Abstract Submitted
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On the influence of temperature and volume fraction on liquid crystalline block copolymer nanoscale architectures KISHORE TENNETI, CHRISTOPHER LI, Department of Materials Science & Engineering, Drexel University, Philadelphia, PA 19104, YINGFENG TU, XINHUA WAN, QU-FENG ZHOU, Department of Polymer Science, Peking University, P. R. China, CARLOS AVILA-ORTA, BENJAMIN HSIAO, Department of Chemistry, SUNY at Stony Brook, Stony Brook, New York 11794 — Liquid crystalline block copolymers (LCBCs) form complex hierarchical structures. We report the phase structures of a series of poly(styrene-*block*-(2,5-bis-(4-methoxyphenyl)oxycarbonyl)styrene) (PS-b-PMPCS) rod-coil diblock copolymers based on the results obtained from thermal analysis, x-ray analysis and transmission electron microscopy. The PS-b-PMPCS system formed lamellar structures of alternating PS and PMPCS domains. Each PMPCS domain contained a bilayered rod-like structure whose axis is parallel to the lamellar normal. In low MW BCs, a S_{Ad}-like interdigitated metastable phase was observed which changed into a bilayered structure upon heating. As the PS content increased, the LC layer was gradually punctuated by PS and a perforated layer structure was observed. The "degree of perforation" depends on the LC volume fraction.

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