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Morphological transformation and mesostructure formation in diblock copolymer blends KISHORE TENNETI, Drexel University, XIAOFANG CHEN, Peking University, CHRISTOPHER LI, Drexel University, LIXIA RONG, BENJAMIN HSIAO, Stony Brook University, DEPARTMENT OF POLYMER SCIENCE AND ENGINEERING COLLABORATION[1], DEPARTMENT OF CHEMISTRY COLLABORATION[2] — We report the phase structures of a diblock copolymer (BCP) (PS- b-P4VP) blended with bent-core mesogen (BE3-10). High blending concentrations (1:1) resulted in phase separation. However, smaller concentrations resulted in the formation of complexes between the BE3-10 and the BCP. At moderate blending ratio of 1:5, the BCP morphology transformed from a lamellar to hexagonal cylindrical structure and the BE3-10 formed Sm layers that are oriented perpendicular to the BCP interface. At a blending ratio of 1:10, the sample showed remarkable enhancement in the lamellar ordering. In all the blends, the d- spacing was smaller than the original BCP. It is proposed that Sm layer formation and the corresponding chain stretching are responsible for this behavior.

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