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Phase structures of block copolymers blended with small molecules KISHORE TENNETI, Drexel University, XIAOFANG CHEN, Peking University, CHRISTOPHER LI, Drexel University, XINHUA WAN, QI-FENG ZHOU, Peking University, IGORS SICS, BENJAMIN HSIAO, University of Stony Brook, DREXEL UNIVERSITY TEAM, PEKING UNIVERSITY COLLABORATION, UNIVERSITY OF STONY BROOK COLLABORATION — We report our observations on the influence of blending small molecules on the phase structures of a block copolymer (BCP) system. Poly(styrene-*b*-4vinyl pyridine) (PS-*b*-P4VP) BCP was blended with 4-(3,4,5-tris(alkyloxy)benzoyloxy)phenyl 4-hydroxyphenyl isophthalate (BCLC_n where $n = 6-16$) small molecule in different weight ratios. The terminal hydroxyl group of the BCLC is expected to form hydrogen bonding with the P4VP and thus alter the phase structure of the BCP. Thermal analysis, X-ray analysis and transmission electron microscopy were conducted and it was observed that BCLCs with $n = 6$ and 8 did not have any influence on the BCP morphology and those with $n = 14$ and 16 have phase separated. There was a substantial decrease in the *d*-spacing of BCPs blended with BCLCs with $n = 10$ and 12 and a bilayer structure was evident.

Kishore Tenneti
Drexel University

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