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Single Crystals of Diblock Copolymers: Tethered Chain Study RYAN M. VAN HORN, JOSEPH X. ZHENG, HUIMING XIONG, RODERIC P. QUIRK, University of Akron, BERNARD LOTZ, Institut Charles Saudron, EDWIN L. THOMAS, Massachussetts Institute of Technology, STEPHEN Z.D. CHENG, University of Akron — Tethered polymer chains have become an important area of research over the last few decades. Their unique properties make them appealing for various applications. The tethering density of the chains is the most important parameter in determining their 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. Previous work on PS-b-PEO and PS-b-PLLA shows, for the first time, the values of the interacting and brush regime transitions. The systems studied have addressed some issues, molecular weight dependence and solvent quality, but they do not provide general results. The work presented here will look at the role of chain adsorption and crystallization of the tethered chain, using PMMA-b-PLLA and PEO-b-PCL systems.

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