Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Effect of polymer architecture on the interfacial properties of thin films EMMANOUIL GLYNOS, BRADLEY FRIEBERG, PETER GREEN, University of Michigan, Ann Arbor — Many physical properties of polymers, such as phase transitions, mechanical properties, dynamics, crystallization and the glass transition, Tg, are influenced by film thickness constraints, and associated with the interactions between the constituent macromolecules and external interfaces. We show that star-shaped molecules, possessing sufficiently high functionality, exhibit significant differences in their average Tg-vs-thickness (H) behavior, both in the magnitude and the thickness dependent trends, from their linear analogs. In this talk, we will discuss the effect of polymer architecture on the interfacial properties of supported thin films, and more specifically how chain segments near the free and the solid interfaces influence the average Tg of the film. These effects are discussed in terms of the role of macromolecular architecture and entropic effects on the structure and dynamics of the polymer chains close to the interfaces, and their influence on the average properties of thin supported films.

Emmanouil Glynos
University of Michigan, Ann Arbor

Date submitted: 27 Nov 2010 Electronic form version 1.4