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Imaging Layer Effect on Density Multiplication in the Directed Assembly of Block Copolymer Thin Films HUIMAN KANG, Department of Chemical and Biological Engineering, University of Wisconsin-Madison, EUNG-NAK HAN, PADMA GOPALAN, Department of Materials Science and Engineering, University of Wisconsin-Madison, PAUL NEALEY, Department of Chemical and Biological Engineering, University of Wisconsin-Madison — Recently, we discovered the assembly block copolymer thin films on chemically nanopatterned surfaces markedly improve both the quality and resolution of the lithographic process. In comparing the assembled block copolymer structures to the lithographically defined chemical pattern, the density of features is increased by a factor of four and the dimensional uniformity is vastly improved, even on the strongly preferential background imaging layer. Here, we investigate the effect of the interactions between the patterned imaging layer and the components of the block copolymer, especially polystyrene-*block*-poly(methyl methacrylate) (PS-*b*-PMMA), by controlling the fraction of styrene in the imaging layer of chemically patterned surfaces from preferential to non-preferential to the polymer.

Huiman Kang
Department of Chemical and Biological Engineering,
University of Wisconsin-Madison

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