

Abstract Submitted
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Electromechanical memory effect in a ferroelectric nanoparticle-suspended liquid crystal RAJRATAN BASU, US Naval Academy — A small quantity of BaTiO₃ ferroelectric nanoparticles (FNP) was doped in a liquid crystal (LC), and the LC+FNP hybrid was found to exhibit an electromechanical memory effect in the isotropic phase. The permanent dipole moment of the FNPs causes the LC molecule to form short-range order surrounding the FNPs. This FNP-induced short-range order becomes more prominent in the isotropic phase when the global nematic order is absent. These short-range domains, being anisotropic in nature, interact with the external electric field. When the field goes off, these domains stay oriented due to the absence of the long range order in the isotropic phase, showing a hysteresis effect. The area under the hysteresis graph shows a significant pretransitional behavior on approaching the nematic phase from the isotropic phase.

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