

Abstract Submitted
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Faceting of multicomponent charged elastic shells RASTKO SKNEPNEK, CHEUK LEUNG, LIAM C. PALMER, Northwestern University, GRAZIANO VERNIZZI, Siena College, SAMUEL I. STUPP, MICHAEL J. BEDZYK, MONICA OLVERA DE LA CRUZ, Northwestern University — Combining coarse-grained molecular dynamics simulations with continuum elastic theory, we show that electrostatic interactions between charged lipid head groups can lead to the crystallization of the bilayer. Regions with different molecular charge ratios have distinct elastic properties and naturally tend to segregate inducing an effective line tension between neighboring patches. The line tension and local patch-dependent elastic properties, i.e., bending rigidity and Young modulus, have a drastic effect on the shell shape. We explore a wide region of parameter space and find a gallery of faceted structures, closely resembling shapes of shells recently identified experimentally.

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