

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Charge Induced Pattern Formation on Surfaces** SHARON M. LOVERDE, YURY VELICHKO, MONICA OLVERA DE LA CRUZ, Department of Materials Science and Engineering, Northwestern University — Amphiphilic molecules self-assemble into a wide variety of biological structures—micelles, vesicles, membranes, etc. Recent observations support the existence of phase separation on the surface of charged nano-aggregates. In this case, short range van der Waals and long range electrostatic interactions induce microphase separation and determine the resulting equilibrium morphology on the surface. An ideal system of immiscible cationic and anionic components, confined to a two dimensional plane, is analyzed with MD simulation using a  $1/r$  Coulomb potential. Implicit counterion effects on structural properties are also considered by introducing a screened Debye-Hückel potential to represent the effects of including monovalent salt in the system. Resulting structural and thermodynamic properties are compared with those predicted by theory.

Sharon M. Loverde  
Department of Materials Science and Engineering  
Northwestern University

Date submitted: 07 Dec 2004

Electronic form version 1.4