

Abstract Submitted
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“Smart” Surfaces of Diblock Copolymer Brushes DONG MENG, QIANG WANG, Colorado State University — We use a self-consistent field (SCF) theory to study the morphological response of diblock copolymers grafted to a planar substrate. One of the two blocks can carry weakly dissociating charges (e.g., poly(acrylic acid)), making the surface responsive to the solution pH, ionic strength and applied electric field, in addition to the solvent selectivity. Three-dimensional, parallel SCF calculations are performed in real space with high accuracy to identify the thermodynamically stable morphology under a given set of controlling parameters. The internal structure and surface switchability of the copolymer brushes are studied in detail as a function of chain length, volume fraction of the two blocks and chain-grafting density.

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