

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Mixed Polymer Brushes: A Tool for Nano-lithography?** SU-MI HUR, University of California, Santa Barbara, AMALIE FRISCHKNECHT, DALE HUBER, Sandia National Laboratories, GLENN FREDRICKSON, University of California, Santa Barbara — Self-consistent field theory (SCFT) simulations are presented that examine the suitability of mixed polymer brushes as a nano-lithography tool by adapting lateral confinement methods that have proved effective in enhancing the in-plane order of self-assembled block copolymer films. In the present context, however, we explore a type of “chemical” (rather than “topological”) confinement in which a “pure” polymer brush of either A or B homopolymer is used to laterally confine the mixed A/B brush into a region of prescribed shape. SCFT simulations of such confined mixed brushes show that the introduction of a pure polymer brush alongside the mixed brush region directs the microdomains to align with the interface between the two regions. Results are also presented that demonstrate the possibility of forming features with multiple sizes and pitches in precise locations within a film by modulating the grafting densities of one or both mixed brush components.

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Date submitted: 18 Nov 2009

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