Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

**Ion solvation and its effects on polymer blend miscibility** ZHENGANG WANG, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA 91125 — We study the solvation of small ions in a binary blend of two homopolymers having different dielectric constants. The preferential solvation of ions by the high dielectric constant component results in decreased miscibility of the two polymers. We first consider the solvation of a single ion in the mixture and its effect on the local composition change using the Flory-Huggins-de Gennes free energy for the polymer blend. This single-ion information is then used to construct a bulk free energy valid for small ion concentrations, from which the shift in the spinodal and coexistence curve is calculated.

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Date submitted: 20 Nov 2006 Electronic form version 1.4