

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

The effect of interlayer distance on thickness fluctuations in a swollen lamellar phase: A molecular dynamics study SUKHUM CHAWANG, The University of Oklahoma, TAKUMI HAWA, The University of Oklahoma — Molecular dynamics simulations have been conducted to characterize thickness fluctuations in a swollen lamellar structure, composed of a non-ionic surfactant, water, and oil, to verify the results of the neutron scattering experiments by Nagao. The thickness fluctuations are measured as an excess dynamics from the bending motion around the length scales of the membrane thickness and as a function of the interlayer distance (membrane thickness). The enhancement of the thickness fluctuations is observed in all ranges of thickness we simulated; however, it decays with increase of the membrane thickness. Dependence of directions of sampling wave vectors q on the thickness fluctuation is also investigated. At more normal direction (perpendicular to the membrane surfaces) the excess dynamics is clearly observed, while at more lateral direction (parallel to the membranes) the bending motion is more clearly observed. The present results show the existence of the enhancement of the thickness fluctuations and the importance of the sampling directions.

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Date submitted: 17 Nov 2010

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