

Supporting Information

Tailored-made Dimension of Diblock Copolymer Truncated Micelles on a Solid by UV Irradiation

Jiun-You Liou, and Ya-Sen Sun*

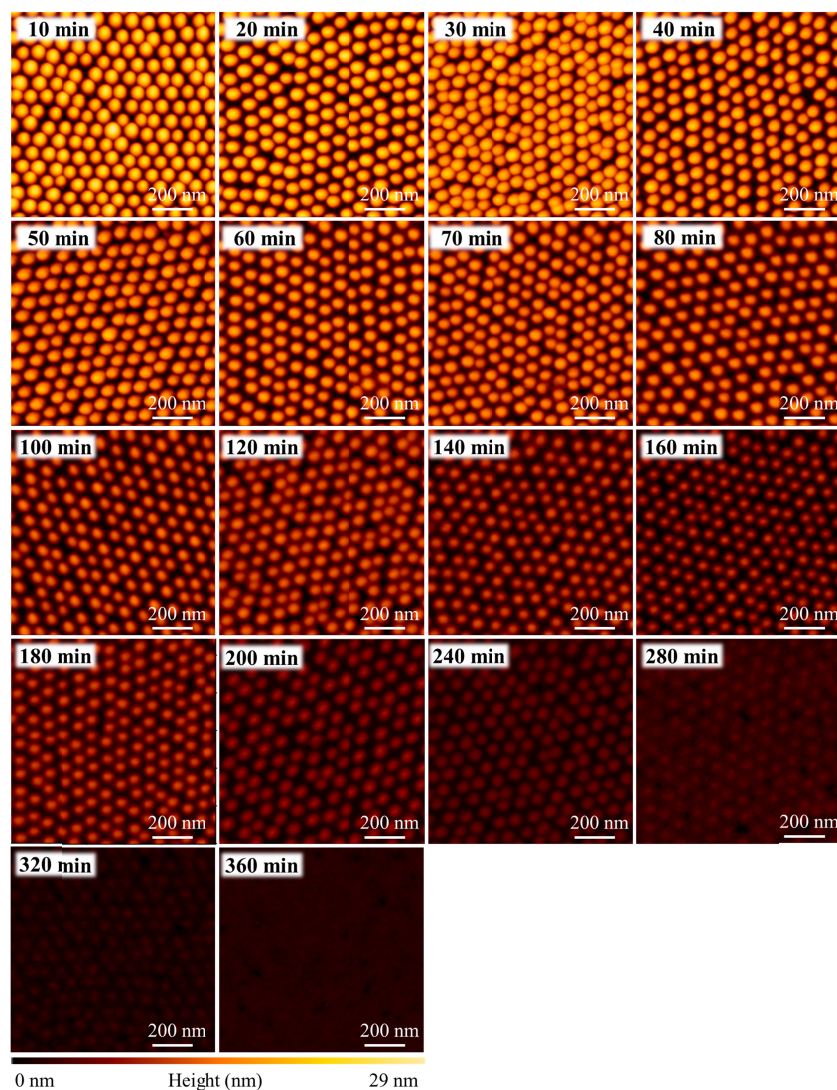


Figure S1 AFM topographic images of PS-b-P2VP micellar films after UVIA of varied time durations (10–360 min).

Figure S2 AFM topographic images and cross sections of PS-*b*-P2VP micellar films after UVIA of (a) 10, (b) 100, (c) 120, (d) 240, (e) 320 and (f) 360 min. For clarity, those AFM topographies were normalized in a height scale between 0 and 29 nm. Those scan profiles represent cross sections of the 2D images. White lines are plotted as a visual guide.

Figure S3 Real-time experimental and simulated 2D GISAXS patterns, which are displayed as animated figures (movies 1 and 2).

Figure S4 Intensity cross sections of the 2D GISAXS patterns shown in Movie 1 (experimental data) and Movie 2 (simulated patterns). The cuts were made (a) along

the $q_{\perp}$ direction at $q_{\parallel}=0.007457 \text{ \AA}^{-1}$ and (b) along the $q_{\parallel}$ direction at the maximum intensity of the lobes. Black open circles represent the experimental data whereas red lines denote the simulated profiles.

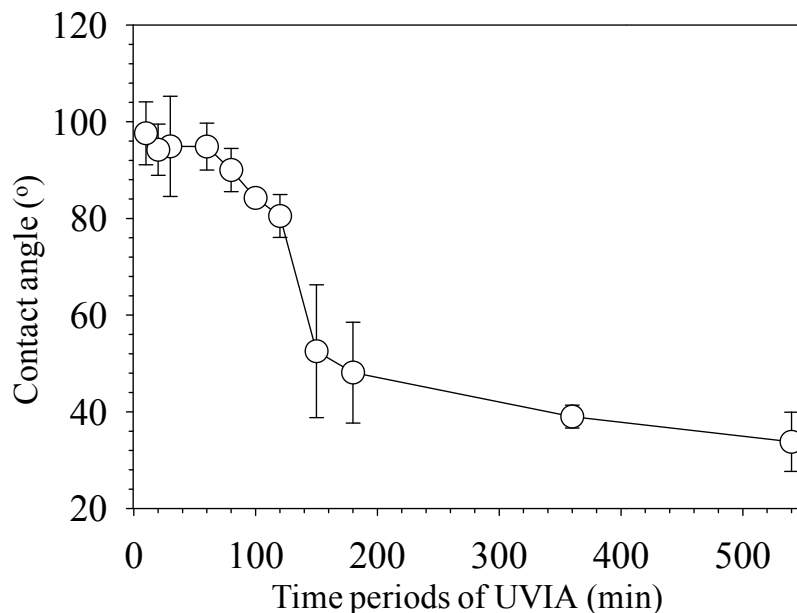


Figure S5 Static contact angle of water on PS-*b*-P2VP micellar films with UVIA treatments of varied time periods.

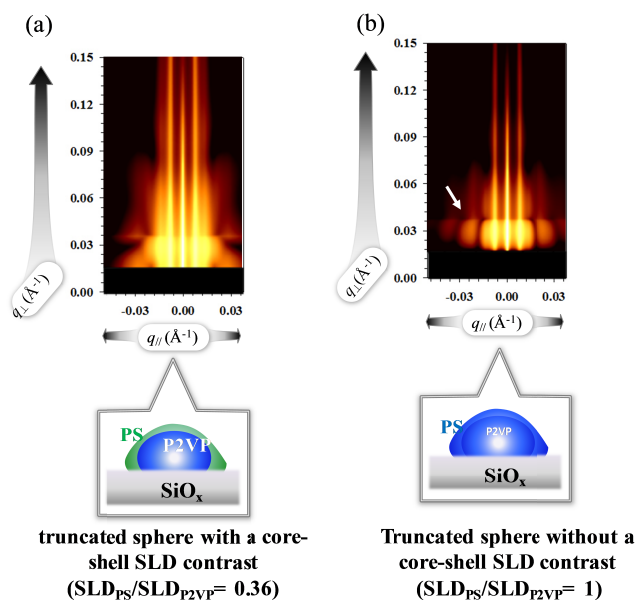


Figure S6 Simulated 2D GISAXS patterns of core-shell truncated sphere (a) with a core-shell SLD contrast, in which the PS shell has a lower SLD than the P2VP core and (b) without a core-shell SLD contrast, in which the PS shell has the same SLD as

the P2VP core

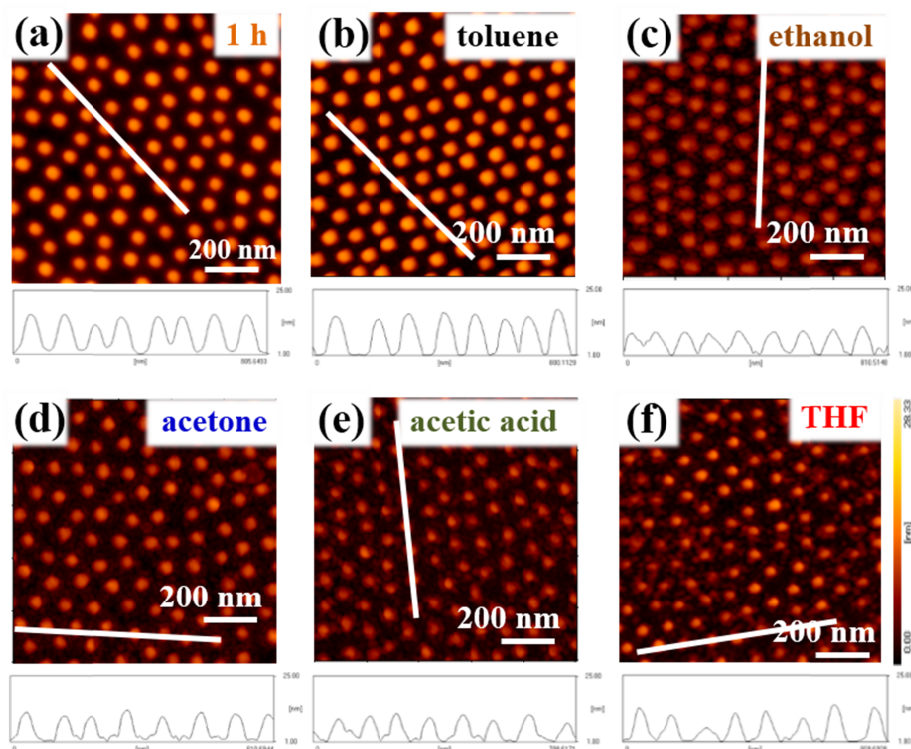


Figure S7 (a) AFM topographic image of the micellar film after 60 min of UVIA. (b-f) AFM height topographies of micellar films with UVIA of 60 min followed by sonication in five organic solvents including (b) toluene, (c) ethanol, (d) acetone, (e) acetic acid and (f) THF solvents. For clarity, those AFM topographies were normalized in a height scale between 0 and 29 nm. Those scan profiles represent cross sections of the 2D images. White lines are plotted as a visual guide.

Table S1 solubility parameters for organic solvents and PS and P2VP homopolymers

Solvent ¹ /Polymer ²	δ_t	δ_d	δ_p	δ_h
	$MPa^{1/2}$			
Toluene	18.2	18.0	1.4	2.0
THF	19.4	16.8	5.7	8.0
Acetone	20	15.5	10.4	7.0
Acetic acid	21.4	14.5	8.0	13.5
Ethanol	26.5	15.8	8.8	19.4
Polystyrene	17.6	-	-	-
Poly(2-vinylpyridine)	20.4	-	-	-

References:

- (1) Barton, A. F. M. Solubility Parameters. *Chemical Reviews* **1975**, *75*, 731-753.
- (2) L. Cui, H. Wang, Y. Ding and Y. Han, *Polymer*, 2004. **45**, 8139-8146.