

Abstract Submitted
for the TSF12 Meeting of
The American Physical Society

Gramicidin Alters the Lipid Compositions of Liquid-Ordered and Liquid-Disordered Membrane Domains EBRAHIM HASSAN-ZADEH, Graduate Student, JUYANG HUANG, Professor — The effects of adding 1 mol % of gramicidin A to the well-known DOPC/DSPC/cholesterol lipid mixtures were investigated. 4-component giant unilamellar vesicles (GUV) were prepared using our recently developed Wet-Film method. The phase boundary of liquid-ordered and liquid-disordered (*Lo-Ld*) coexisting region was determined using video fluorescence microscopy. We found that if cares were not taken, light-induced domain artifacts could significantly distort the measured phase boundary. After testing several fluorescence dyes, we found that the emission spectrum of Nile Red is quite sensitive to membrane composition. By fitting the Nile Red emission spectra at the phase boundary to the spectra in the *Lo-Ld* coexisting region, the thermodynamic tie-lines were determined. As an active component of lipid membranes, gramicidin not only partitions favorably into the liquid-disordered (*Ld*) phase, it also alters the phase boundary and thermodynamic tie-lines. Even at as low as 1 mol %, gramicidin decreases the cholesterol mole fraction of *Ld* phase and increases the area of *Lo* phase.

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Date submitted: 17 Sep 2012

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