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Equilibrium chain conformations of bound polymers at the polymer melt/solid interface[1] MANI SEN, NAISHENG JIANG, LEVENT SENDOGDULAR, MAYA ENDOH, TADANORI KOGA, State Univ of NY- Stony Brook — We report the equilibrium conformations of bound polymer chains formed on planar solids. In this study, bound polystyrene (PS) layers onto silicon (Si) substrates were used as a model system. Three 50 nm-thick PS thin films were prepared by using different film processes (i.e., spin coating, dip coating, and floating) following prolonged thermal annealing and subsequent solvent leaching. The structures of the bound layers on Si were then characterized by using x-ray reflectivity and atomic force microscopy. We found that the adsorption kinetics for the dip coating film is much longer than that for the spun cast film or the floating film. It was also found that all the bound PS layers are composed of two different nanoarchitectures: flattened chains that constitute the inner higher density region of the bound layers and loosely adsorbed polymer chains that form the outer bulk-like density region.

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