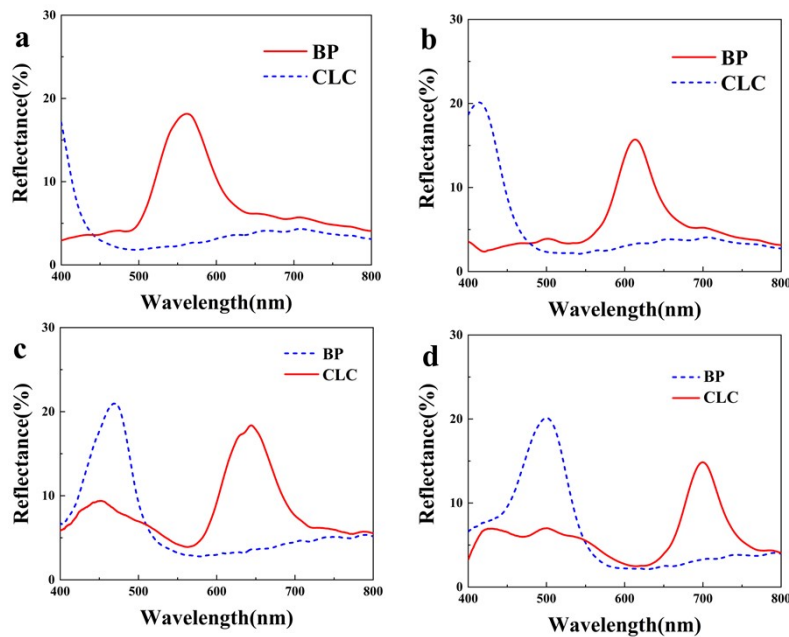
Figure S5. Comparison of reflection spectra of BP and CLC made from liquid crystals under different chiral content.
(a) HTG135200=40wt%, HCM006=6wt%, RM257=18wt%. (b) HTG135200=40wt%,

HCM006=5.5wt%, RM257=18wt%. (c) HTG135200=40wt%, HCM006=5.0wt%, RM257=18wt%. (d) HTG135200=40wt%, HCM006=4.5wt%, RM257=18wt%).