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Self-Consistent Field Theory Simulations of Confined 2D Block Copolymer Thin Films SU-MI HUR, GLENN FREDRICKSON, UC Santa Barbara, AUGUST BOSSE, EDWARD KRAMER, CARLOS GARCIA-CERVERA, UC Santa Barbara — We present self-consistent field theory (SCFT) simulations of block copolymers confined in a square well in order to guide self-assembly towards defect-free in-plane arrays. In particular, tetragonal (square) packing, which is thought to be crucial to developing novel information storage and electronic devices, has been observed in simulations of thin films of AB diblock copolymers with suitable A homopolymer additives confined in square wells. While the A-B + A system only supports square lattices of limited sizes (up to 4x4), we were able to produce large-area defect-free square lattices using blends of chemically different diblock copolymers with suitable attractive interactions between blocks. Our simulations demonstrate that order originates at the walls and then permeates throughout the system.

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