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**Self-consistent field theory simulations of block copolymer assembly on a sphere** T.L. CHANTAWANSRI, A.W. BOSSE, A. HEXEMER, H.D. CENICEROS, C.J. GARCIA-CERVERA, E.J. KRAMER, G.H. FREDRICKSON, University of California, Santa Barbara — Using a self-consistent field theory (SCFT) framework, we explore the topic of self-assembly in a thin AB diblock copolymer melt confined to the surface of the sphere. This model is numerically simulated by spectral collocation with a spherical harmonic basis. The method allows us to investigate the lamellar and cylindrical phases on the surface of a sphere as a function of sphere radius. For thin cylinder-forming films, with uniform radial composition, we have found that the number of microdomains in the ground state configuration is determined by a delicate competition between chain stretching and topological constraints. Notably, our SCFT simulations have shown the absence of configurations with 11 and 13 domains in the ground state. For thin lamellar films, we examined the stability of three lamellar configurations: spiral, hedgehog, and quasi-baseball phases. The spiral and hedgehog morphologies are found to alternate in stability over a range of sphere radii.

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