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Control of the processing window for block copolymer nanostructures by the addition of a homopolymer JUNHAN CHO, Dankook University, DU YEOL RYU, Yonsei University, KWANG HYUN SONG, SANG BO NA, Dankook University, YOUNGMIN KIM, Hongik University — Processing window for block copolymer nanostructures is often limited by a material at hand and effective intermonomer interactions. Taking polystyrene-*b*-poly(methyl methacrylate) (PS-*b*-PMMA) as a model system, which is one of the most widely used passive electronic materials, we investigated how to control the processing window for generating nanostructures from PS-*b*-PMMA by the addition of PS homopolymer. The ordering transition points were measured for the neat copolymer and its mixtures by optical and radiation scattering methods. A molecular model based on a random-phase approximation theory was then used to elicit the effective interactions between constituent blocks and to predict the measured ordering transition temperatures for the design and fabrication of nanostructures from the copolymer system at desired processing condition.

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