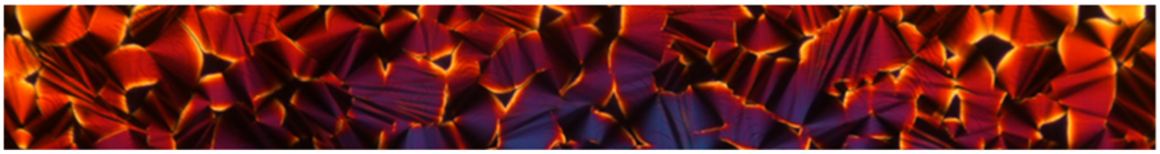

# SOFT MATERIALS RESEARCH CENTER

## *SPECIAL SEMINAR SERIES*

## Pixelated Polymers: Directing the Self-Assembly of Liquid Crystalline Elastomers


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Liquid crystalline materials are pervasive in modern society. It has been long known that liquid crystalline materials in polymeric forms also exhibit exceptional characteristics in high performance applications such as transparent armor or bulletproof vests. A specific class of liquid crystalline polymeric materials referred to as liquid crystalline elastomers were predicted by de Gennes to have exceptional promise as artificial muscles, owing to the unique assimilation of anisotropy and elasticity. Subsequent experimental studies have confirmed the salient features of these materials, with respect to other forms of stimuli-responsive soft matter, including actuation cycles of up to 400% as well "soft elasticity" (stretch at minimal stress). In this presentation, I will summarize our recent efforts in developing materials chemistry amenable to directed self-assembly. Enabled by these chemistries and processing methods, we have prepared liquid crystal elastomers with distinctive actuation and mechanical properties. Notably, these materials are homogenous in composition (lacking material/material interfaces). Relevance of this work to implementations in aerospace and commercial applications will be discussed.


**Wednesday, September 26th at 1:30 p.m. in Duane Physics G126**


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