Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Tethered Polymer Chains on Single Crystal Surfaces RYAN VAN HORN, JOSEPH X. ZHENG, HUIMING XIONG, RODERIC P. QUIRK, University of Akron, BERNARD LOTZ, Institut of Charles Sadron, EDWIN L. THOMAS, MIT, AN-CHANG SHI, McMaster University, STEPHEN Z. D. CHENG, University of Akron — For years, tethered polymer chains have been studied for various applications, including responsive surfaces and protein adsorption. The tethering density of such systems is a highly important parameter in determining their conformations and subsequent properties, as shown by various theoretical and experimental works. Our group uses single crystals of crystalline-amorphous diblock copolymers to study tethered polymer chains. This system provides better control of tethering density and molecular weight as compared to previous methods. Our work focuses specifically on determining the transitions into each interaction regime. Zheng and coworkers found that the reduced tethering density is 3.7 for the onset of interchain interaction and 14.3 for the highly-stretched brush in PS-b-PEO and PS-b-PLLA. This work provides, for the first time, the values of these two onsets with high certainty; however, the systems studied do not provide general results. Work on expanding our knowledge of these transitions in other systems, PMMA-b-PLLA and PB-b-PEO, is currently underway.

Ryan Van Horn
University of Akron

Date submitted: 17 Nov 2006 Electronic form version 1.4