MECHANICAL & INDUSTRIAL ENGINEERING COLLOQUIUM: ME 794 001

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221 MEC
1:00 to 2:25pm

"Mechanics of Amorphous Polymers and Polymeric Gels"

Abstract:

Amorphous thermoplastic polymers are important engineering materials; however, their nonlinear, strongly temperature- and rate-dependent elastic-viscoplastic behavior is still not very well understood, and is modeled by existing constitutive theories with varying degrees of success. Further, many materials undergo large deformations in response to a wide range of stimuli, such materials are known as active materials. In what follows, I will discuss prior and current research on constitutive modeling of amorphous thermoplastic polymers, and thermally active materials --- specifically thermally-actuated shape-memory polymers and polymeric gels.

Biography

I started my education in 2000 in the honors college at the New Jersey Institute of Technology. I received both B.S. and M.S. degrees at NJIT from the mechanical engineering department, finishing with an M.S. in 2006. My research while at NJIT was in the area of computational granular science. In 2006 I went on to the solid mechanics and materials laboratory at the Massachusetts Institute of Technology. I received my Ph.D. in mechanical engineering in 2011, specializing in solid mechanics. After MIT, I became a postdoctoral researcher in the engineering division at Lawrence Livermore National Laboratory near San Francisco in California. My research focus in the past few years has been the development of experimentally validated continuum level constitutive theories for large-deformation multi-physics behavior of materials, and the associated numerical implementation. My work spans most aspects of mechanics; experimental characterization, theoretical modeling, numerical implementation, and experimental validation.