

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**The buckling transition of ionic shells and electrostatics**<sup>1</sup> MONICA OLVERA DE LA CRUZ, RASTKO SKNEPNEK, GRAZIANO VERNIZZI, Northwestern University — Can one design the morphology of a shell with diverse symmetries by coassembling oppositely charged molecules? We present the results of numerical simulations of a model for an ionic shell at different stoichiometric ratios. The tendency of electrostatic interactions to organize a system of charges (globally electroneutral) along flat planes, competes with the curved geometry of the shell. An “electrostatic buckling” instability ensues, and at low-temperatures a variety of shapes arise, beyond the icosahedral one typical of large viruses, large fullerenes, and catanionic-anionic vesicles. We study also the effects of temperature, different dielectric environments, and screening salt.

<sup>1</sup>Research supported by the U.S. Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Award DE-FG02-08ER46539

Graziano Vernizzi  
Northwestern University

Date submitted: 17 Dec 2009

Electronic form version 1.4