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Study of PSAs based on Acrylic Block Copolymers by Scanning Probe Microscopy[1] CARLOS A. BARRIOS, MARK D. FOSTER, Department of Polymer Science, The University of Akron — Techniques developed from scanning probe microscopy (SPM) allow the observation of surfaces on a highly local level and in a way in which bulk dissipative mechanisms play a much less prominent role. Unfortunately, sticky surfaces are difficult to characterize due to strong interactions with the probe. Deposition of hydrophobic coatings on SPM tips is used in this work to study adhesive surfaces. The primary goal of this work is to study the short time aging of model PSAs, particularly under humid conditions for a blend of acrylic triblock copolymer and homopolymer having similar molecular weights. Well-defined polymers were synthesized by ATRP. Hydrophobic modification of tips using chlorosilanes allowed the resolution of pull-off forces on mildly adhesive surfaces. Force-penetration curves of acrylic block copolymer-homopolymer blends showed a transition point in which the slope of the loading region changes to almost twice its original value and a constant force region just before debonding. Such behavior may be related to a superficial phase separation between the two components of the blend and a fibrillation process, respectively. Current work focuses on the quantification and analysis of these differences.

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