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Calamitic liquid crystal elastomers swollen with bent-core liquid crystals M. CHAMBERS, Liquid Crystal Institute, Kent State University, Kent, OH, J.T. GLEESON, S. SPRUNT, Department of Physics, Kent State University, Kent OH, A. JAKLI, Liquid Crystal Institute, Kent State University, Kent OH. — Liquid crystal elastomers are composed of a chemically bonded liquid crystal mesogen and an elastomeric polymer network. They exhibit both the properties of rubber elasticity, liquid crystallinity and their interplay, giving rise to unique systems rich in physics. Additionally, bent-core ("banana") liquid crystals are also of interest exhibiting rich phase behaviour and non-classical properties such as flexoelectricity. Here we examine the swelling of existing calamitic liquid crystal elastomers with various bent-core mesogens and the intriguing properties of the resulting system. The consequential swollen liquid crystalline elastomer systems, can imbibe many times there weight and volume in bent core mesogens until saturated. The homogenous system displays new properties (transition temperatures and phases) depending strongly on the interaction of the elastomer mesogen and bent-core mesogen. Strangely, for some bent-core mesogens this leads to higher temperature phase behaviour than both compounds originally posses. The authors would like to acknowledge support from ONR (N00014-07-1-0440) and NSF (DMR-0606160).

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