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Polymer Physics Prize Talk: Polymer Mobility at Surfaces and in Confined Environments

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Rich new chemistry and physics emerge when one considers confined fluids, where the environment is distinctly different than in bulk. The intuition of what to expect based on bulk properties is found to break down. This talk will emphasize recent findings using a combination of single-particle imaging and fluorescence correlation spectroscopy of polymers at hard surfaces (mica), soft surfaces (phospholipid bilayers) and random network environments. A surprising dependence is found on the polymer molecular weight and concentration, as well as on the substrate makeup.