

Abstract Submitted  
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**Domain Structure Formation in Swollen Side-Chain Liquid Crystalline Elastomers**<sup>1</sup> CHRISTOPHER GRABOWSHI, PAUL LUCHETTE, PETER PALFFY-MUHORAY, Liquid Crystal Institute - KSU — Liquid crystal elastomers (LCEs) are soft materials consisting of a crosslinked polymer network that incorporates mesogenic groups, allowing for orientational order in a solid rubber. Maintaining uniaxial strain on a swollen nematic polymer gel will fix the direction of average orientation of mesogens along the strain axis, yielding a monodomain LCE. Failure to strain the swollen gel within  $\sim 30$  minutes of formation will produce an opaque polydomain LCE that possesses no long-range nematic order unless stretched. Polarized laser light scattering has been previously employed to monitor the size of liquid crystal domains in fully-formed LCEs; however, no studies have focused on the initial stages of domain formation. We have recorded the time evolution of the far-field scattering patterns produced by swollen polymer gels under varying levels of applied strain. These scattering patterns provide dynamical information of domain behavior during synthesis and processing of monodomain and polydomain LCEs.

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