

Abstract Submitted
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Macroscopic Phase Separation, Modulated Phases, and Microemulsions: A Unified Picture of Rafts¹ ROY SHLOMOVITZ, LUTZ MAIBAUM, MICHAEL SCHICK, University of Washington — We simulate a simple phenomenological model describing phase behavior in a multi-component membrane, a model capable of producing macroscopic phase separation, modulated phases, and microemulsions, all of which have been discussed in terms of raft phenomena. We show that one effect of thermal fluctuations on the mean-field phase diagram is that it permits a direct transition between either one of the coexisting liquid phases to a microemulsion. This implies that one system which exhibits phase separation can be related to a similar system which exhibits the heterogeneities characteristic of a microemulsion. The two systems could differ in their average membrane composition or in the relative compositions of their exoplasmic and cytoplasmic leaves. The model provides a unified description of these raft-associated phenomena.

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