

Abstract Submitted
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Templated Self-Assembly of Highly Ordered Square Arrays from an ABC Triblock Terpolymer JEONG GON SON, VIVIAN P. CHUANG¹, MIT, JESSICA GWYOTHER, University of Bristol, JAE-BYUM CHANG, KARL K. BERGGREN, MIT, IAN MANNERS, University of Bristol, CAROLINE A. ROSS, MIT — Square-symmetry patterns are of interest in nanolithography, but are not easily obtained from self-assembly of a diblock copolymer. Instead, we demonstrate 40 nm period square patterns formed in a thin film of 82 kg/mol polyisoprene-*b*-polystyrene-*b*-polyferrocenylsilane (PI-*b*-PS-*b*-PFS) triblock terpolymer with volume fraction of 25%, 65% and 10%, respectively, blended with 15% PS homopolymer. The square patterns consist of PFS pillars which remain after removal of the PI and PS with an oxygen plasma. On a smooth substrate, the correlation length of the square pattern is increased dramatically to several microns by the use of brush layers and specific solvent anneal conditions. The interaction between the square pattern and nanoscale topographical trenches and posts was also investigated, and controlled by the substrate functionalization.

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