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**Conformational Properties and Phase Behavior of Mixed Brushes between Charged and Neutral Polymers: SCF Modeling Using the Edwards Hamiltonian Approach** KEVIN WITTE, YOU-YEON WON, Purdue University — We present a theoretical study of the single-chain statistics and two-dimensional (2-D) phase behavior of mixed brushes composed of charged and non-charged polymers. We extend the Edwards Hamiltonian formulation for the Green function to investigation of mixed brushes containing a polyelectrolyte species through the incorporation of the combined electrostatic effects as an additional external field which can be self-consistently computed by a corresponding Poisson-Boltzmann-like equation. The resultant SCF equations were numerically analyzed to achieve results that are exact within the assumption of mean field. The 2-D phase behavior of the mixed brushes (assuming that the brushes are laterally mobile) was examined using the conventional free energy of mixing analysis. The predictions on the effects of such control variables as the brush hydrophilicity/hydrophobicity, surface grafting density, charge content of the polyelectrolyte species, and ionic strength of the medium on the conformation properties and phase behavior of the mixed brushes will be discussed.

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