

Abstract Submitted
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Nano-architectures of flattened polymer chains at solid-polymer melt interface¹ XIAOYU DI, JIAXUN WANG, NAISHENG JIANG, MAYA K. ENDOH, TADANORI KOGA, Department of Materials Science and Engineering, Stony Brook University, Stony Brook, NY 11794-2275, MASAFUMI FUKUTO, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY 11973, USA, TAKAMICHI SHINOHARA, ATSUSHI TAKAHARA, Institute for Materials Chemistry and Engineering, Kyushu University, Motoooka, Nishi-ku, Fukuoka 819-0395, Japan — Our group has recently revealed that, by using x-ray/neutron reflectivity, irreversibly adsorbed polystyrene (PS) layers onto planar silicon substrates are composed of the two different nano-architectures: flattened chains that constitute the inner higher density region of the adsorbed layers and loosely adsorbed polymer chains that form the outer bulk-like density region. Here, we focus on the following two effects on the formation of the flattened layer: (i) intramolecular architectures and (ii) polymer/substrate interactions. Various surface sensitive techniques including in-situ x-ray/neutron reflectivity, grazing incidence X-ray diffraction, and atomic force microscope were utilized to illuminate the inherent chain architectures at the solid/polymer interface.

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Xiaoyu Di
Department of Materials Science and Engineering,
Stony Brook University, Stony Brook, NY 11794-2275

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