

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Study of Onsets of Tethered Chain Overcrowding and Highly Stretched Regime of Brushes via Crystalline-Amorphous Diblock Copolymers JOSEPH X. ZHENG, HUIMING XIONG, KYUNGMIN LEE, Maurice Morton Institute and Department of Polymer Science, The University of Akron, CHRISTOPHER Y. LI, Department of Materials Science and Engineering, Drexel University, LEI ZHU, Polymer Program, Institute of Materials Science and Department of Chemical Engineering, The University of Connecticut, PING HUANG, YA GUO, QING GE, RODERIC P. QUIRK, Maurice Morton Institute and Department of Polymer Science, The University of Akron, BERNARD LOTZ, Institut of Charles Sadron, France, EDWIN L. THOMAS, Department of Materials Science and Engineering, MIT, STEPHEN Z.D. CHENG, Maurice Morton Institute and Department of Polymer Science, The University of Akron — Well-controlled tethered polymer chains can be obtained from the solution grown single crystals of crystalline-amorphous diblock copolymers (such as PS-b-PEO and PS-b-PLLA). Based on the thickness-crystallization temperature relation, the interaction between the tethered polymer chains can be measured. The onset of chain was found as a first-order like transition at reduced tethering density near 3.7-3.8, and the onset of highly stretched brush regime was found as a high-order like transition at reduced tethering density near 15.

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Date submitted: 11 Jan 2005

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