

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Probing Relaxation in Glassy Freestanding Diblock Copolymer Films ADAM N. RAEGEN, ANDREW B. CROLL, KARI DALNOKI-VERESS, Department of Physics & Astronomy and the Brockhouse Institute for Materials Research, McMaster University — We employ an axi-symmetric deformation and modulus test (ADAM) to measure the response of a thin freestanding diblock copolymer film to an external load. The method measures the deformation of a spincast film when an axi-symmetric load is applied by a flat circular punch. The flat punch minimises uncertainties in the experiment, while the use of spincast films provides a very smooth contact surface. The use of diblock copolymers allows us to change the internal structure of the film from disordered to ordered (lamellar) and surface topography (flat if there are an integer number of lamellae, and islands, bicontinuous or holes for non-integer) by changing the annealing history and thickness of the sample. We discuss our results in terms of the elastic modulus and creep compliance of the films.

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Date submitted: 03 Dec 2007

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