

Abstract Submitted  
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**Small angle X-ray scattering studies of side chain liquid crystalline block copolymers.** ERIC VERPLOEGEN, LU TIAN, PAULA HAMMOND, Massachusetts Institute of Technology — A series of well defined smectic side chain liquid crystalline (LC) block copolymers with a low  $T_g$  siloxane center block has been synthesized via anionic polymerization. The presence of a smectic liquid crystalline phase and the block copolymer mesophase are observed across various temperature ranges via Small Angle X-ray Scattering (SAXS) and Grazing Incidence Small Angle X-ray Scattering (GISAXS). The influence of various types of confinement and mechanical deformation upon the morphologies of the liquid crystalline and block copolymer mesophases was investigated. The interactions between the smectic LC and the block copolymer morphologies and their influence upon their respective orientations in response to the various confinement and mechanical deformations are detailed. Additionally, it was found that modifications to the liquid crystalline moiety were key in the clearing points for the smectic liquid crystalline phase, as well as significantly influencing the nanophase segregation of the block copolymer.

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