

Abstract Submitted
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Understanding crumpling lipid vesicles at the gel phase transition¹ LINDA HIRST, School of Natural Sciences, University of California, Merced, ADAM OSSOWSKI, MATTHEW FRASER, University of California, Merced — Wrinkling and crumpling transitions in different membrane types have been studied extensively in recent years both theoretically and computationally. There has also been very interesting recent work on defects in liquid crystalline shells. Lipid bilayer vesicles, widely used in biophysical research can be considered as a single layer smectic shell in the liquid crystalline phase. On cooling the lipid vesicle a transition to the gel phase may take place in which the lipid chains tilt and assume a more ordered packing arrangement. We observe large scale morphological changes in vesicles close to this transition point using fluorescence microscopy and investigate the possible mechanisms for this transition. Confocal microscopy is used to map 3D vesicle shape and crumpling length-scales. We also employ the molecular tilt sensitive dye, Laurdan to investigate the role of tilt domain formation on macroscopic structure.

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