

Abstract Submitted
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Microwave- assisted Rapid Self- Assembly of Lamellar Forming Poly (styrene-b- lactic acid) (PS-b-PLA) Block Copolymer for Fabrication of Silicon Nanowires PARVANEH MOKARIAN-TABARI, (1) Department of Chemistry, University College Cork and Tyndall National Institute, Cork, Ireland (2) Centre for Research on Adaptive Nanostructures, CIAN CUMMINS, (1) Department of Chemistry, University College Cork and Tyndall National Institute, Cork, Ireland, SOZARAJ RASAPPA, JUSTIN D. HOLMES, MICHAEL M. MORRIS, (1) Department of Chemistry, University College Cork and Tyndall National Institute, Cork, Ireland (2) Centre for Research on Adaptive Nanostructures — Photolithography has been a fundamental process in the production of integrated circuits, but it is reaching its physical limit for generating ultra-small feature sizes. Block copolymers have a great potential as mask templates for fabricating nano features. Although ordered sub 20 nm features utilising BCPs have been achieved, lengthy annealing times (hours to days) are currently employed. Here we use microwave annealing, a new emerging technique, to achieve lateral phase separation in a lamellar forming PS-b-PLA. Having optimised the microwave conditions such as power, temperature, anneal holding time, solvents etc, a long range order line pattern was formed in less than two minutes on Si, Ge and Al substrates. The etched pattern (PLA removed by Ar/O₂ RIE) was transferred to silicon substrate resulting in 18nm Si nanowires.

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