Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information

for

Nanotextured Si Surfaces Derived from Block–Copolymer Self–Assembly with Superhydrophobic, Superhydrophilic, or Superamphiphobic Properties

Agnieszka Telecka[1], Tao Li[1,2], Sokol Ndoni[1,3], and Rafael Taboryski[1,*]

[1]Department of Micro- and Nanotechnology, Technical University of Denmark, DK-2800 Kongens Lyngby, Denmark

[2]Department of Electronic and Electrical Engineering, University College London, WC1E7JE London, Great Britain

[3]Center for Nanostructured Graphene, CNG, Technical University of Denmark, DK-2800 Kongens Lyngby, Denmark

[*]rata@nanotech.dtu.dk

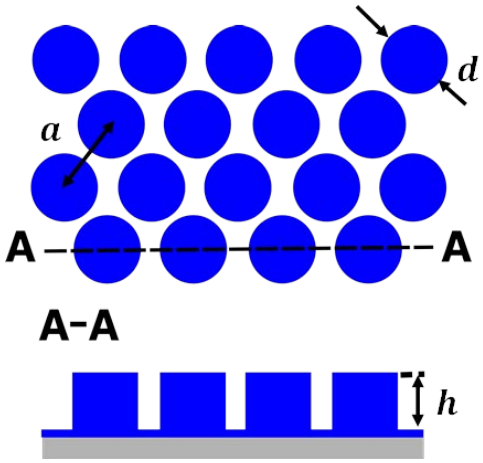

Figure S1: Sketch of hexagonal pillar structure dimensions. Top view and cross-section view.

Table S1 Etching times for the straight side-wall **nanopillar surfaces** with corresponding geometrical parameters derived from pitch size, diameter, and height together with the respective measured wetting properties. Pitch size is $a = (72\pm3)$ nm for all structures. Uncertainties are obtained as SD (n=3) (measured WCAs and roll-off angles) and from measurement of d and a by SEM inspection to determine SD (N=10) for d and a and subsequent employment of standard rules for error propagation to determine uncertainties in the other derived geometrical parameters.

Etching time [s]	Aspect ratio h/d	Diameter to pitch d/a	Solid fraction f_s	Roughness factor r	Apparent CA θ [°] *	Roll off angle α [°] *
170	1.0±0.2	0.9±0.1	0.7±0.2	3.9±0.5	131±1	Pinned
180	1.9±0.3	0.83±0.08	0.6±0.1	5.6±0.6	132.4±0.4	89±9
200	2.8±0.4	0.8±0.1	0.5±0.1	6.9±0.8	144.2±0.7	42±7
220	3.4±0.4	0.7±0.1	0.4±0.1	7.1±0.8	155±2	26±4
250	4.8±0.6	0.7±0.1	0.4±0.1	8.5±0.9	160±1	14±1
280	6.1±0.9	0.6±0.1	0.3±0.1	8.9±1.2	165.6±0.7	2.6±0.3
300	10±1	0.42±0.06	0.16±0.04	7.5±0.9	169.8±0.5	1.1±0.5
320	13±2	0.39±0.07	0.14±0.05	8.0±1.2	170.5±1.5	1.2±0.2

*Apparent contact angle and roll-off angle are given for the FDTS coated samples.

Table S2: Etching times for the **nanohole surfaces** with corresponding geometrical parameters derived from pitch size, diameter, and height together with the respective measured wetting properties. Pitch size is $a = (72\pm3)$ nm for all structures. Uncertainties are obtained as SD (n=3), and employment of standard rules for error propagation.

Etching time [s]	Aspect ratio h/d	Diameter to pitch d/a	Solid fraction f_s	Roughness factor r	Apparent CA θ [°] *	Roll-off angle α [°] *
250	2.26±0.06	0.70±0.03	0.55±0.05	5.9±0.4	155±1	30.6±1.4
300	3.2±0.1	0.72±0.04	0.53±0.06	7.2±0.5	160±1	24.0±0.6
400	4.5±0.2	0.74±0.05	0.51±0.07	9.9±0.8	167.6±0.2	7.8±0.4
500	4.9±0.3	0.77±0.08	0.47±0.09	11.6±1.1	170.3±0.5	7±2

*Apparent contact angle and roll-off angle are given for the FDTS coated samples.

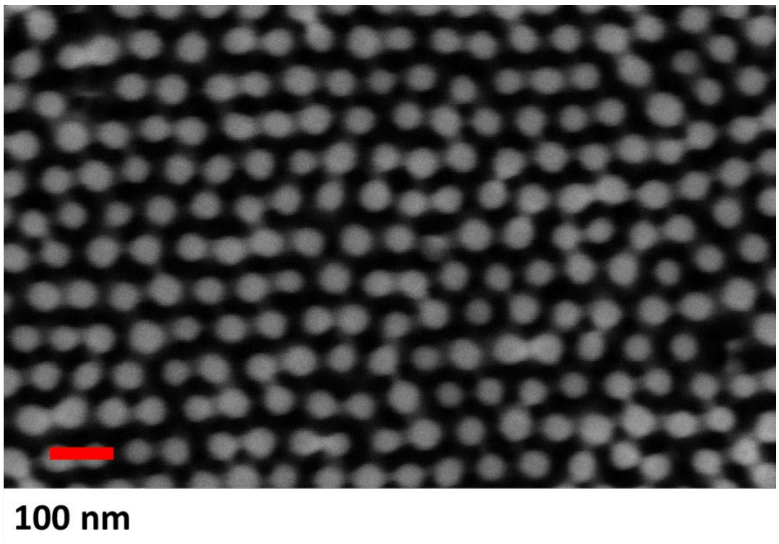

Figure S2: SEM top view image of the re–entrant nanostructure.

Table S3: Dimensions and convex texture angle ψ of re–entrant nanostructure.

d [nm]	b [nm]	c [nm]	$\cos\psi$	ψ [°]
47 ± 3*	19 ± 1*	26 ± 1*	0.54 ± 0.03*	56 ± 7*

*SD, n = 10 obtained from SEM images.