
Bilayers at the ILL

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# Stability of supported lipid bilayers in high adhesive regime

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Supported lipid bilayers (SLBs) are often used for investigation in biophysics. They can be a good model system because it is not difficult to compose them at different scales of complexity. In fact, by using mixtures of lipids, or the addition of other proteins, the interactions between those bilayer components can be investigated. Alternatively, polymers can be attached to a defined proportion of the outer layer allowing for a wide range of end functionalities and coverages in order to research particular interactions. The Surface Forces Apparatus (SFA) has been used frequently to understand lipid bilayer interactions primarily under low adhesive loads such as bilayer – bilayer experiments where the stability of the SLB is not in doubt . The aim of this work is to explore how SLBs behave in highly adhesive regimes.
The poster presents how phospholipid bilayers respond in a high adhesive confinement. In particular, we use as a zwitterionic phospholipid 1,2-dipalmitoyl-sn-glycero-3-phosphocholine (DPPC) and as a positively charged phospholipid 1,2-dipalmitoyl-3-trimethylammonium-propane (DPTAP). The bilayers are transferred onto the mica substrate by means of a Langmuir Blodgett deposition (LBT) then, to describe the interaction between them and a mica surface; we perform SFA experiments and record topography of the systems utilizing an Atomic Force Microscope (AFM).
Also, we compare thiol based SLBs to the ones discussed previously, focusing on the stability under high adhesion force.
In conclusion, we illustrate the results we obtained allowing us to understand lipid bilayer stability naming the most stable SLB in a highly adhesive regime. Then, using the best model system, we will take a first look at a more complex solid liquid interface.

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