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Exploration of phase separation in heterogeneous lipid monolayers CURT DECARO, SAMBHUNATH BERA, Northern Illinois University, ZHANG JIANG, Argonne National Laboratory, MRINMAY MUKHOPADHYAY, SPring-8, CAROL THOMPSON, Northern Illinois University — A Langmuir monolayer is a well established model of a single leaflet of a lipid membrane. In this work, we investigate the phase separation behavior of a model Langmuir monolayer as a function of both Langmuir surface pressure and ratio of saturated lipid : unsaturated lipid : cholesterol. The specifics of domain separation behavior, or "rafting," in membranes are generally thought to be responsible for much of the behavior of living membranes, specifically in protein integration and transport. Off-specular x-ray scattering is used to probe in-plane structure of the membrane at the sub-micron scale. Additionally, atomic force microscopy imaging is taken on samples transferred to a rigid support. In-plane order is found to grow as a function of surface pressure. Also, the in-plane order is found to depend on cholesterol concentration in the monolayer. The phase space of the in-plane order as a function of lipid and cholesterol concentration is presented.

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