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The effect of salt-doping on the lamellar phase of AB diblock copolymers ISSEI NAKAMURA, ZHEN-GANG WANG, Division of Chemistry and Chemical Engineering, California Institute of Technology — We study the effect of adding 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. We include the Born energy to account for the preference of salt ions to be solvated by higher dielectric polymer. We first show that the effective χ parameter can be increased upon addition of salt, depending on the size of salt particles, with an accompanied increase in the domain spacing of the lamellar phase. The salt ions tend to be localized in the microphase where the higher dielectric components are dominant. The effect of the incompressibility on the distribution of salt ions is also studied. Moreover, we include a binding interaction between one of the blocks and one of the salt ions (e.g., cations), and study the effects of such strong binding on the distribution of the counterions (anions).

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