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Bio-Membranes: X-ray and Neutron Scattering Studies. J. Majewski, C. Miller, T. Kuhl*, Los Alamos National Laboratory, Los Alamos, New Mexico, USA, *Univ. of California-Davis, Davis, California, USA.

Cells are highly organized with many functional units defined by lipid membranes. The lipid membrane, composed of lipid and proteins molecules, forms a barrier to keep various gradients between the inside and outside of the cell and perform functions from selective transport and recognition to sequestration.

Several scattering techniques have been developed for probing the surface structure of the 2-D arrays of lipids at different interfaces. These include neutron and x-ray reflectometry and x-ray grazing incidence diffraction. As will be shown in this presentation, these techniques can be successfully implemented for studying structures of lipid membranes and their interactions with bio-polymers (for example, toxins) with sub-nanometer resolution.

The properties of bio-membranes are of general interest to a wide scientific audience working in the fields of chemistry and biology since they are relevant to such areas as biosensors, advanced drug delivery, and polymer-membrane interactions. Understanding how membranes assemble on the *nm*-scale would be profound for the understanding of how bacteria, toxins, and viruses penetrate cell walls and are transmitted.

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