

Abstract Submitted
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Effects of lithium salts on the lamellar phase of diblock copolymers ISSEI NAKAMURA, ZHEN-GANG WANG, California Institute of Technology — We study the effects of lithium salts on the lamellar phase of AB diblock copolymers by means of the self-consistent field theory. We consider a model in which the A and B blocks have different dielectric constants and account for the tight binding of Li^+ to one of the blocks, the preferential solvation energy of anions in the higher-dielectric polymer domain, the translational entropy of anions, and change in the χ parameter due to the binding of Li^+ . We study the effect of the strong polymer- Li^+ binding on the distribution of the salt ions. In particular, we show that local charge separation near the interface of the higher- and lower- dielectric polymers largely arises from the effect of the Born energy. We also examine the relationship between two definitions of the effective χ parameter, one based on the lamellar spacing and one based on the structure factor in the disordered phase, and show that these two definitions generally do not coincide.

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