

Abstract Submitted
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Swellable Model POPC/POPG/DHPC Membrane with a Lamellar Long-Range Order¹ MING LI, MU-PING NIEH, Department of Chemical, Materials & Biomolecular Engineering, Institute of Materials Science, University of Connecticut, Storrs, CT 06269, USA — A physiological relevant biomimetic model membrane is of great necessity for the structural characterization of membrane protein. This presentation will report a small-angle neutron scattering (SANS) result on two lipid bicellar series composed of 1-palmitoyl-2-oleoyl-*sn*-glycero-3-phosphocholine(POPC)/1,2-dihexanoyl-*sn*-glycero-3-phosphocholine (DHPC) and POPC/DHPC/1-palmitoyl-2-oleoyl-*sn*-glycero-3-phospho-(1'-*rac*-glycerol) (POPG). Instead of the multi-lamellae vesicle (MLV) structure observed in zwitterionic POPC/DHPC mixture, the perforated lamellae (PL) structure is found in POPC/POPG/DHPC upon addition of small amount of charged lipid, POPG { $R=[\text{POPG}]/([\text{POPC}]+[\text{POPG}])=0.01$ }. The PL phase exists from 10 to 60 degree C and the interlamellar spacing (d-spacing) varies from 12.9 to 49.0 nm as the lipid concentration changes from 25 to 7.5% wt where the lamellae still indicate long-range order. The effect of temperature and charge density (R) on structural variation will be discussed in this presentation.

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