

Abstract Submitted  
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**Symmetric reflection band broadening of weakly polymer stabilized cholesteric thin films using low DC electric fields** MADELINE DUNNING, CHRISTOPHER BAILEY, ANASTASIA VOEVODIN, VINCENT TONDIGLIA, LALGUDI NATARAJAN, TIMOTHY WHITE, TIMOTHY BUNNING — We report on a new, low field electro-optical effect in weakly polymer stabilized cholesteric liquid crystals with negative dielectric anisotropy. By applying low DC electric fields ( $<3\text{V}/\mu\text{m}$ ), a symmetric broadening of the cholesteric reflection band can be seen, resulting in band width increases by factors of two or more. An intensive study of the various experimental parameters combined with numerical calculations of the transmission spectra, indicate that the polymer interacts with the electric fields resulting in an approximately constant pitch gradient across the cell thickness. Our results show that the maximum pitch distortions reach values of approximately 15% the zero voltage value for notches in the visible range (pitches of 300-400nm), but increase along with the pitch. Possible physical mechanisms will be explored and discussed that might explain this interesting electro-optical effect.

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