

Abstract Submitted  
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**Morphology Diagrams for Polyelectrolytic Diblock Copolymers** RAJEEV KUMAR, MURUGAPPAN MUTHUKUMAR, University of Massachusetts Amherst — We have calculated morphology diagrams for polyelectrolytic diblock copolymers in melts and highly concentrated solutions. Using the random phase approximation and self-consistent field theory, stability limits of the standard morphologies (lamellae, cylinders and spheres) have been considered both in weak and strong segregation limits. Effects of Coulomb interaction strength, degree of ionization, Debye screening length, block length, chain length, and the chi parameter on the periods of these morphologies will be discussed. Also, the crossover behavior in the whole range of segregation will be presented. Charging a polymer block with electrical charges leads to many unexpected behaviors, which will be discussed in the context of previous theories and experiments.

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