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Kinetics of Assembly of "Looped" Brushes at the Solid-Liquid Interface JOSE ALONZO, S. MICHAEL KILBEY II[1], Department of Chemical Engineering, Clemson University, Clemson, SC 29634, USA — Dense layers of end-tethered polymers, often called polymer brushes, are of interest for their ability to modify interfacial properties. Along these lines, creating brushes comprised of loops by tethering the chains by both ends offers potential advantages in tailoring the adhesive or frictional properties of surfaces. Rigorously synthesized poly(2-vinylpyridine)-polystyrene-poly(2-vinylpyridine) triblock copolymers were used as a model system to examine the formation of looped brushes at the solid-liquid interface. In-situ phase modulated ellipsometry measurements were made to study the kinetics of assembly of these copolymers onto silicon surfaces. This technique allows the adsorbed amount and ellipsometric height of the layer to be sensitively measured as a function of time. These experiments provide evidence of loop formation: specifically, while the adsorbed amount increases asymptotically, the thickness shows an "overshoot" during the initial stages of adsorption followed by a slow reorganization. The final thickness of the looped brush is approximately one-half of that expected for a single-end tethered brush made from a diblock copolymer with a buoy block of similar molecular weight. The effect of triblock molecular weight and composition on layer assembly and structure will also be discussed.

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