Abstract Submitted
for the OSF05 Meeting of
The American Physical Society

Monte Carlo Study of Reversible Polymer Brushes CHUN-CHUNG CHEN, ELENA E. DORMIDONTOVA, Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, Ohio 44106 — We study end-adsorption of reversibly associated polymers formed through head-to-tail reversible self-assembly. The surface contains uniformly distributed adsorption sites attractive only for head-groups of associating polymers, so there is no possibility of forming loops at the surface. At low density of adsorption sites, the density profile of adsorbed layer corresponds to a polydisperse mushroom regime. In this regime the adsorption constant was found to decay as inverse square root of the chain length based on loss of conformational entropy near the surface. With an increase of adsorption site density and polymer bulk concentration the average height of associated polymer layer increases as chains stretch out away from the surface. Such stretching, however, is rather limited as the chains are getting shorter and the occupancy of adsorption sites on the surface is lower. Despite the high adsorption density regime considerably differs from traditional monodisperse brush, a transition from non-stretched to stretched chain conformations with the increase of anchoring density is quite evident.

Chun-Chung Chen
Department of Macromolecular Science and Engineering
Case Western Reserve University, Cleveland, Ohio 44106

Date submitted: 23 Sep 2005 Electronic form version 1.4