Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Confined diblock copolymer melts: a field-theoretic computational study ALFREDO ALEXANDER-KATZ, GLENN FREDRICKSON, University of California, Santa Barbara — Using field-theoretic simulations, we study the effects of confinement and fluctuations in the location of the order-disorder transition (ODT) for a diblock copolymer system. Specifically, we consider a melt of copolymers confined between two neutral hard walls separated by a distance L. For this system, it is found that confinement induces a shift in the ODT which depends on the strength of the fluctuations (dominated by the length of the copolymers), as well as on the width of the slit. The shift in the ODT due to fluctuations presents a minimum when the slit width is comparable to the unperturbed size of the polymer. Also, we present results on the structure of the disorder phase close to the ODT which exhibits non-trivial oscillations in the composition fluctuations.

Alfredo Alexander-Katz
TUM

Date submitted: 19 Jan 2005 Electronic form version 1.4