

Abstract Submitted  
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**Stress Induced Domain Formation in Multilamellar Lipid Bilayers**<sup>1</sup> LOBAT TAYEBI, SEAN GILLMORE, ATUL PARIKH, University of California Davis — Domain formation in lipid mixtures due to phase separation of the components is a well-known phenomenon that has been studied in mono- and bi-molecular lipid configurations. We report same phenomenon, however, in multilamellar configurations consisting of thousands of lamellae where the domain pattern in each layer is interestingly aligned with the other lamellae. In this process, both dehydration and hydration of lipid cake can act as the driving force to separate two phases of liquid ordered and liquid disordered. In a controlled experiment with a stack lipid saturated with water, mechanical perturbation can induce domain formation too. Series of experiments of this kind reaches us to the conclusion that any sort of stress in special condition may cause domain formation. We use a combination of microscopy tools including AFM, fluorescence confocal and bright-field microscopy to determine the influence of interaction between the line tension and key elastic properties of the lipid bilayers. As a particular interest we studied the dynamics of the domain pattern formation and the interactions between the domains such as long-term fusion.

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