Abstract Submitted
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Line Tension and the Nature of the Boundary in a Pure Model System[1] RICHELLE TEELING, PRITAM MANDAL, LU ZOU, Kent State University, ANDREW BERNOFF, Harvey Mudd College, JAMES ALEXANDER, J. ADIN MANN, Case Western Reserve University, ELIZABETH MANN, Kent State University — Insoluble 8CB (4-n-octyl-4 -cyanobiphenyl) layers at the air/water interface provide a well-controlled system on which to analyze the line tension and the nature of the boundary between quasi-two dimensional domains. The average molecular area was adjusted to monolayer liquid/gas or to monolayer/trilayer coexistence. In the first case, difference in dipole moment density leads to long-range repulsive forces which affect line tension and domain configuration. The symmetry of additional bilayers in the second system minimizes such effects, allowing a direct test of the effect of repulsive forces. The line tension of both systems was determined from the hydrodynamic relaxation of stretched domains, through quantitative comparisons with a numerically tractable hydrodynamic model for the relaxation. This research will give insight into similar system of lipids and proteins in biological membranes.

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