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Supporting Information for

On the Self-Assembly of Brush Block Copolymers in Thin Films

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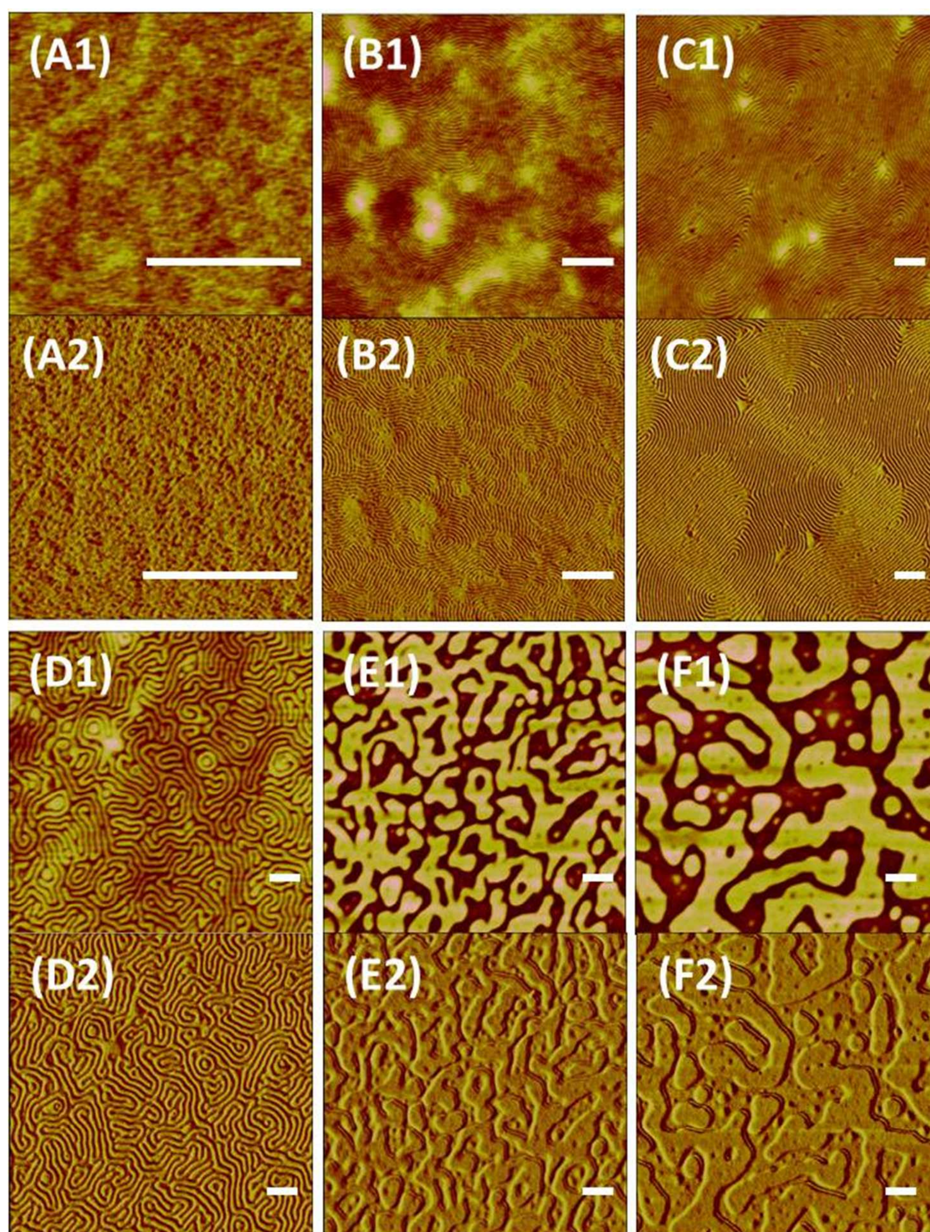


Figure S1. SFM height (A1-F1) and phase (A2-F2) images of solvent annealed thin films of $[g\text{-}S_{2.4}]_{19}$-*b*-$[g\text{-}LA_{2.4}]_{25}$, $[g\text{-}S_{2.4}]_{35}$-*b*-$[g\text{-}LA_{2.4}]_{43}$, $[g\text{-}S_{2.4}]_{51}$-*b*-$[g\text{-}LA_{2.4}]_{67}$, $[g\text{-}S_{2.4}]_{98}$-*b*-$[g\text{-}LA_{2.4}]_{124}$, $[g\text{-}S_{2.4}]_{189}$-*b*-$[g\text{-}LA_{2.4}]_{233}$, and $[g\text{-}S_{2.4}]_{259}$-*b*-$[g\text{-}LA_{2.4}]_{381}$, respectively. Scale bars: 500 nm.

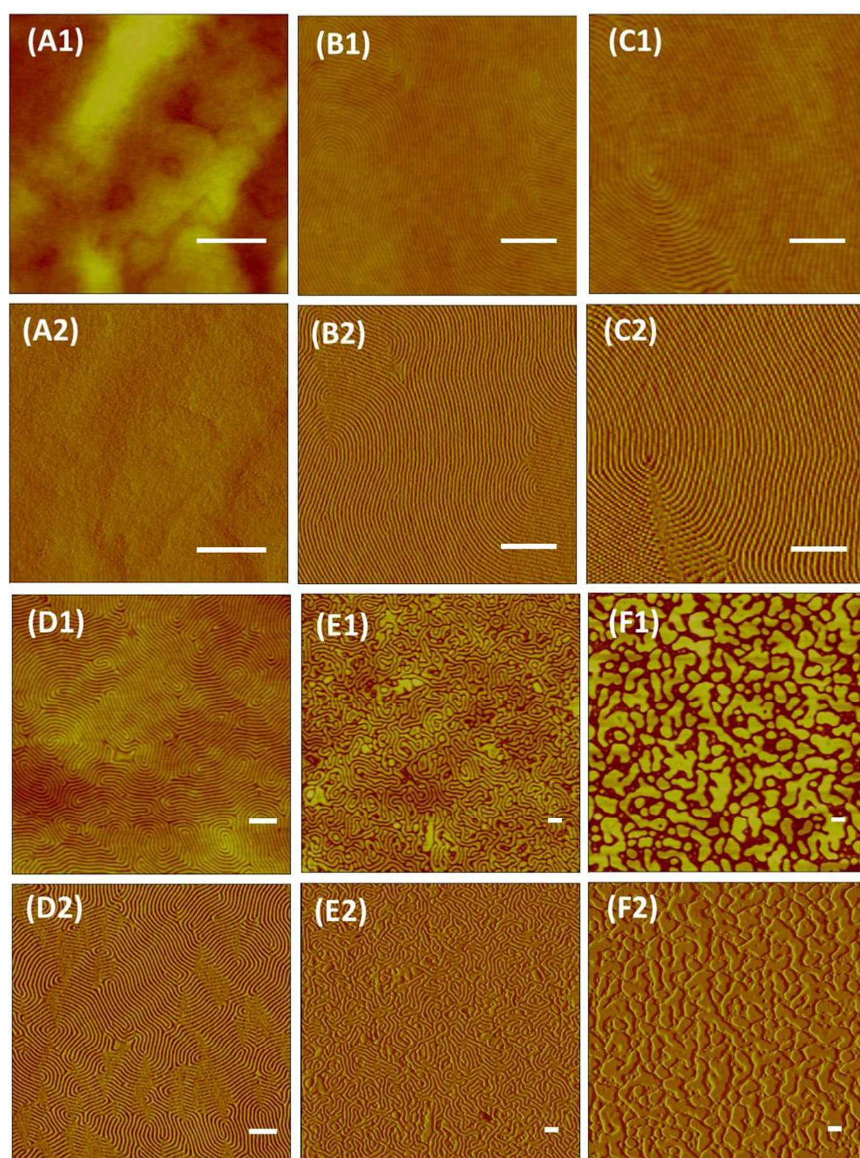


Figure S2. SFM height (A1-F1) and phase (A2-F2) images of solvent annealed thin films of $[g\text{-}S_{4.3}]_{11}\text{-}b\text{-}[g\text{-}LA_{4.5}]_{14}$, $[g\text{-}S_{4.3}]_{19}\text{-}b\text{-}[g\text{-}LA_{4.5}]_{2}$, $[g\text{-}S_{4.3}]_{32}\text{-}b\text{-}[g\text{-}LA_{4.5}]_{42}$, $[g\text{-}S_{4.3}]_{42}\text{-}b\text{-}[g\text{-}LA_{4.5}]_{58}$, $[g\text{-}S_{4.3}]_{93}\text{-}b\text{-}[g\text{-}LA_{4.5}]_{128}$ and $[g\text{-}S_{4.3}]_{206}\text{-}b\text{-}[g\text{-}LA_{4.5}]_{278}$, respectively. Scale bars: 500 nm.

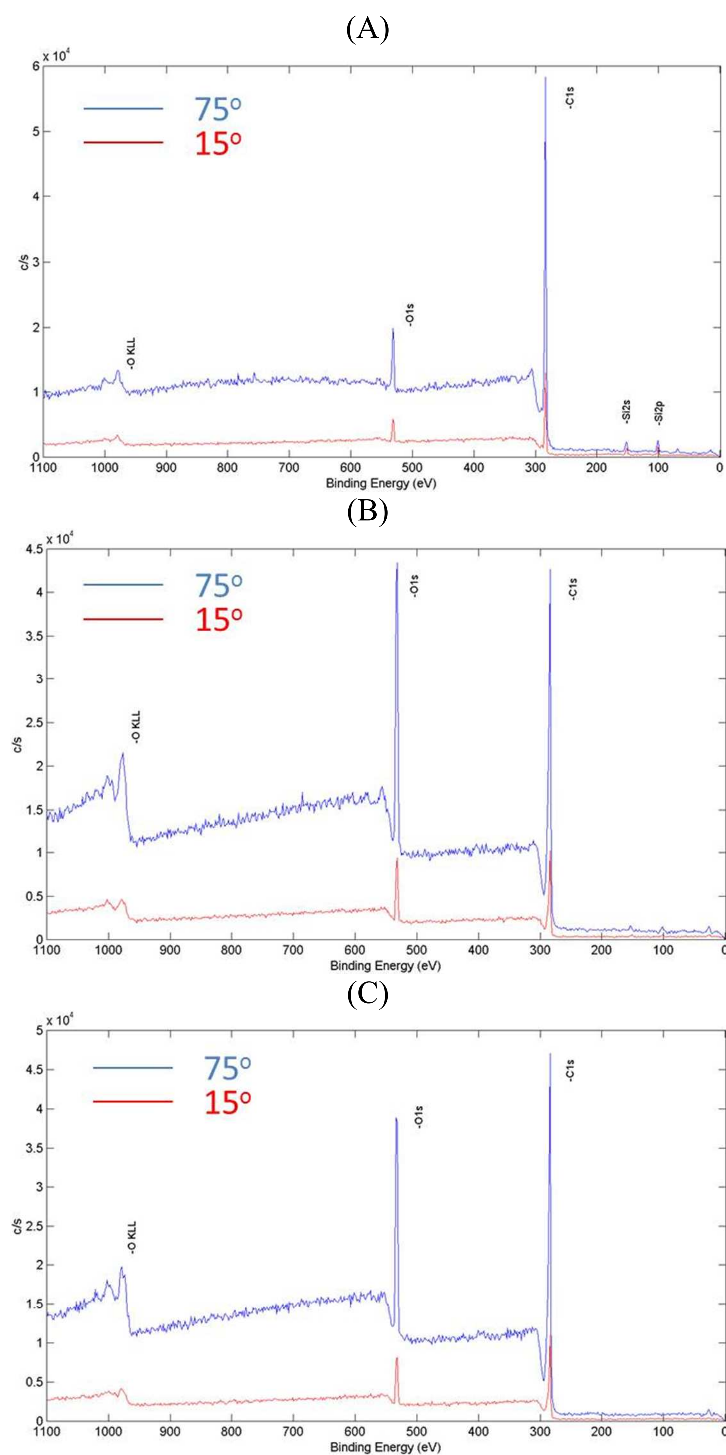


Figure S3. Survey spectra of XPS spectroscopy of (A) $[g\text{-S}_{2.4}]_{189}$-*b*-$[g\text{-LA}_{2.4}]_{233}$, (B) $[g\text{-S}_{2.4}]_{259}$-*b*-$[g\text{-LA}_{2.4}]_{381,}$ and (C) $[g\text{-S}_{4.3}]_{93}$-*b*-$[g\text{-LA}_{4.5}]_{128}$ on Si substrates.

Table 1S: Carbon:Oxygene Atomic Concentration (According to C 1s and O 1s Peaks in XPS Spectroscopy)

	15°	75°
[*g*-$S_{2.4}$]$_{189}$-*b*-[*g*-$LA_{2.4}$]$_{233}$	80.2:11.5	89.5:7.2
[*g*-$S_{2.4}$]$_{259}$-*b*-[*g*-$LA_{2.4}$]$_{381}$	70.2:24.9	73.9:25
[*g*-$S_{4.3}$]$_{93}$-*b*-[*g*-$LA_{4.5}$]$_{128}$	79.2:20.8	78.8:21.2

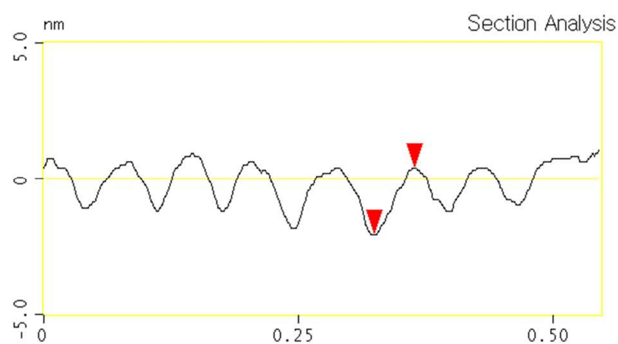


Figure S4. Cross sectional line scan of thin films of [*g*-$S_{5.1}$]$_{54}$-*b*-[*g*-$LA_{4.4}$]$_{51}$.

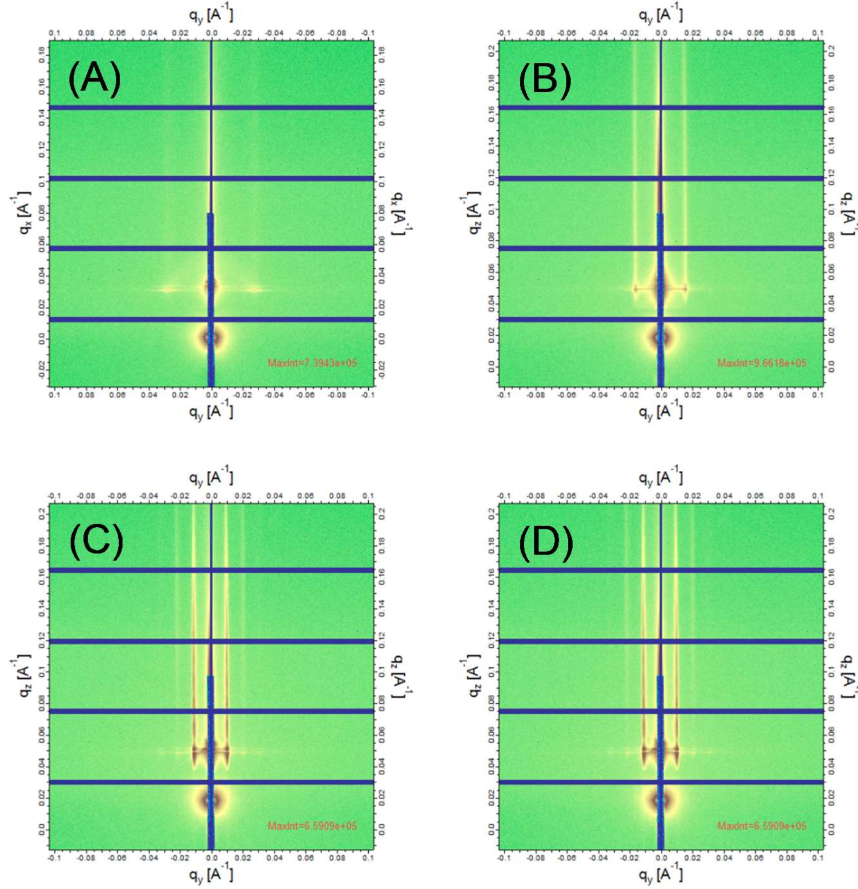
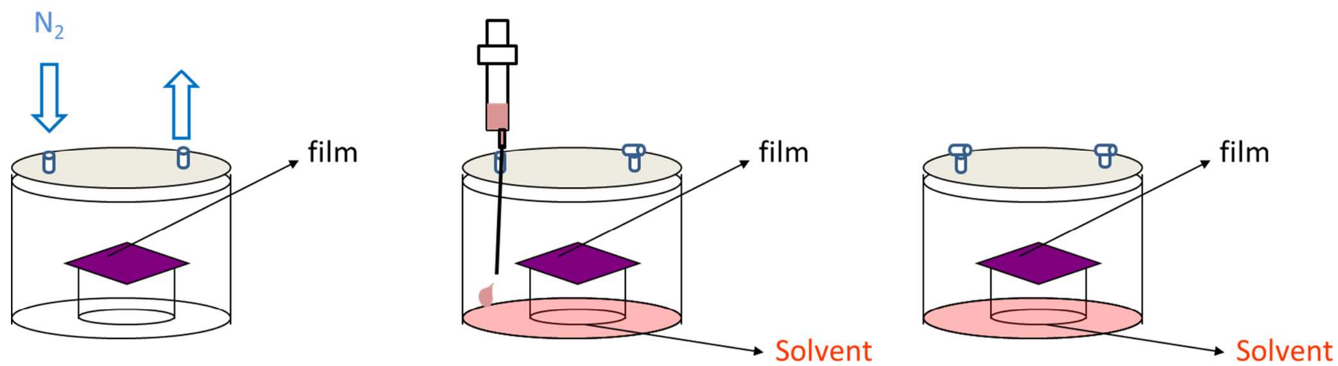


Figure S5. GI-SAXS patterns of thin films of (A) [g-$S_{2.4}$]$_{19}$-b-[g-$LA_{2.4}$]$_{25}$ (B) [g-$S_{2.4}$]$_{35}$-b-[g-$LA_{2.4}$]$_{43}$, (C) [g-$S_{2.4}$]$_{51}$-b-[g-$LA_{2.4}$]$_{67}$, and (D) [g-$S_{2.4}$]$_{98}$-b-[g-$LA_{2.4}$]$_{124}$ on Si substrates. q_y is the in-plane scattering vector and q_z is the out-of-plane scattering vector.

Film thickness of samples in Figure 3 (measured by ellipsometry):

Bottom to Top

Figure 3A	38 nm	42 nm	42 nm	56 nm	60 nm	63 nm
Figure 3B	47 nm	50 nm	53 nm	54 nm	58 nm	58 nm



Scheme S1. Solvent annealing process