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Substrate tolerant direct block copolymer nanolithography - DTU Orbit (08/11/2017)

Substrate tolerant direct block copolymer nanolithography

Block copolymer (BC) self-assembly constitutes a powerful platform for nanolithography. However, there is a need for a general approach to BC lithography that critically considers all the steps from substrate preparation to the final pattern transfer. We present a procedure that significantly simplifies the main stream BC lithography process, showing a broad substrate tolerance and allowing for efficient pattern transfer over wafer scale. PDMS-rich poly(styrene-b-dimethylsiloxane) (PS-b-PDMS) copolymers are directly applied on substrates including polymers, silicon and graphene. A single oxygen plasma treatment enables formation of the oxidized PDMS hard mask, PS block removal and polymer or graphene substrate patterning.

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