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## Phase Behaviour of Polyelectrolyte/Homopolymer Blends

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The phase behaviour of polyelectrolyte/homopolymer blends is studied using self-consistent field theory. The blends are composed of charged and neutral homopolymers plus counter ions dissociated from the polyelectrolytes. We explore the phase behaviour of the system as a function of blend composition, charge density and interaction parameter. Besides the usual macrophase separation behaviour, the SCFT predicts that under appropriate conditions the system undergoes microphase separation, forming various ordered phases similar to diblock copolymers. We found that the formation of ordered structures is the result of the balance between the interactions and the mixing entropy of the ions. In particular, the domain size of the ordered phases is determined by the competition between the polymer-polymer interaction and counter ion entropy, thus it is not limited by polymer size. Increase in the repulsive interaction between the chains results in an increase in the domain spacing.

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