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Ion Complexation in Salt Containing Block Copolymer Thin Films MATTHEW MISNER, University of Massachusetts, SEUNG HYUN KIM, Inha University, LING YANG, University of Massachusetts, THOMAS RUSSELL, University of Massachusetts — Ion complexation within cylinder-forming PS-*b*-PEO thin films was investigated, where added salts bound the PEO block as the minor component. Small amounts of added salts, on the order a few ions per chain, show large effects on the ordering and orientation of the copolymer films during solvent annealing, a process where we have shown a large degree of long-range lateral order can be obtained. The orientation of the cylindrical microdomains was found to strongly depend on salt concentration and the nature of the counter ion. Furthermore, with the addition of relatively large amounts of salts, we observed that the copolymer microdomains remained ordered at a high degree of swelling and an extremely large amount of lateral spatial correlations of the cylindrical microdomains was found in the swollen state, as observed by grazing incidence small angle scattering. By using gold or cobalt salts, well-organized patterns of nanoparticles were generated in the copolymer microdomains after the reduction of the corresponding salts.

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