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Self-annihilation of defects in block-copolymer thin films induced by corrugated substrates[1] GEORGES HADZIIOANNOU, GUILLAUME FLEURY, Universite de Bordeaux France, KARIM AISSOU, MIT, JONAH SAVER, LOMA Universite de Bordeaux, GILES PECASTAINGS, CYRIL BROCHON, Universite de Bordeaux France, CHRISTOPHE NAVARRO, ARKEMA, STEPHANE GRAUBY, JEAN-MICHEL RAMPNOUX, STEFANE DILHAIRE, LOMA Universite de Bordeaux, LCPO UNIVERSITE DE BORDEAUX TEAM, LOMA UNIVERSITE DE BORDEAUX TEAM, ARKEMA TEAM — Ultradense perfectly ordered structures with nanometric periodicity are of crucial importance for applications such as microelectronics, data storage media or meta-materials. Herein we demonstrate the use of a polymeric guiding pattern to control the self-assembly of block copolymers into highly-ordered 2D arrays. For this, a sinusoidal surface-relief grating was interferometrically inscribed onto an azobenzene containing copolymer sub-layer. A poly(styrene-*b*-ethylene oxide), PS-*b*-PEO, film was cast on top, resulting in cylinders with a 6-fold coordination. When film thickness reaches a critical value where the PS-*b*-PEO free-surface is smooth and no hint of the underlying sinusoidal pattern is apparent, a defect-free 2D-array of PS-*b*-PEO cylinders is observed over a large surface. Our results show that the surface deformation induced by the topological pattern controls the diffusion of defects and consequently their annihilation.

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