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Electrostatic attraction between cationic-anionic assemblies with surface compositional heterogeneities YURY VELICHKO, MONICA OLVERA DE LA CRUZ, Northwestern University — Biological assemblies of heterogeneous cationic and anionic molecules with hydrophobic groups have important functional properties controlled by interdependencies of the architectures and the intermolecular interactions. The net incompatibility among chemically different charged components, which in water can be due to different degrees of hydrophobicity, promotes macroscopic segregation, while electrostatics promotes mixing of the charges into ionic crystal structure. This competition results in formation of surface charge domains. We analyze attractions among two cylindrical assemblies with surface charge heterogeneities. The compositional heterogeneities are correlated and strongly polarized in the presence of the second assembly. This leads to a strong attraction. The strength of the effective attraction is studied as a function of the distance for different values of the net incompatibility. We compare results of computer simulations and theory.

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