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**Block Copolymer Ordering on Soft, Patternable and Flexible Substrates** ARZU HAYIRLIOGLU, GURPREET SINGH, ALAMGIR KARIM, Department of Polymer Engineering, The University of Akron, Akron, 44325, OH — Directed assembly of cylinder and lamellae forming block copolymer films via flexible PDMS substrate is examined to investigate the ordering properties of polystyrene-*b*-poly(methyl methacrylate) (PS-*b*-PMMA) films. We study the cases where the PS-*b*-PMMA films are either directly coated on patterned PDMS flexible substrates, or coated on a flat PDMS substrate with a top patterned and flexible PDMS confinement. The surface energy of the PDMS substrates was modified to vary from 20 to 68 mJ/m<sup>2</sup> by exposing them to UV-ozone (UVO) for controlled wettability and orientation control. We replicated different patterned media and observed perpendicular lamellar orientation and parallel cylindrical orientation on patterned flexible substrate at higher surface energies in preliminary measurements. Characterization of orientation was investigated with Grazing-Incidence Small Angle X-ray Scattering (GISAXS) measurement as well as with Atomic Force Microscope (AFM) results. Optical Microscope (OM) was also used to study of the surface morphology of the BCP films.

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