

Abstract Submitted
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Nanoparticles Induced Microscaled Pore Formation on Supported Lipid Bilayer BENXIN JING, Y. ELAINE ZHU — Most of recent researches on the cytotoxicity of nanomaterials focused on hydrophilic nanomaterials because of their good dispersion in water, but much less on hydrophobic ones. In this work, we have investigated the effect of semi-hydrophobic nanoparticles (NPs) on the dynamics and morphology of model cell membrane. We have found carboxyl functionalized polystyrene nanoparticles can induce the formation of microscaled pores on neutral supported Egg PC lipid bilayer at the ionic strength range similar to that in the human body with a strong dependence on nanoparticle size and concentration. The hydrophobic interaction between the NP surface and lipid bilayer is accounted for the induced line tension in lipid bilayer; when the tension exceeds a critical value, pores are formed and grow rapidly with dependence on nanoparticle size and ionic strength.

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