

Abstract Submitted
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Growth and Stability of Polymer Surface Wrinkles ALFRED CROSBY, University of Massachusetts — For certain materials and geometries, the surface of a polymer film will wrinkle upon the application of a critical in-plane stress due to the onset of an elastic instability. The resulting morphology minimizes the in-plane strains and the system energy by locally bending the surface plane. This process and morphology have been studied at an increasing rate over the last decade and demonstrated in applications ranging from materials metrology to adhesion control. In general, the knowledge and use of this phenomenon has been developed for conditions that far exceed the point of initiation, under static equilibrium. In this presentation, we highlight recent experiments that explore the growth and morphological transitions of surface wrinkles. We quantify the growth mechanism under different conditions of mechanical constraint and demonstrate a unique ability to stabilize a wide variety of unique, non-predicted, surface wrinkle morphologies.

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