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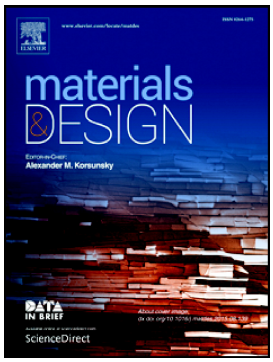

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A Polymer Microsphere-Filled Cholesteric-Liquid Crystal Film with Bistable Electro-Optical Characteristics

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Abstract

In this paper, we promote a new polymer microsphere-filled cholesteric-liquid crystal (PFLC) system sandwiched between two flexible substrates for making a robust composite film with both bistable optical performance and high mechanical strength. The effects of the size of the polymer microspheres (PMs) and the pitch of the cholesteric liquid crystals (ChLCs) on the electro-optical performance of the as-made PFLC films were systematically investigated. Results show that the optical appearance of the optimized PFLC film can be reversibly changed between transparent and light-scattering states according to electric field by switching the ChLCs between planar (P) and focal conic (FC) states. Moreover, both P and FC states are stable for more than one year after