

Abstract Submitted
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Self-Assembly of Block Copolymers on Well-modulated Sawtoothed Surface DONG HYUN LEE, Lawrence Berkeley National Laboratory, TING XU, University of California, Berkeley, SUNG WOO HONG, University of Massachusetts, Amherst, ALEXANDER HEXEMER, HOWARD PADMORE, Lawrence Berkeley National Laboratory, THOMAS RUSSELL, University of Massachusetts, Amherst — The self-assembly of block copolymers on the faceted surfaces of sapphire and silicon substrates were investigated as a function of the amplitude and pitch of the sawtooth pattern. To generate these surfaces, sapphire substrates, cut along the M plane, were annealed at temperatures above 1000°C. The pitch and amplitude of the sawtooth pattern was controlled by varying the annealing temperature. In addition, surfaces with a sawtooth pattern in silicon were generated by an anisotropic etching of the silicon. Block copolymers were spin-coated onto the patterned surfaces. To induce ordering of the BCP, the thin films were solvent-annealed in organic solvent vapors. Long-range lateral ordering of the BCP microdomains persisted across the entire surface with both types of substrates without further treatment. The ordering of the BCP is very sensitive to the geometry of sawtooth pattern.

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