

Abstract Submitted
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Liquid crystal elastomers: Bent core flexo-electricity¹ MARTIN CHAMBERS, Liquid Crystal Institute and Physics Department, Kent State University, Kent OH44240, USA, RAFAEL VERDUZCO, Center for Nanophase Materials Science, Oak Ridge National Laboratory, Oak Ridge TN37831, USA, SAMUEL SPRUNT, JAMES T. GLEESON, Physics Department, Kent State University, AN-TAL JAKLI, Liquid Crystal Institute, Kent State University — We report on the swelling of calamitic liquid crystal elastomers (LCE) with bent-core mesogens (BCM); this swelling took place at a temperature where both materials were in their isotropic phase. The BCM used varied in the degree of saturation of their hydrocarbon tails, which affects both viscosity and phase behaviour. We determined both swelling magnitude and dynamics. The host LCE systems homogeneously imbibe BCM up to 30-40 % mol. Based on differential scanning calorimetry, shape change anisotropy, and optical birefringence measurements, the swollen elastomers are all found to exhibit nematic phases, with some possessing a lower temperature smectic phase. Bent-core liquid crystal elastomers and swollen calamitic LCE in BCM were investigated for the flexoelectric properties by inducing a mechanical deformation. The value of the bend flexoelectric constant, e_3 of the swollen BCM containing LCE systems is comparable of that of the neat bent-core liquid crystal.

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