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Kinetic Control for the Morphological Transition of Block Copolymer Micelle Complexes MISOOK LEE, JINKEE HONG, KOOKHEON CHAR, Seoul National University — The morphology of charged block copolymer micelle complexes, consisting of crew-cut poly(styrene-*b*-acrylic acid) (PS-*b*-PAA) and poly(styrene-*b*-4vinyl pyridine) (PS-*b*-P4VP) micelles, was controlled by pH of aqueous solvent. The charge densities of corona block segments (PAA and P4VP blocks) dispersed in water were sensitive functions of solution pH. The high pH region (pH > 5.5) is particularly interesting in the present case due to the formation of spherical micelle clusters since the degree of ionization of P4VP blocks is negligible while PAA blocks are fully charged in this regime. These spherical clusters were then slowly transformed into different morphologies when the solution pH was adjusted to the range allowing both of the corona blocks to be oppositely charged. The morphological transitions of micelle blends were also monitored by varying experimental parameters such as blending ratio, blending sequence, and the content of co-solvent when coupled with the effect of solution pH. The present study demonstrates that the kinetic pathway for the formation and transformation of micelle complexes at various solution pH is significantly important for the morphological evolution involving charged micelles.

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