Anti-counterfeiting Holographic Liquid Crystal Gels with Color and Pattern Control

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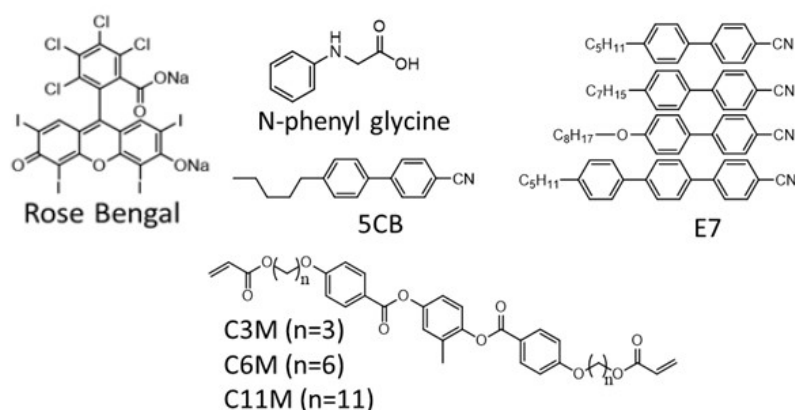
Supplementary Materials

Figure S1. Chemical structures of materials used for this study: Initiator (Rose Bengal), co-initiator (NPG), nematic LCs (5CB and E7), and liquid crystal monomers (C3M, C6M and C11M).
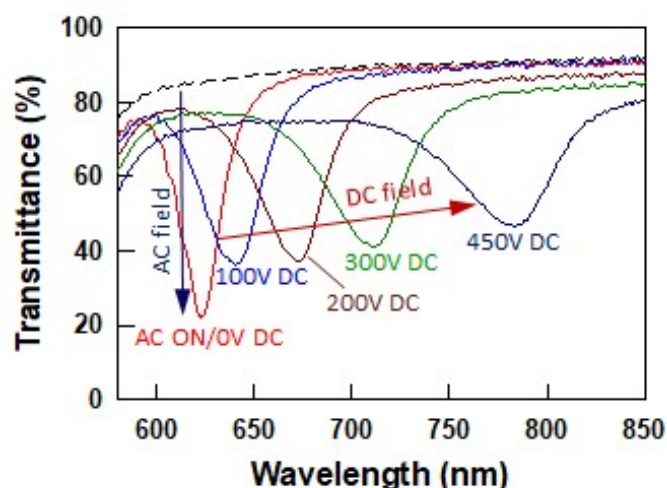

Figure S2. Reconfigurable optical behavior of holographic notch in H-PSLC containing 1wt% RB, 1.5wt% NPG, 20wt% C3M and 77.5wt% 5CB. Switching by application of an 100 V AC field (1 kHz) and red tuning of H-PSLC by increasing DC voltage to 450 V.
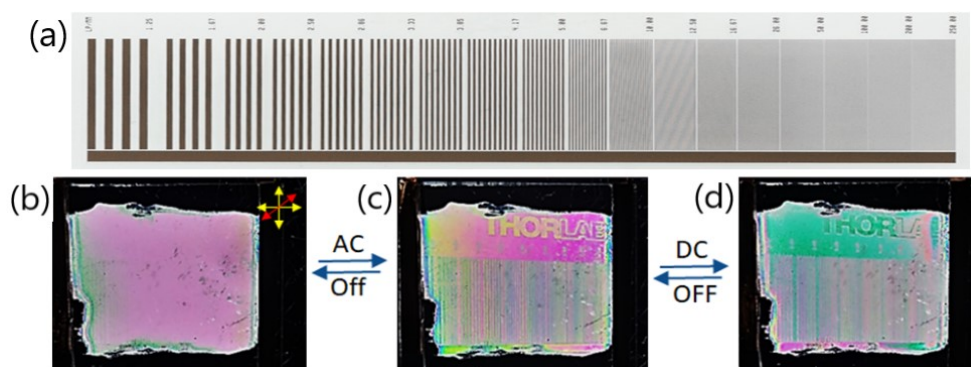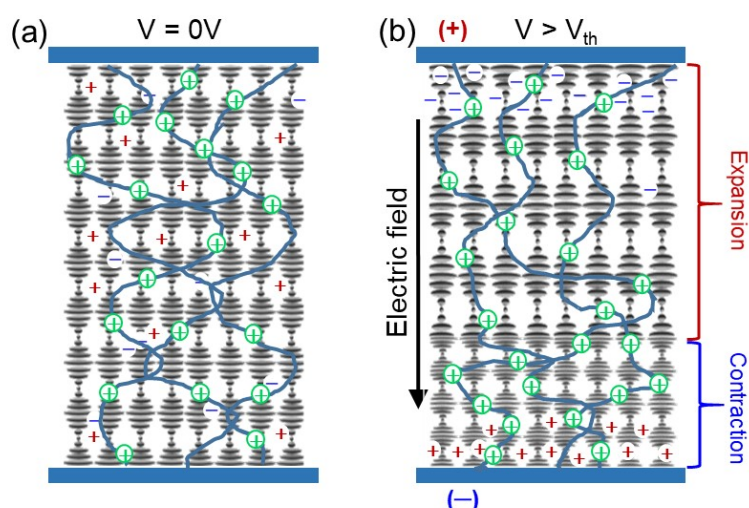
Figure S3. Photographs of (a) a line-grating target (Thorlabs) and patterned reflection gratings under cross-polarizers at (b) 0V, (c) 100V at 1 kHz (AC) and (d) 15V DC while applying an AC field. The sample size is 2.5 cm x 3.3 cm and the active area is 2 cm x 3.3 cm.

Scheme S1. Schematic of the polymer network in a deformable PSCLCs: (a) with no applied field, (b) with a DC field applied between the top and bottom substrates. The blue lines represent the polymer network, the grey horizontal bars are the low-molecular weight CLC molecules, + and − are the free cationic and anionic impurities and ⊕ are trapped cationic impurities. Adapted Ref [1]

1. M. Lee, E. P. Crenshaw, M. Rumi, T. J. White, T. J. Bunning and M. E. McConney, *Materials*, 2020, **13**, 746.