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Phase separation in lipid/cholesterol monolayers: direct comparison of fluorescence and Brewster angle microscopies FANINDRA BHATTA, YASMIN ISLER, DAVID ALLENDER, ELIZABETH MANN, Kent State University — Langmuir monolayers of dihydrocholesterol (dChol) and dimyristoylphosphatidylcholine (DMPC) at the air / water interface reveals behavior that is useful for gaining insight into biological membranes, bilayers containing these and other components. At a given temperature and dChol fraction, there is a fixed 2-d surface pressure below which dChol/DMPC divides into two phases: an ordered, cholesterol-rich phase and a more disordered cholesterol-poor phase. Above this surface pressure, the two phases are identical. Previous studies of phase separation in this system used fluorescence microscopy (FM) but fluorescence agents can be line active and significantly change the phase behavior. Brewster angle microscopy (BAM) allows us to look at macroscopic phase separation without dye. In this study, we have developed an integrated assembly for FM and BAM on a Langmuir trough. A laser ($\lambda = 488$ nm) is used as the source of light for both the reflectivity observed in BAM and for the excitation and emission observed in FM.

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