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Deposition of Homogeneous Single-supported DMPG Lipid Membranes onto a Silica Substrate for Quasielastic Neutron Scattering Experiments[1] ANDREW MISKOWIEC, MIA BROWN, JASON COOLEY, RENEE JIJI, HASKELL TAUB, JUSTIN GRAYER, GAVIN KING, University of Missouri - Columbia, HELMUT KAISER, University of Missouri Research Reactor, FLEMMING HANSEN, Technical University of Denmark, MADHUSUDAN TYAGI, NIST Center for Neutron Research — We report deposition of single bilayers of dimyristoyl-phosphoglycerol (DMPG) lipid onto a SiO_2-coated Si(100) substrate. These anionic membranes have large-scale homogeneity comparable to that achieved with single-supported uncharged DMPC membranes used for neutron scattering studies.[2] Optimum deposition conditions were found by systematically varying the lipid concentration and both the monovalent and divalent buffer salt concentrations. Plausible mechanisms for the bilayer stability will be discussed. In addition, we report Atomic Force Microscopy measurements of the membrane thickness as a function of temperature near the gel-to-fluid phase transition. We also report initial results of elastic neutron intensity scans vs. temperature taken on the backscattering spectrometer at NIST that probe the freezing of the membrane-associated water for comparison with results obtained with the neutral membrane DMPC.[3]

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[2]M. Bai, *et al.* Europhys. Lett. **98**, 48006 (2012).
[3]Ibid.

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