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**Controlling the Orientation of Block Copolymer Thin Films with Selective and Neutral Nanoparticles** MISANG YOO, SEYONG KIM, Korea University, BUMJOON J. KIM, Korea Advanced Institute of Science and Technology, JOONA BANG, Korea University — The bottom up approach using self-assembly of block copolymers (BCP) have been considered as a powerful technique which can resolve the limitations of conventional nanolithograph. For practical applications, the perpendicular orientation of microdomains with respect to the substrate is a prerequisite. However in most cases, one of the domains has a preferential interaction with the substrate and this interaction induces parallel orientation of the microdomains. To overcome the preferential interaction and to obtain vertically orientated BCP microdomains, diverse approaches have been developed. Previously, we synthesized thermally stable core-shell gold nanoparticles using UV cross-linkable BCP and also precisely tuned the surface property of nanoparticles which are selective and neutral to PS and PMMA by adjusting the composition of polymeric ligand. Moreover, we demonstrated the effect of selective and neutral gold nanoparticles on the orientation of PS-PMMA thin films. Herein, we further investigated the effect of selective and neutral gold nanoparticles on the orientation of BCP thin films of lamellar and cylindrical BCP according to the film thickness. The thin film morphologies were characterized with AFM and SEM.

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