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Soft Dielectrics: Heterogeneity and Instabilities STEPHAN RUDYKH, GAL DEBOTTON, Ben-Gurion University of the Negev, KAUSHIK BHATTACHARYA, California Institute of Technology — Dielectric Elastomers are capable of large deformations in response to electrical stimuli. Heterogeneous soft dielectrics with proper microstructures demonstrate much stronger electromechanical coupling than their homogeneous constituents. In turn, the heterogeneity is an origin for instability developments leading to drastic change in the composite microstructure. In this talk, the electromechanical instabilities are considered. Stability of anisotropic soft dielectrics is analyzed. Ways to achieve giant deformations and manipulating extreme material properties are discussed. 1. S. Rudykh and G. deBotton, "Instabilities of Hyperelastic Fiber Composites: Micromechanical Versus Numerical Analyses." Journal of Elasticity, 2011. http://dx.doi.org/2010.1007/s10659-011-9313-x 2. S. Rudykh, K. Bhattacharya and G. deBotton, "Snap-through actuation of thick-wall electroactive balloons." International Journal of Non-Linear Mechanics, 2011. http://dx.doi.org/10.1016/j.ijnonlinmec.2011.05.006 3. S. Rudykh and G. deBotton, "Stability of Anisotropic Electroactive Polymers with Application to Layered Media." Zeitschrift für angewandte Mathematik und Physik, 2011. http://dx.doi.org/10.1007/s00033-011-0136-1 4. S. Rudykh, A. Lewinstein, G. Uner and G. deBotton, "Giant Enhancement of the Electromechanical Coupling in Soft Heterogeneous Dielectrics." 2011 http://arxiv.org/abs/1105.4217v1

Stephan Rudykh
Ben-Gurion University of the Negev

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