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**Alamethicin Supramolecular Organization in Membranes**[1] JIAN-JUN PAN, JOHN F. NAGLE, Physics Department, Carnegie Mellon University, Pittsburgh, PA 15213, STEPHANIE TRISTRAM-NAGLE, Biological Physics Group, Physics Department, Carnegie Mellon University, Pittsburgh, PA 15213 — In this work we investigate the effect of membrane hydration and hydrophobic mismatch on the Alm channel superstructure in an oriented multilayer sample by x-ray scattering. Wide angle x-ray (WAXS) scattering near 14 $nm^{-1}$ indicates that the lipid chain region is not perturbed much by the incorporation of up to 10 mole percent Alm. Low angle x-ray scattering (LAXS) indicates that when the sample is very dry, which promotes interactions between neighboring bilayers, a body centered tetragonal crystal packing of Alm channels is formed. As the hydration level increases closer to biological conditions, the separation between bilayers increases, the interbilayer interactions weaken, and the crystalline order disappears while considerable diffuse scattering remains. The effect of hydrophobic mismatch is examined for two mono-unsaturated lipids, diC18:1PC and diC22:1PC, that differ in bilayer thickness by 0.7nm. There is also in-plane scattering at a medium q of $7nm^{-1}$ that our analysis suggests may not be from the Alm channel structure.

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