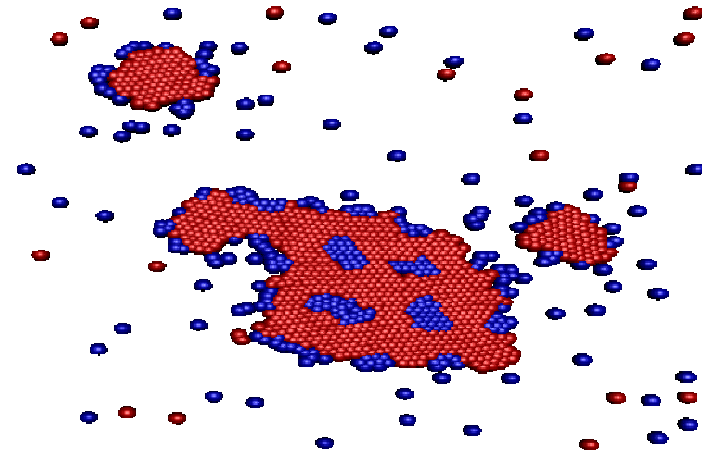

Ionic Rafts May Promote Interactions in Complex Biological Systems

S. Loverde, F. J. Solis, and M. Olvera de la Cruz “Charged Particles on Surfaces: Coexistence of Dilute Phases and Periodic Structures at Interfaces” *Phys. Rev Lett.* 98, 237802 (2007).

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Electrostatic interactions between oppositely charged macromolecules adsorbed at an interface leads to segregation of the molecules into dense ionic phases. These ionic rafts may be relevant in biology since they allow a local increase in concentration of adsorbed biomolecules onto cell surfaces.

While the possibility of modulated phases has been considered in many systems—semiconductors, metal alloys, polymer gels, membranes, and Langmuir films—the possibility of coexistence of charged nanopatterns with a dilute gas phase at interfaces is novel. This research possess a plethora of applications in nanopatterning. It allows an accurate prediction of self-assembled surface patterns produced by changing the ionic conditions and interaction parameters among molecules.



Positively (red) and negatively (blue) charged macromolecules that possess short ranged van der Waals interactions form a dense periodic ionic phase, in coexistence with a dilute gas phase.
