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Lipid domains in supported SM-Chol membranes measured by GISANS[1] MIKHAIL ZHERNENKOV, MANISH DUBEY, Los Alamos National Laboratory, BORIS TOPERVERG, Ruhr-Universität Bochum, JAROSLAW MAJEWSKI, MICHAEL FITZSIMMONS, Los Alamos National Laboratory — Cell membranes are known to contain regions (called lipid domains, or rafts) described as sphingolipid-cholesterol assemblies which also may contain a subset of membrane proteins. Currently, the main point of discussion is the methodology to study lipid domains and their sizes. We report on Grazing Incidence Small Angle Neutron Scattering (GISANS) measurements of lipid domains in supported sphingomyelin(SM)-cholesterol(Chol) bilayers in a fully aqueous environment. The model bilayers SM:Chol(2:1), SM:Chol(1:2), and a pure SM were deposited using Langmuir-Blodgett/Langmuir-Schaefer technique at a surface pressure of 10 mN/m and measured at 25 $^{\circ}$C. First measurements revealed short range inhomogeneities of the order of 100 Å in both binary systems. The control measurement of a pure SM bilayer exhibited nearly no GISANS indicating an absence of lipid domains in the SM bilayer. This observation is consistent with the notion that a single component system studied below the liquid-gel transition temperature will not produce lipid domains.

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