

Abstract Submitted
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Templated Co-assembly of PS-*b*-PDMS Block Copolymer and Inorganic Nanoparticles YI DING, KEVIN GOTRIK, OU CHEN, MOUNGI BAWENDI, CAROLINE ROSS, ALFREDO ALEXANDER-KATZ, Massachusetts Inst of Tech-MIT — We studied the co-assembly behavior of block copolymer (BCP) and inorganic nanoparticles (NPs) with post arrays as graphoepitaxial template. We have developed a fabrication/characterization procedure for thin films composed of oil-soluble NPs (e.g. quantum dots capped with oleic acid and oleylamine) and polystyrene-*b*-polydimethylsiloxane (PS-*b*-PDMS) BCP. According to our experiments, NPs demonstrated a tendency to gather at defect points (X-shape, T-shape, L-shape) of the cylinder forming PDMS domain. Based upon this property, we used chemically functionalized hydrogen silsesquioxane (HSQ) posts as templates to direct the BCP-NPs co-assembly. The HSQ posts were designed in such a way that the cylinder-phase of PS-*b*-PDMS BCP can form X-shape and T-shape structure. Different conditions to control the location of the NPs within the thin film were studied.

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