

Abstract Submitted
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Solvent induced shape changes in liquid crystal elastomers¹ ATTILIO GOLEMME, Universita della Calabria, TIBOR TOTH-KATONA, Research Institute for Solid State Physics and Optics, JEREMY NEAL, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU, UNIVERSITA DELLA CALABRIA COLLABORATION, RESEARCH INSTITUTE FOR SOLID STATE PHYSICS AND OPTICS COLLABORATION, LIQUID CRYSTAL INSTITUTE TEAM — Liquid crystal elastomers are exceptionally responsive due to coupling between orientational order and mechanical strain. Changes in orientational order can give rise to mechanical deformations. Orientational order can be changed by a variety of excitations, including chemical concentration fields. We have studied the dynamics of shape changes in LCE samples due to exposure to organic solvents and solvent vapors. Unlike isotropic elastomers, which simply swell, LCEs show dramatic anisotropic shape changes when exposed to solvents. We present results for the excitation and relaxation dynamics of shape changes for a variety of materials in response to the presence of different solvents. The absorption of solvents can cause a nematic-paranematic phase transition. We discuss possible applications

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