

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**How Local Anesthetics affect the structural and dynamical properties of bio-membranes** ZHENG YI, Indiana University, MICHIIHIRO NAGAO, Indiana University Cyclotron Facility, DOBRIN BOSSEV, Indiana University — To address the question of how local anesthetics influences the structural and dynamical properties of bio-membranes, neutron-spin echo spectroscopy (NSE) has been performed on 1,2-Dimyristoyl-sn-Glycero-3-Phosphocholine (DMPC) unilamellar vesicles (ULV) with different concentrations of Lidocaine in D<sub>2</sub>O to study the influence of Lidocaine on the bending elasticity of DMPC ULV bilayers in fluid crystal (L<sub>α</sub>) phase and the ripple gel (P<sub>β</sub>' ) phase; The measurement of small-angle neutron scattering (SANS) has been performed to determine the bilayer thickness as a function of the concentration of Lidocaine. In the existence of molecules of Lidocaine the bending elasticity of DMPC bilayers was increased 30% -100% in L<sub>α</sub> phase. The NSE data confirmed that fluid crystal/ripple gel transition temperature of DMPC bilayers was depressed by the addition of local anesthetics, which has also been examined via differential scanning calorimetry (DSC).

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Date submitted: 09 Dec 2008

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