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Curvature-driven domain formation in ternary lipid membranes MATTHEW DEMERS, RASTKO SKNEPNEK, MONICA OLVERA DE LA CRUZ, Northwestern University — We model vesicles formed by three-component fluid membranes whose components have differing spontaneous curvatures. We use Monte Carlo simulated annealing to find low energy configurations for a range of component characteristics. A wide variety of ordered structures are found, including highly symmetric structures with elongated domains resembling faceted edges. We also observe an effective attraction between components of highest and lowest spontaneous curvature. We relate these effects to the interplay of spontaneous curvature and underlying geometric constraints. Our results suggest that the composition-shape coupling can be an important mechanism in the formation of highly ordered structures in many-component membranes.

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