

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Surface Dynamics of Partially Tethered Polymer Films

MARK FOSTER, JIN KUK LEE, Dept. of Polymer Science, The University of Akron, BULENT AKGUN, NIST Center for Neutron Research, ZHANG JIANG, SURESH NARAYANAN, X-ray Science Division, Argonne National Laboratory, SUSHIL SATIJA, NIST Center for Neutron Research — The surface dynamics of thin polystyrene (PS) melt films can be tailored by tethering some of the chains to a supporting substrate. The relaxation of surface height fluctuations for these films depends on the density of grafting, molecular weight of tethered chains, and extent to which tethered chains extend into the layer. The surface dynamics of “partially tethered” thin films have been studied using X-ray photon correlation spectroscopy (XPCS). PS chains have been grafted to substrates with low grafting densities untethered deuterated PS (dPS) chains spun cast on the tethered chains, and the films annealed to create layers containing both tethered and untethered chains. The degree to which the tethered PS extends into the untethered dPS chains has been measured by neutron reflectivity.

Mark Foster
Dept. of Polymer Science, The University of Akron

Date submitted: 20 Nov 2011

Electronic form version 1.4