A Hybrid Theoretical and Computational Approach to Study Polymer Induced Interaction between Two Parallel Plates WENHUA JIANG, YONGMEI WANG, Department of Chemistry, The University of Memphis, IWAO TERAOKA, Herman F. Mark Polymer Research Institute, Polytechnic University, Brooklyn, NY 11201 — We present a theoretical derivation for the polymer induced force on the two parallel plates based on the osmotic pressures of the bulk and confined solution and the partition coefficient of polymers between the bulk solution and the confined region. The formulation allows us to deduce the polymer induced force for polymers with excluded volume interactions and for a wide range of polymer concentrations by making use of the lattice Monte Carlo simulation results for self-avoiding walk chains. Both the depletion attraction induced by non-adsorptive polymers and the bridging attraction induced by adsorptive polymers are obtained. The approach is significant since it opens up the possibility to study polymer induced force for a variety of other polymeric systems.

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