

Abstract Submitted
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Phase separation behavior of asymmetric lipid bilayers FANINDRA BHTATTA, ELIZABETH MANN, DAVID ALLENDER, Kent State University — Previous work has considered asymmetric bilayers in which each layer contains a mixture of cholesterol and lipids, but the two layers have different lipids and different cholesterol concentrations. In particular, one layer has concentrations such that phase separation into cholesterol rich and cholesterol poor phases is expected, but the second layer, if unaffected by the first layer, would not phase separate. Using only the leading terms of interaction between cholesterol concentration and the straightening of the hydrocarbon chains in the lipids in a given layer, plus a coupling of the two layers via their chain order, it was found that phase separation in one layer causes phase separation in the second. We have examined the effect of higher order terms in the chain ordering on phase separation behavior of the bilayer if it is symmetric. We found region of two, three and four phase coexistence, depending on concentration, and temperature.

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