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Interactions and self assembly of two heterogeneously charged surfaces ROBERT BREWSTER, Dept. of Materials And Interfaces, Weizmann Institute of Science, PHILIP PINCUS, Dept. of Physics, SAMUEL SAFRAN, Dept. of Materials And Interfaces, Weizmann Institute of Science — Recent experiments[1,2] have measured attractive interactions between two surfaces that each bear two molecular species with opposite charge. Theoretical considerations predict equilibrium finite-sized domains of each species, consistent with experiment. These domains, whose observed sizes are typically tens of nanometers, are the result of a balance between the line tension, which prefers macroscopic separation, and the electrostatics, which prefers mixing. Additionally, two such surfaces show a long range attraction. We present a theoretical model that predicts the domain size, phase behavior and forces for two such interacting surfaces.

(1) E. E. Meyer, Q. Lin, T. Hassenkam, E. Oroudjev, J. N. Israelachvili PNAS **102**, 6839 (2005).
(2) S. Perkin, N. Kampf, J. Klein, Phys. Rev. Lett. **96**, 038301 (2006).

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