

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Buckled Membranes in Mixed-Valence Ionic Amphiphile Vesicles Analyzed by X-Ray Scattering**<sup>1</sup> MICHAEL BEDZYK, CHEUK LEUNG, MEGAN GREENFIELD, LIAM PALMER, GRAZIANO VERNIZZI, MONICA OLVERA DE LA CRUZ, SAMUEL STUPP, Northwestern University — We demonstrate that charged amphiphilic molecules, including molecules with biological motifs, organize into non-spherical shapes expected for elastic membranes. Specifically, we demonstrate that anionic (-1) water insoluble amphiphiles and cationic amphiphiles (+3) (which form micelles in water), can co-assemble into small buckled vesicles ( *J. Am. Chem. Soc.*, 131, 2030-12031 (2009) ). The strong electrostatic interaction between the +3 and -1 head groups increases the cohesion energy of the amphiphiles and favors the formation of two-dimensional, flat ionic domains on the vesicle surface, resulting in edges and a buckled shape. WAXS measurements confirm the presence of crystalline domains induced by these ionic correlations.

<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 DOE DE-FG02-08ER46539.

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Date submitted: 21 Dec 2009

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