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Reversible reordering of a sphere-forming diblock at the substrate interface: surface directed sphere to lamellar transition JESSICA L. CARVALHO, McMaster University, MICHAEL V. MASSA, Harvard University, KARI DALNOKI-VERESS, McMaster University — We present our results on the use of ellipsometry to probe thin films of a diblock-copolymer. Ellipsometry uses the ellipticity induced upon reflection of light from a film covered substrate to allow calculation of the refractive index and thickness of the film. By studying the temperature dependence of these quantities one can measure phase transitions. The samples used are thin films of a polybutadiene-poly(ethylene oxide) diblock that micro phase-separates into PEO minority spheres in a PB matrix. We will discuss a transition that takes place which is the result of a reordering of the diblock morphology at the substrate. As the samples are cooled there is a reversible transition from a partially wetting layer of PEO spheres to a wetting lamella of PEO on the substrate. We will discuss the experimental results as well as the physical mechanism which drives the sphere to lamella transition.

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