

Abstract Submitted
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Photo-induced Ordering of Block Copolymers Systems VIKRAM DAGA, YING LIN, CURRAN CHANDLER, JAMES WATKINS, Polymer Science and Engineering, University of Massachusetts Amherst — The microphase separation of block copolymers and the resulting morphologies are governed by the segregation strength and the relative volume fractions of the different blocks. The segregation strength of disordered block copolymers can be enhanced by incorporation of additives that can interact selectively with one of the blocks. In this work, we discuss how disordered Pluronic block copolymer surfactants, poly(ethylene oxide)-poly(propylene oxide)-poly(ethylene oxide) (PEO-PPO-PEO) when mixed with weakly interacting, protected additives undergo photo-induced ordering upon exposure to UV light and baking. Exposure to UV light and heating causes deprotection reaction resulting in formation of strongly interacting groups on the additives. This strong interaction with one of the blocks of the block copolymer causes segregation of the PEO and PPO blocks and thus leads to formation of ordered morphologies. Using such a photo-induced ordering strategy, arbitrary patterns of ordered nanostructures can be made in an otherwise disordered block copolymer film.

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