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Renormalized Elasiticity of Lipid Membranes with Adsorbed Polymers JOEL D. REVALEE, Physics Department, University of Memphis, MOHAMED LARADJI, Physics Dept., University of Memphis — Renormalized elastic moduli of self-assembled lipid membranes, with anchored polymers that interact attractively with the membrane, are determined by means of large scale dissipative particle dynamics simulations. We show that the effective surface tension and the bending modulus of the membrane behave non-monotonically with the molecular weight or/and polymer coverage. At low molecular weight or grafting densities, the surface tension increases, while the bending modulus decreases, with increasing molecular weight or grafting density of the polymer chains. However, at high molecular weight or grafting densities, when the polymers are in the brush regime, we found that the surface tension decreases while the bending modulus increases with increasing grafting density or molecular weight of the polymers. We will also present results on the pearling instability of the lipid membrane due to grafted polymers.

Joel Revalee
University of Memphis

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