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Surface dynamics of micellar diblock copolymer films[1] SANGHOON SONG, WONSUK CHA, HYUNJUNG KIM, Sogang University, ZHANG JIANG, SURESH NARAYANAN, Advanced Photon Source — We studied the structure and surface dynamics of poly(styrene)-b-poly(dimethylsiloxane) (PS-b-PDMS) diblock copolymer films with micellar PDMS surrounded by PS shells. By 'in-situ' high resolution synchrotron x-ray reflectivity and diffuse scattering, we obtained exact thickness, electron density and surface tension. A segregation layer near the top surface was appeared with increasing temperature Surface dynamics were measured as a function of film thickness and temperature by x-ray photon correlation spectroscopy. The best fit to relaxation time constants as a function of in-plane wavevectors were analyzed with a theory based on capillary waves with hydrodynamics with bilayer model Finally the viscosities for the top segregated layer as well as for the bottom layer are obtained at given temperatures

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