

Abstract Submitted
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Polymer adsorption from the melts - In-situ x-ray/neutron reflectivity studies on the chain conformations at the polymer/solid interfaces¹
NAISHENG JIANG, JUN SHANG, MAYA ENDOH, Department of Materials Science and Engineering, Stony Brook University, BULENT AKGUN, SUSHIL SATIJA, Center for Neutron Research, NIST, Gaithersburg, TADANORI KOGA, Department of Materials Science and Engineering, Stony Brook University — Adsorbed polymer layers formed on flat solid substrates have recently been the subject of extensive studies due to their strong influence on the physical properties of polymeric materials confined at the nanometer scale. Such adsorbed layers are stable against temperature and solvents and can be formed even onto weakly attractive substrate surfaces. In this study, we aim to clarify the detailed structures and thermal properties by the combined use of in-situ x-ray/neutron reflectivity and atomic force microscopy techniques. Various polymers including polystyrene, polybutadiene, poly(2-vinylpyridine), polycarbonate, and poly(methyl methacrylate) were used to prepare equilibrium adsorbed polymer layers on silicon substrates. We report the effects of the intramolecular architectures, molecular weight, and polymer/substrate interactions on the structures, leading to a better understanding of the thermodynamics at the polymer melt/solid interfaces.

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