

Abstract Submitted
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Modeling texture transitions in cholesteric liquid crystal droplets¹ ROBIN SELINGER, VIANNEY GIMENEZ-PINTO, SHIN-YING LU², JONATHAN SELINGER, ANDREW KONYA, Kent State University — Cholesteric liquid crystals can be switched reversibly between planar and focal-conic textures, a property enabling their application in bistable displays, liquid crystal writing tablets, e-books, and color switching “e-skins.” To explore voltage-pulse induced switching in cholesteric droplets, we perform simulation studies of director dynamics in three dimensions. Electrostatics calculations are solved at each time step using an iterative relaxation method. We demonstrate that as expected, a low amplitude pulse drives the transition from planar to focal conic, while a high amplitude pulse drives the transition from focal conic back to the planar state. We use the model to explore the effects of droplet shape, aspect ratio, and anchoring conditions, with the goal of minimizing both response time and energy consumption.

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