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Electrospun poly(styrene-b-isoprene) fibers that exhibit internal structure SERGIO MENDEZ, VIBHA KARLA, PRASHANT KAKAD, MARLEEN KAMPERMAN , YONG JOO, Cornell University — We have used the electrospinning process to fabricate fibers from THF / poly(styrene-b-isoprene) (PS-PI) diblock copolymer solutions. We spun fibers with copolymers that had various volume fractions of PI. These fibers had diameters ranging from 200 nm to 5 microns depending on the processing conditions such as solution concentration, needle size, electric field, etc.. The goal of this investigation was to observe the formation of self-assembled microstructures within the fibers. SAXS data indicates that the copolymer microphase separates and that there is some degree of globally ordered domains; however, TEM images indicate that this order is more local which might be due to the short residence time in the electrospinning process. By comparison, SAXS and TEM data of PS-PI films exhibits unambiguous global ordering. In an attempt to improve the long range order within the fibers, we performed various annealing treatments, and found that heating at temperatures below the glass transition temperature only had a small effect.

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