

W0104

X-ray Grazing Incidence Diffraction and Reflectivity Studies of Biomimetic Ultrathin Films. T.L. Kuhl¹, C.E. Miller², J. Majewski³, T. Gog⁴, ¹Dept. of Chemical Engineering and Material Science, Univ. of California, Davis, CA 95616, ²Biophysics Graduate Group, Univ. of California, Davis, CA 95616, ³Manuel Lujan Neutron Scattering Center, Los Alamos National Laboratory, Los Alamos, NM 87545, ⁴Advanced Photon Source, Argonne National Laboratory, Argonne, IL 60439.

In nature, membranes perform several functions of the living cell from selective transport and recognition, to simple sequestration. In general, the membrane consists of a single bilayer or in special cases, such as the lung surfactants, a single monolayer. Using powerful new neutron and x-ray sources, the techniques of reflectivity and grazing incidence diffraction permit us to obtain structural information on single monolayers and bilayers in an aqueous environment. Recent results on the structure of lipid films and protein binding and 2-D crystallization under lipid layers at the air-water interface will be highlighted, including data on both the in-plane and layer-normal structures.