Abstract Submitted
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The Effect of Short-Chain Lipid on the Morphology of Bicellar Mixtures[1] MING LI, University of Connecticut, Storrs, CT, USA, HANNAH MORALES, University of Toronto, Toronto, ON, JOHN KATSARAS, Oak Ridge National Laboratory, Oak Ridge, TN, PETER MACDONALD, University of Toronto, Toronto, ON, MU-PING NIEH, University of Connecticut, Storrs, CT, USA — Lipid bicellar mixtures, composed of long-chain phospholipids (usually dimyristoyl phosphatidylcholine (DMPC) and charged lipid dimyristoyl phosphoglycerol (DMPG)) and a short-chain phospholipid (e.g. dihexanoyl phosphocholine (DHPC) or (3-[(3-Cholamidopropyl)dimethylammonio]-2-hydroxy-1-propanesulfonate (CHAPSO)), are ideal substrates for structural characterization of the membrane protein, because they provide the natural lipid bilayer environment and furthermore can be aligned in the magnetic field.Recently, structural phases of zwitterionic DMPC/DHPC and charged DMPC/DMPG/DHPC bicellar mixtures have been studied extensively.However, the effect of the short-chain lipid on the morphology is still unknow. Here we report the phase diagram of DMPC/CHAPSO and DMPC/CHAPSO/DMPG mixtures by SANS and NMR. Compared with DMPC/DHPC and DMPC/DHPC/DMPG, different temperature dependence of morphology is observed in the counterpart of CHAPSO by SANS. Also, The PFG-NMR result shows different diffusion behaviors of polyethylene glycol associated with the membranes composed of DMPC/CHAPSO and DMPC/CHAPSO/DMPG, which are magnetically alignable. Both SANS and NMR results suggest tha bilayered ribbon the is formed in the case of DMPC/CHAPSO, DMPC/CHAPSO/DMPG.

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