

Abstract Submitted
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Phase behaviour of ABC Triblock Copolymer Thin Film Confined Between Brush-coated Substrates¹ RONG WANG, GI XUE, Dept.of Polymer Sci. & Eng., Nanjing University — In this work, we investigate the phase behavior of ABC triblock copolymer thin film confined between brush-coated substrates by using the self-consistent field theory in three dimensions. The coated polymers identical with the end block A and the middle block B of the ABC triblock copolymer are considered. The phase diagrams are constructed by continuously changing the compositions of the block copolymer. At the three corners of the phase diagram, the disordered phase or the core-shell hexagonal phase is easily form. When the three components are comparable, the lamellar phase occurs. When the ABC block copolymer confined between the end block copolymer coated substrates, the parallel lamellae is easy to form. But for the middle block B coated substrate, the direction of the lamellae can be tailored by the interaction parameters and the composition of the block copolymer. Even the direction of the cylinder phase can be tuned. Our results show that the surface properties of the substrates are very important to control the phase behaviour and are helpful for designing the functional nanopattern of the ABC block copolymer thin film.

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