Electronic Supplementary Information (ESI) for Soft Matter

Elongated phase separation domains in spin-cast polymer blend thin films characterized with a panoramic image

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Fig. S1 Typical panoramic images obtained from (a) 2L, (b) 2M, (c) 2H, (d) 4M, (e) 6L, (f) 6M, and (g) 6H (ruler unit: μ m).



Fig. S2 Film thickness versus rotating speed with the scaling analysis.



Fig. S3 Images of Marangoni convection induced striations at the edge regions for each sample.



Fig. S4 A scatter chart between the individual oriented angle and the corresponding aspect ratio for PS domains in each sample. The lines at oriented angle of 0° are drawn to guide the eye.



Fig. S5 Optical microscopic images taken *in situ* for white light interferometric microscope characterization of 4M and 6M as shown in Figure 4 in the main context.



Fig. S6 Determination of relative height for 2M: (a) a calibration plot between hue value and height in the range from 50 to 200 nm, as highlighted in red. The observed colors are also shown below in gradient; (b) red and blue arrows respectively show PS domains at some ridge and valley regions in a partial 2M image; (c) a scatter chart between hue value and area; (d) a scatter chart between area and relative height for each PS domain.

Herein, the color information is obtained from each PS domains in 2M, and the corresponding relative height can be determined from a calibration plot. A series of PS thin films with different thicknesses were prepared. The RGB values of the captured images were extracted and transformed to hue angle value with the equation, $H = \operatorname{atan2}(\sqrt{3}(G-B), 2R-G-B)$. The *H* values is plotted against the given film thickness in Figure S6a. Compared to monochromatic light, the interference from different wavelengths of white light always leads to a limited resolution. However, in the range from 50 to 200 nm, we found this approach can provide a sufficient resolution, and its calibration plot coincides with the previous study very well [Proc. Inst. Mech. Eng. J, 1994, 208, 199–205.], as the curve highlighted in red. While PS domains protrude from the film to some extent, the calibration plot can be appropriate for 2M with film thickness of 110 nm. As arrows shown in Figure S6b, the color differences of PS domains at ridges and valleys are even visible by naked eves. The area for each PS domain and their H values are shown in Figure S6c, and a scatter plot between the area and the calculated height is given in Figure S6d. It is clear that large PS domains have greater height than small ones. Taken together, combined with the results from Figure 4 in the main context, we conclude that the local distribution of elongated and dispersed PS domains matches the striation pattern.



Fig. S7 Enlarged views of some portions from a panoramic image of 2H, where some elliptical/elongated PS domains at the ridge regions are framed in red boxes (ruler unit: μ m).