

Microstructure and flow of nanoscale films at the fluid interfaces

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Abstract:

The rheological properties of nanoscale films which include monolayers of particles, surfactants, proteins and their complex mixtures adsorbed at fluid interfaces are important not only from a basic physics viewpoint but also from technological interest. These films which are relevant for controlling emulsion stability or in lung surfactant therapy also serve as model systems to correlate the microstructure with flow behaviour of complex fluids. My talk will focus on our studies on two dimensional (2D) films of nanoparticles as well as monolayers of insoluble surfactants and membrane peptides [1-4]. I will discuss some of our recent studies where we observe the viscoelastic and flow behaviour of these dense 2D suspensions formed at fluid interfaces by combining surface rheology with microscopy. It is seen that the interfacial moduli as well as the nonlinear flow behaviour, is found to be closely related to the morphology of these films.

References:

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- 3) Nonlinear viscoelasticity of sorbitan tristearate monolayers at a liquid/gas interface.
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