

Abstract Submitted  
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**Symmetric Diblock Copolymers under Nano-Confinement** DONG MENG, QIANG WANG — We use both lattice Monte Carlo simulations and real-space self-consistent field calculations to study the self-assembled morphology of symmetric diblock copolymers under nano-confinement, either in thin films between two homogeneous surfaces or in nanopores. In the former case, we obtained 3D structures of mixed lamellae as an equilibrium morphology by 1D confinement (thin films) of 1D-structure (lamellae) forming copolymers. We also mapped out the system phase diagram as a function of surface preference and film thickness. In the latter case, we studied in detail the structures and phase transitions of various morphologies (concentric cylinders, the slab morphology and the mixed morphology) by systematically varying the pore diameter and surface preference, and compared with the thin-film case to understand their formation mechanisms.

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