

## **40b Formation of Supported Functional Bilayers by Vesicle Fusion: Experimental Data and Modeling**

*Dimitrios Stroumpoulis, Alejandro Parra, and Matthew V. Tirrell*

Vesicle fusion is one of the most convenient ways of depositing supported bilayers on both flat and textured topologies. This is an advantage with respect to Langmuir-Blodgett deposition, which can only be effective on flat surfaces. Additional benefits are the simplicity of the process and the ability to control its rate. Vesicle fusion also offers the possibility of surface functionalization using composition arrays which would allow for the preparation of surface-composition gradients. Such gradients could be a valuable tool in assessing the importance of bioactive species (i.e. peptide amphiphiles) concentrations in multi-component membranes on modifying cell function (i.e. ability to adhere or migrate). In this talk a kinetic study on the formation of lipid bilayers on silicon dioxide surfaces is presented, based on ellipsometry and a mass transport model. The ability of supported membranes formed by vesicle fusion to control the adhesion and spreading behavior of mouse fibroblast cells is assessed by incorporating small amounts of RGD containing peptide amphiphiles. Efforts on constructing surface composition gradients by vesicle fusion are also discussed.