Contribution ID: **162** Type: **Poster**

Effect of Membrane Tension on Physical Properties of Niosome Bilayers: A Molecular Dynamics Study

Wednesday 24 May 2017 15:45 (15 minutes)

Molecular dynamics simulations of niosome bilayer were performed to investigate its physical properties such as area per lipid, volume, thickness, lateral diffusion coefficient, and lipid structural order. The physical properties were computed in the membrane tension ranging from 0 to 15 dyn/cm. All simulations were carried out at the constant temperature of 300 K by using Gromacs package 5.1.2. We found that an increase in membrane tension results in a decrease in the bilayer thickness, area per lipid, volume and lateral diffusion. These results suggest that membrane tension causes significant change not only in the physical properties but also in the stability of noisome formation.

Keywords: Niosome Bilayer, Molecular Dynamics, Surface Tension, Membrane Thickness, Diffusion

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Session Classification: Poster Presentation I

Track Classification: Surface, Interface and Thin Film