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Charged surface Induced Diblock Copolymer Micellization MONICA OLVERA DE LA CRUZ, HAO CHENG — Diblock copolymers with one charged block A and one hydrophobic block B are mainly single chains in solution when the concentration is lower than the critical micellization concentration (cmc. Electrostatic interaction between copolymers and a negatively charged surface decreases the non-ideal part of the micelle chemical potential and induce the micelle formation at the surface when the bulk copolymer concentration is still lower than the bulk cmc. The effects of surface charge density σ, monomer number of charged blockN_A, monomer number of hydrophobic blockN_B and the fraction of charged monomers in the charged block f, on the number of chains in micelles p,micelle radius Ls and critical surface micellization concentration (csmc) are studied. When Ls is smaller than the size of the micelle Wigner-Seitz cell R, p is very small. When Ls is equal to R, p does not depend on the number of charged monomers in hydrophilic block. The size of the micelle has the same dependence on N_A and N_B as uncharged system. The effect of electrostatic is reflected by $R \sim (f/\sigma)^{1/8}$ and $p \sim (f/\sigma)^{-3/4}$. The csmc rises with the increase of salt concentration when the copolymer layer charge density is lower than the surface charge density. However the cscm decline with the increase of salt concentration when the layer charge density is higher than the surface charge density.

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