

SUPPORTING INFORMATION

Controlling Block Copolymer-Substrate Interactions by Homopolymer Brushes/Mats

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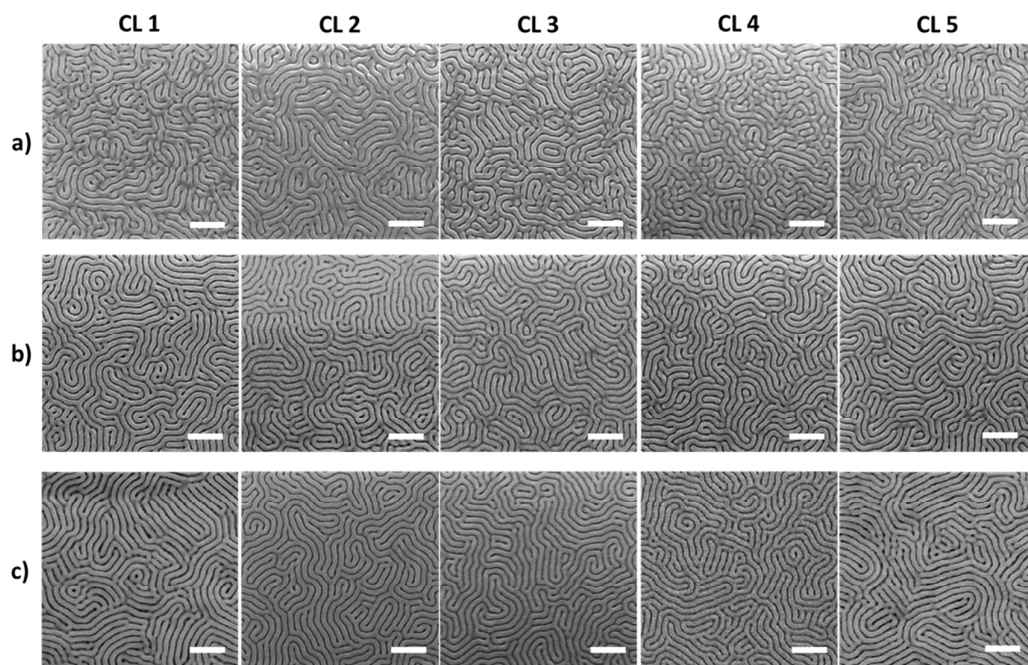


Figure S1. SEM images of SM5354 films on crosslinked homopolymer mats thermally annealed at a) 190 °C for 12 hours, b) 230 °C for 10 min and c) 250 °C for 5 min, respectively. Film thicknesses are ~ 50 nm. Scale bars represent 200 nm.

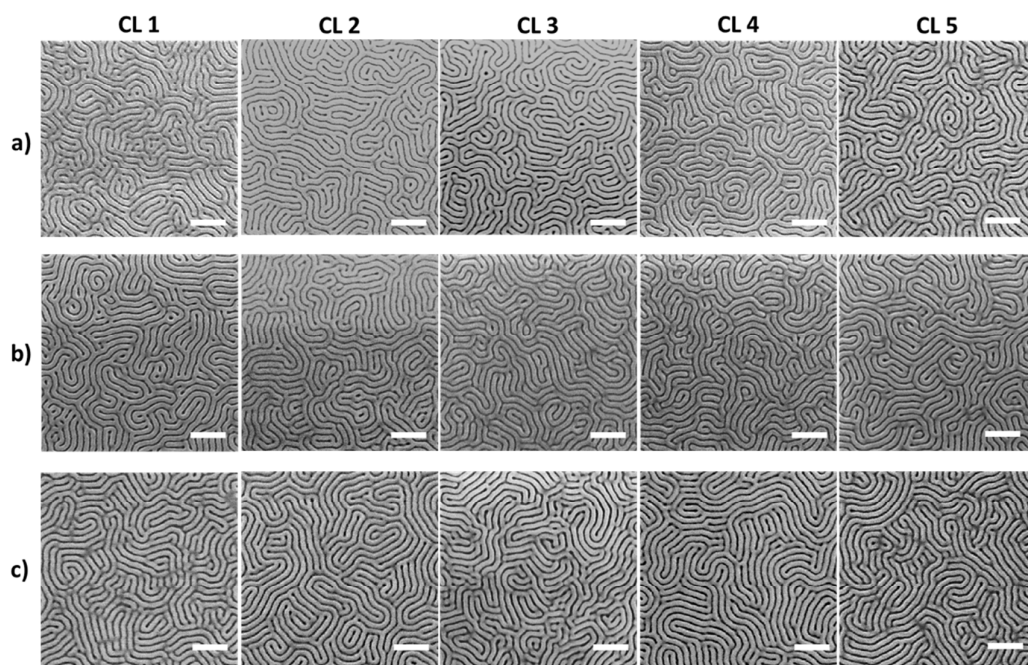


Figure S2. SEM images of SM5354 on crosslinked homopolymer mats thermally annealed at 230 °C under vacuum for 10 min. The film thicknesses are a) 31 nm, b) 50 nm and c) 92 nm, respectively. Scale bars represent 200 nm.

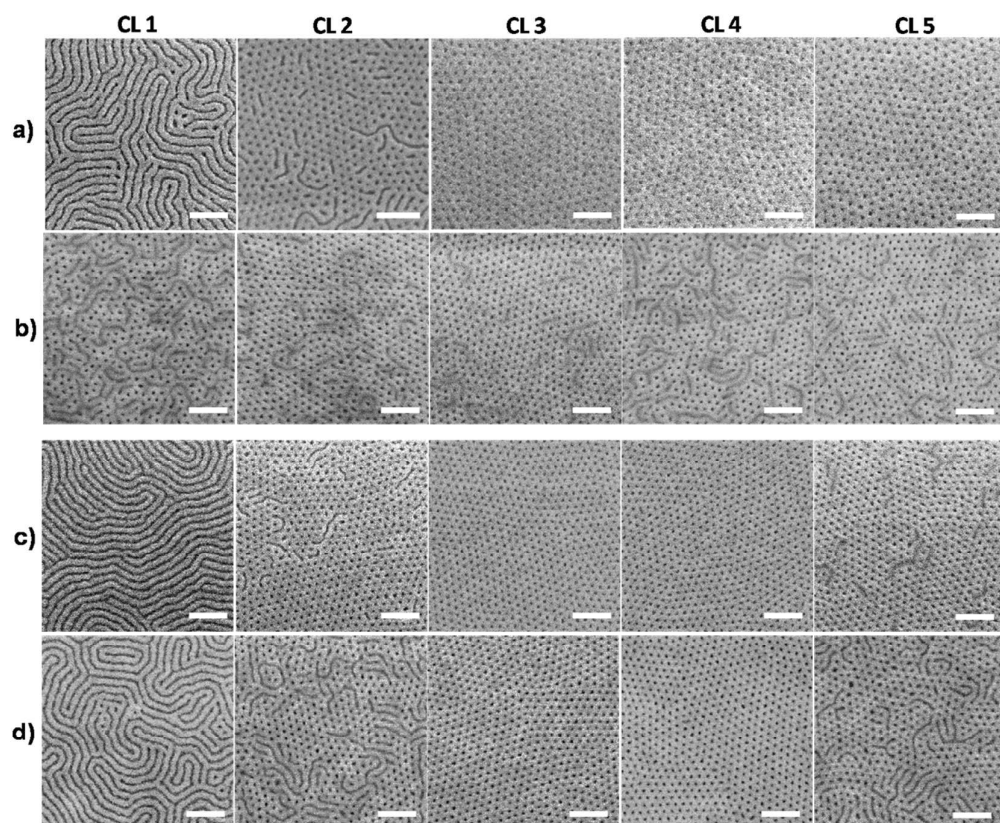


Figure S3. SEM images of SM4621 films on crosslinked homopolymer mats thermally annealed at a), b) 190 °C for 12 hours and c), d) 230 °C for 10 minutes. The film thicknesses are 32 nm for a), c), and 62 nm for b), d). Scale bars represent 200 nm.

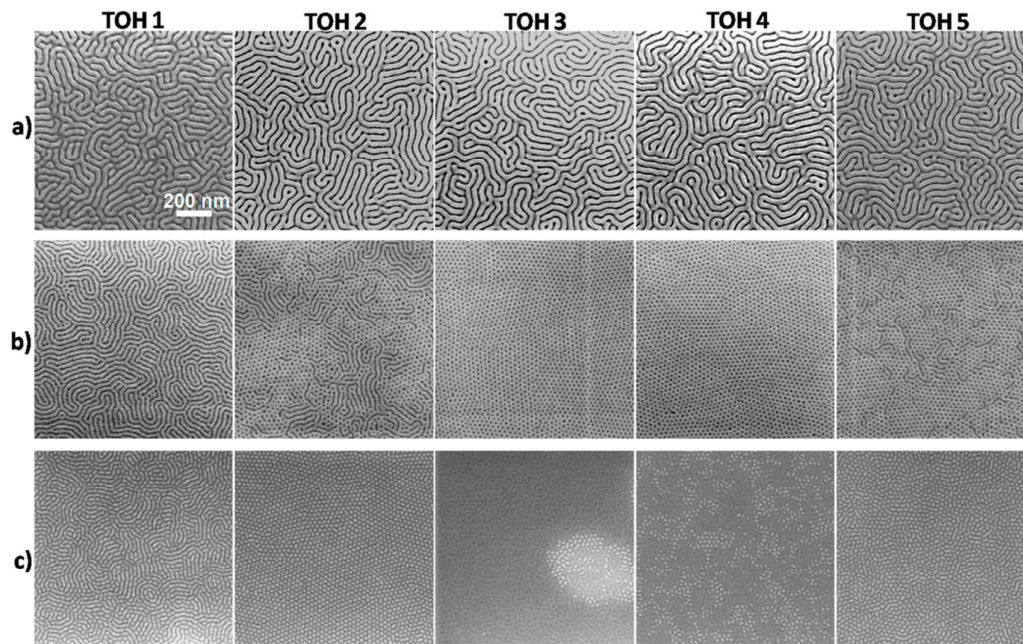


Figure S4. SEM images of a) SM5354, b) SM4621 and c) SM2050 on TOH1-5. The film thicknesses are a) 50 nm, b) 32 nm and c) 35 nm, respectively. The annealing temperature and time are 230 °C for 10 min for a) and b) and 250 °C for 3 min for c).

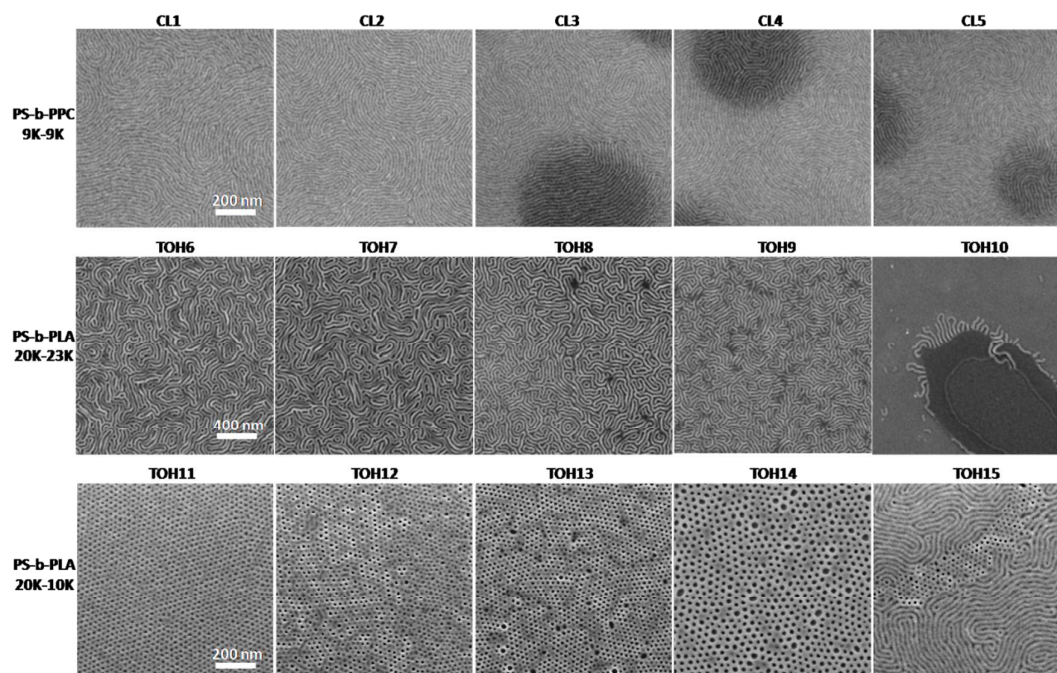


Figure S5. SEM images of PS-*b*-PPC and PS-*b*-PDLLA films self-assembled on homopolymer mats or brushes. PS-*b*-PPC films were annealed at 130 °C for 30 min and PS-*b*-PDLLA films were annealed at 180 °C for 12 h, respectively.

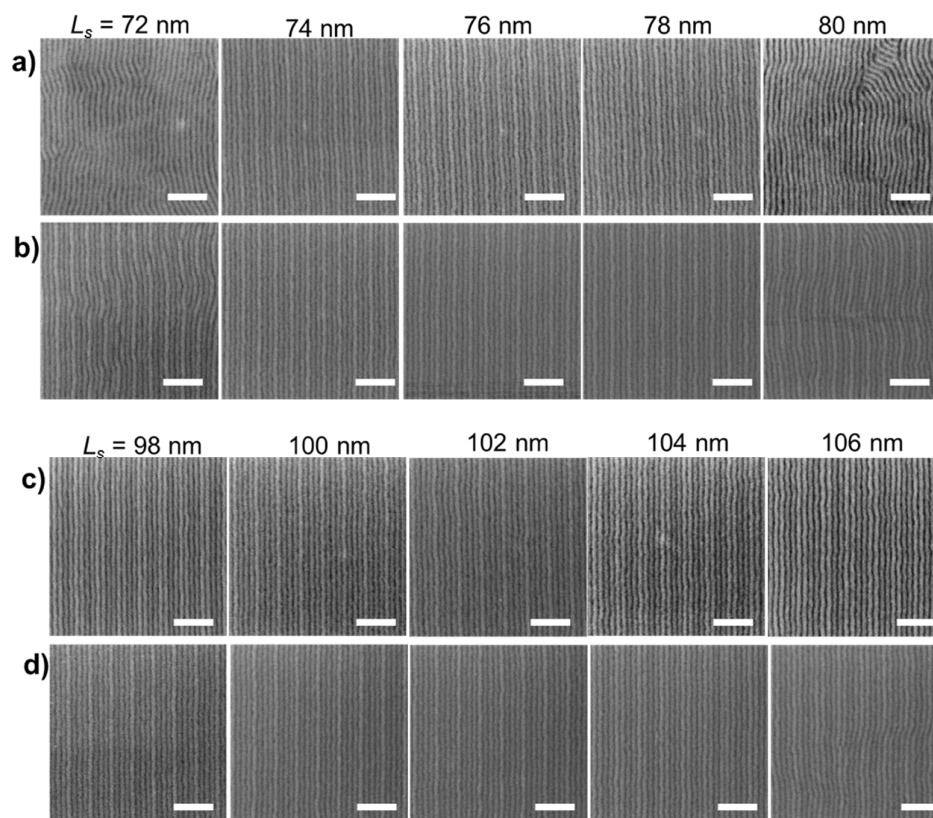


Figure S6. DSA of SM2222 films with 3 \times and 4 \times density multiplication on chemical pattern backfilled TOH1 (a, c) and TOH2 (b, d) brushes. L_s ranged from 72 to 80 nm for 3 \times and 98 to 106 nm for 4 \times density multiplication. Scale bars represent 200 nm.

Table S1. The brush/mat thicknesses, water contact angles and SEM images of self-assembled SM5354 films as a function of heating time for brush/mat formation.

CL2								
Heating time (min)	15	30	60	120	240	480	960	1440
Mat thickness (nm)	5.8	5.4	6.1	5.7	6.2	5.5	5.8	5.9
Contact angle (°)	84.0	83.9	83.9	83.9	83.4	83.9	83.2	84.1
Self-assembly of SM5354								
TOH2								
Heating time (min)	15	30	60	120	240	480	960	1440
Brush thickness (nm)	1.2	1.9	2.8	2.9	3.2	3.5	4.9	5.2
Contact angle (°)	60.8	68.7	72.5	76.5	78.2	78.8	82.7	83.5
Self-assembly of SM5354								

Table S2. Wetting behaviors of PS-*b*-PMMA films self-assembled on TOH1-15 brushes and CL1-5 mats ^a.

	TOH1	TOH2	TOH3	TOH4	TOH5	CL1	CL2	CL3	CL4	CL5
SM5354	⊙	●	●	●	⊙	⊙	●	●	●	⊙
SM4621	○	⊙	●	●	⊙	○	⊙	●	●	⊙
SM2050	⊙	●	○	○	⊙	⊙	●	○	○	⊙
	TOH6	TOH7	TOH8	TOH9	TOH10	TOH11	TOH12	TOH13	TOH14	TOH15
SM5354	⊙	●	●	●	⊙	○	○	⊙	●	●
SM4621	⊙	○	⊙	○	⊙	○	○	○	●	○
SM2050	○	⊙	○	⊙	○	○	○	⊙	⊙	○

^a “●” represents non-preferential (or neutral), “○” represents preferential, and “⊙” represents nearly non-preferential wetting behaviors.