

Directed Assembly of Polymer Blends on Nano-Scale Patterned Self Assembled Monolayers

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Patterned polymer structures in the area of nanotechnology offer a variety of applications which include the semiconductor industry as well as the biosensor. The majority of research in this particular area has been focused on pure block copolymers with only a few select studies dealt with polymer blends. These polymer blends studies have solely focused on uniform geometry patterns. Recently, block copolymers with the addition of a homopolymer have demonstrated the ability to phase separate into non-uniform geometries. This work investigated the assembly of polymer blends to achieve phase separation on non-uniform geometries. The two polymers chosen for this study will naturally phase separate and will utilize chemically modified surfaces to direct phase separation of the polymer blends. This work demonstrated the ability to form continuous phase separation of polymer blends on complex non-uniform geometry patterned surfaces reliably down to 100 nm.