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Self-assembly of rod coil block copolymers under confinement MANAS SHAH[1], VENKAT GANESAN[2], The University of Texas at Austin — The interplay of microphase separation and liquid crystalline ordering in rod-coil block copolymers leads to formation of complex morphologies distinct from that of conventional flexible block copolymer phases. In order to be used for organic electronic applications such as photovoltaic cells, rod-coil block copolymers must be patterned into thin films. The final morphology and the nature of orientation of rod units would now depend (in addition to the constituent interactions) on the interactions of the blocks with the confining surfaces. We combine the self-consistent field theory models of rod-coil block copolymers in a thin film framework to understand the effect of confinement on the morphology and the nature of orientation of rod-units. Also for nearly symmetric rod-coil copolymers, we analyze the parallel – perpendicular lamellae transitions using a free energy framework. Also, we consider morphologies of such block copolymers (and blends) which can be utilized for higher device efficiency in photovoltaic cells.

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