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【902】 Directed Self-assembly of Triblock Terpolymers by Chemical Guiding Patterns

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Directed self-assembly (DSA) of block copolymer is a promising approach to achieve macroscopic ordered nanostructures. Here, we investigate the combined effect of solvent vapour annealing and chemical topographical guiding patterning on the self-assembly and grain size of a 3D diamond-forming triblock terpolymer Polyisoprene-block-polystyrene-block-poly(glycidylmethacrylate) (ISG). The guiding patterns were designed according to specific lattice diamond planes (110). In order to gain some chemical contrast, the patterns were fabricated out of hydrophilic silica lines or hexagonal dots on top of a less hydrophilic gold background. Our results show that, depending on the design of the substrate guiding patterns, the polymer will microphase separate in 2D lamellae or 3D diamond morphology forming a single domain on top of the patterned area (16 x 16 μm).

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