

Supporting information

Location-Controlled Parallel and Vertical Orientation by Dewetting-Induced Block Copolymer Directed Self-Assembly

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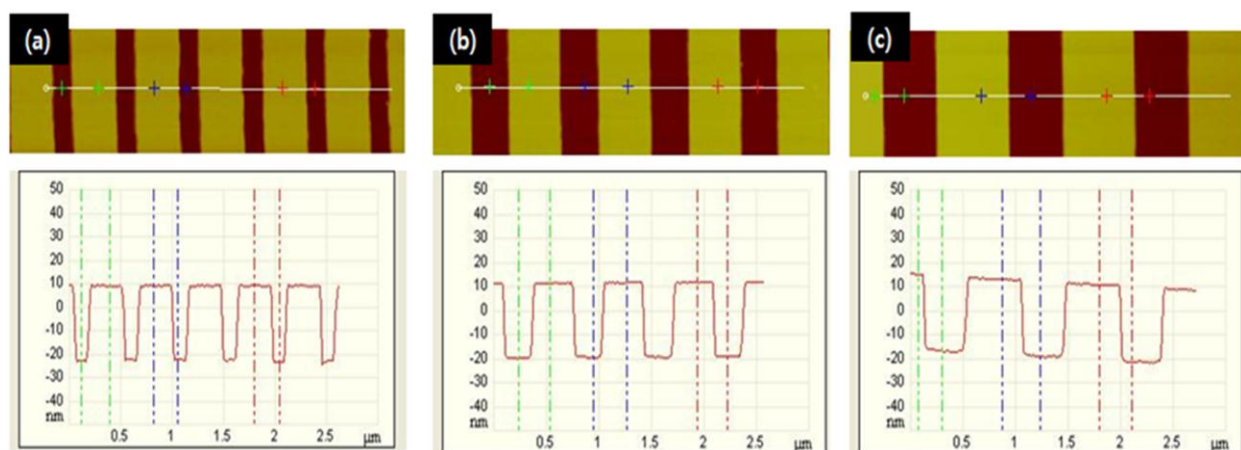


Figure S1. Si Trenches with different widths of (a) 180 nm with 31.6 nm height, (b) 280 nm with 30.8 nm height, and (c) 380 nm with 31.9 nm height.

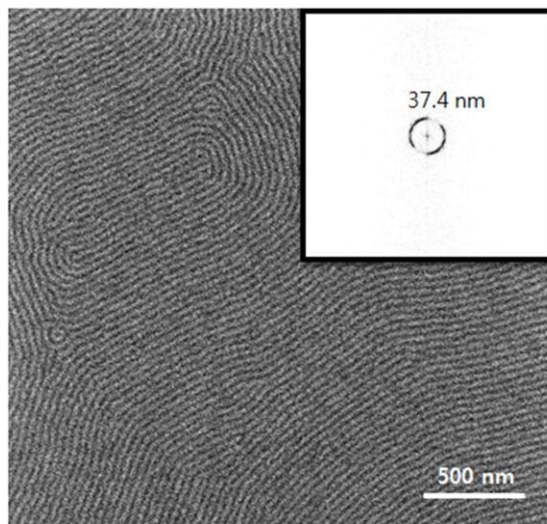


Figure S2. PS-*b*-PMMA half-cylinder arrays on Si bare wafer with 37.4 nm period.

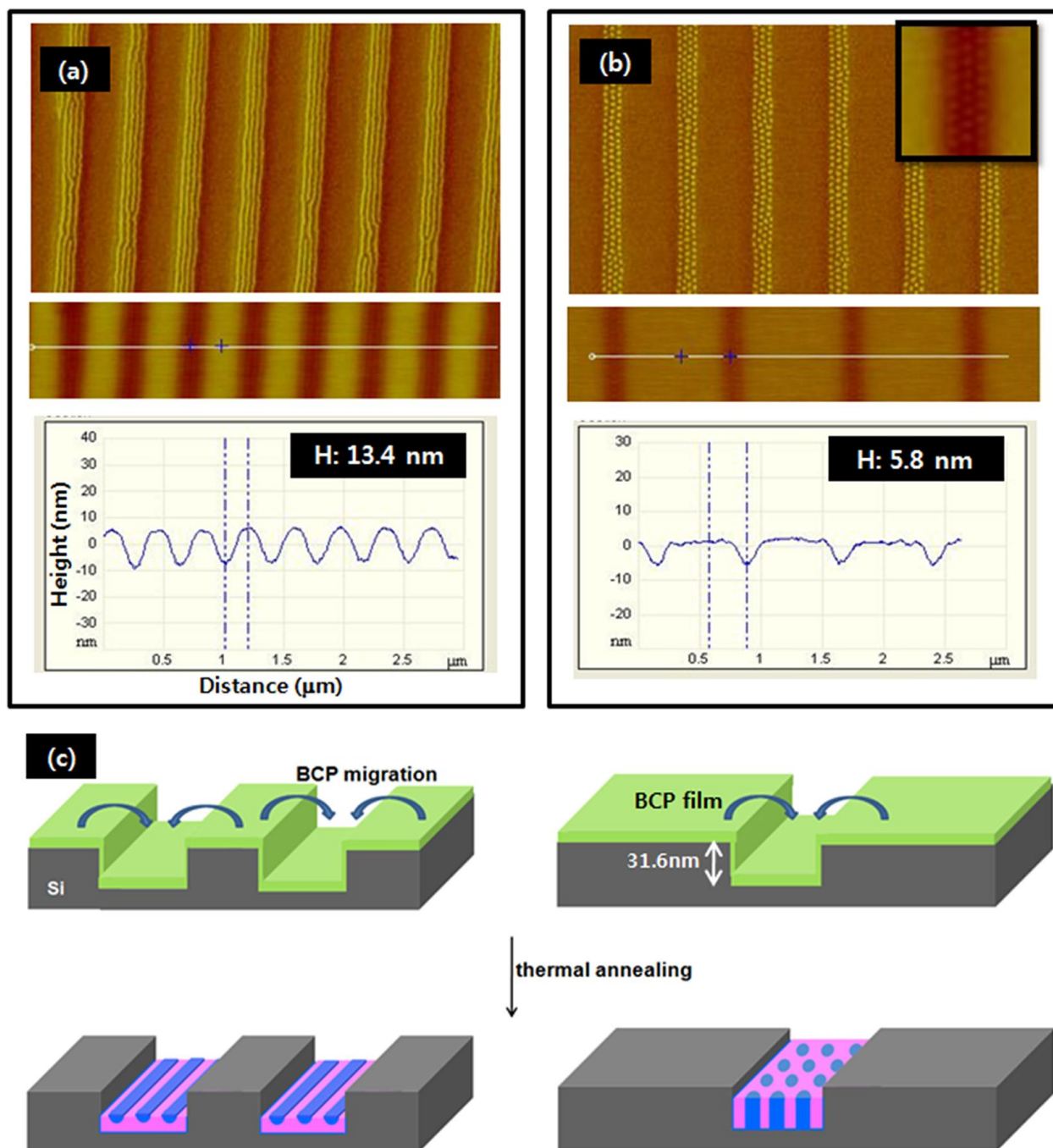


Figure S3. (a) Parallel orientation with H : 13.4 nm and 18.2 nm (calculated) film thickness, (b) perpendicularly oriented cylinders with H : 5.8 nm and 25.8 nm (calculated) thickness, and (c) scheme for parallel/vertical cylinder orientations. BCP film thickness measured by AFM (thickness = 31.6 – H : top-to-bottom distance).

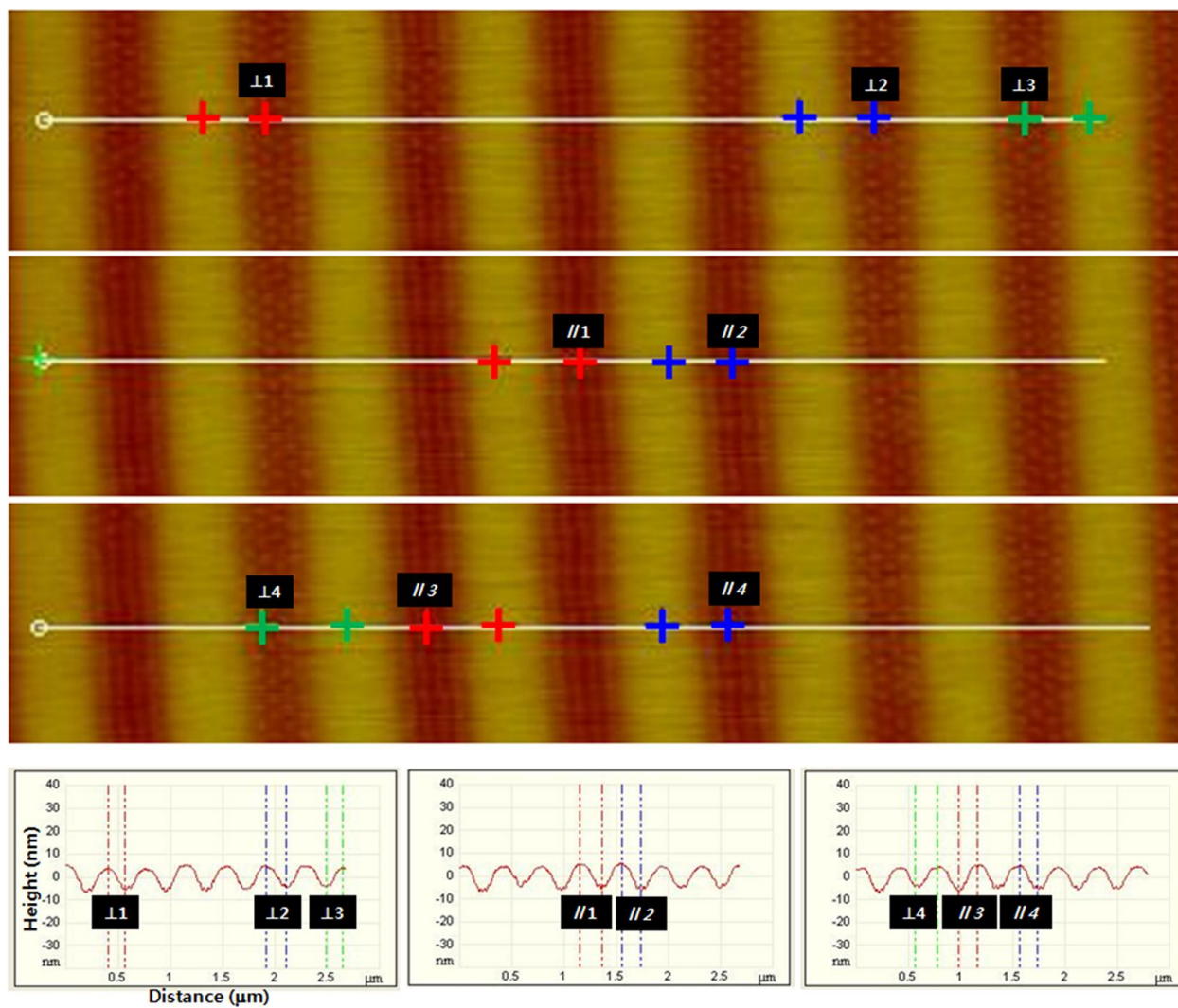


Figure S4. AFM height image showing the coexistence of parallel and vertical cylinder orientation originated by slight film thickness differences at screened area.

Table S1. Table lists the various BCP film thicknesses and their effect on cylinder orientation. The top-to-valley distances (H) for the 180 nm and 280 nm trench width were measured using AFM without subjecting the film to the one-block-removing etching process.

Pattern Width (nm)	Trench height (nm)	From top to valley (H) (nm)	Film thickness in trench pattern (nm)	BCP orientation
280	30.8	16.8	14.0	//
280	30.8	15.2	15.6	//
280	30.8	15.0	15.8	//
180	31.6	13.4	18.2	//
180	31.6	11.5	20.1	//
180	31.6	11.1	20.5	//
180	31.6	10.4	21.2	//
180	31.6	10.1	21.5	//
180	31.6	9.1	22.5	⊥
180	31.6	8.9	22.7	⊥
180	31.6	8.5	23.1	⊥
180	31.6	8.0	23.6	⊥
180	31.6	5.8	25.8	⊥
280	30.8	4.4	26.4	⊥