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**Phase Behavior of Rod-Coil Block Copolymer Blends** Y. TAO, B.D. OLSEN, UC Berkeley and Lawrence Berkeley Labs, VENKAT GANESAN, University of Texas at Austin, R.A. SEGALMAN, UC Berkeley and Lawrence Berkeley Labs — Rod-coil block copolymers have unique self-assembly behaviors due to liquid crystalline interactions and have been shown to form only lamellar, hexagonal, nematic, and isotropic phases at equilibrium. The block copolymer domain size in the lamellar phase can be further controlled via blending of block copolymer with homopolymers. Coil homopolymers swell the coil-containing lamellae as expected. Liquid crystallinity, however, plays a significant role when rod homopolymers are added. Rod homopolymer interdigitates with the rod-blocks and the coils must rearrange to accommodate the increase in interfacial area. This results in an overall decrease in domain spacing with increasing rod content. Further, the addition of homopolymers is observed to alter the grain size and lamellar orientation in the thin film state which may have significant technological implications. These effects will be compared with self-consistent mean field models.

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