

Supporting information

DNA Origami for Silicon Patterning

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Table S1. Mg²⁺ concentrations (atom/cm²) determined by ICP-MS measurements on several SiO₂ substrates (SiO₂-no.1, SiO₂-no.2, SiO₂-no.3, SiO₂-no.4 and SiO₂-no.5). 10 μL of the buffer are deposited on a 2 cm × 2 cm piece of SiO₂ substrate and an incubation time of 1 hour is applied for each sample (except for SiO₂-no.2 and SiO₂-no.4). After this time, a rinsing with EtOH is applied on substrates SiO₂-no.3 and SiO₂-no.4, and a rinsing with DIW/EtOH (9:1) is applied on substrates SiO₂-no.4 and SiO₂-no.5. SiO₂-no.1 is exposed to the buffer but it is not rinsed. Buffer is fixed to 5 mM Tris, 40 mM MgCl₂ at pH 9.

Sample name	Protocol		Concentration (atom/cm ²)
	Buffer	Rinsing solvent	Mg ²⁺
SiO ₂ – no.1	With buffer	No rinsing	6.8 x 10 ¹⁵
SiO ₂ – no.2	No buffer	EtOH	1.1 x 10 ¹²
SiO ₂ – no.3	With buffer	EtOH	8.3 x 10 ¹³
SiO ₂ – no.4	No buffer	DIW/EtOH 9:1 (v:v)	1.1 x 10 ¹²
SiO ₂ – no.5	With buffer	DIW/EtOH 9:1 (v:v)	7.1 x 10 ¹²

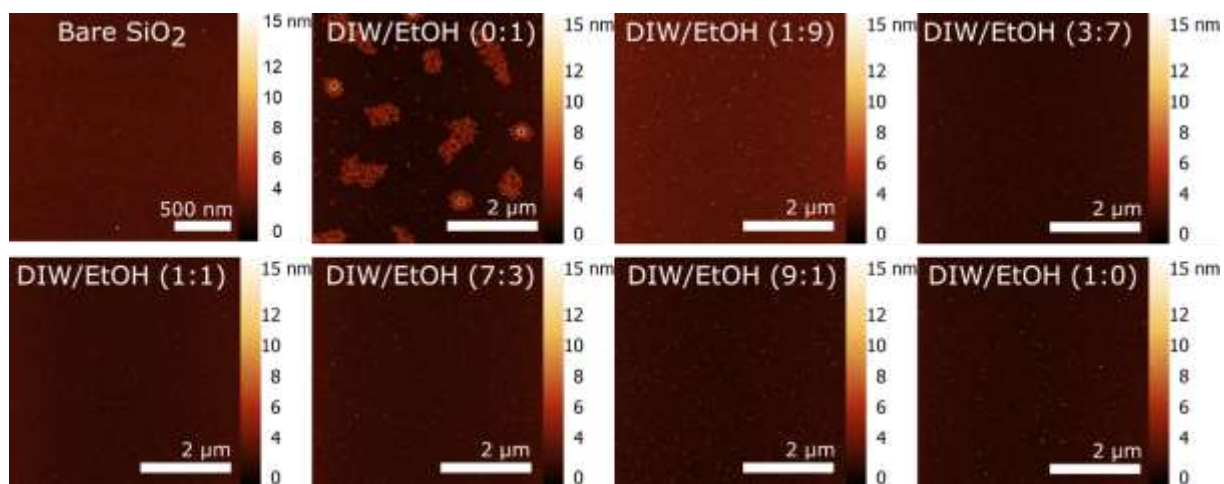


Figure S1. AFM images of surfaces rinsed with DIW/EtOH solutions with ratios 1:0, 9:1, 7:3, 1:1, 3:7, 1:9 or 0:1 after an exposure to 10 μL of the buffer (5 mM Tris, 40 mM MgCl_2 at pH 9). 1 cm \times 1 cm SiO_2 are used and an incubation time of 1 hour is applied for each sample. A rinsing by immersion (30 s) in a suitable solvent is next applied. All the samples are then etched with HF vapor for 60 s before imaging. Bare SiO_2 is only etched by HF vapor.

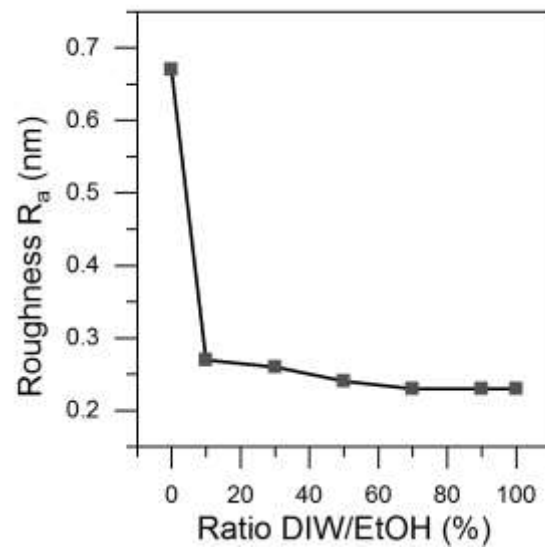


Figure S2. Roughness (R_a) values of SiO_2 ($1 \text{ cm} \times 1 \text{ cm}$) substrates rinsed by immersion for 30 s with DIW/EtOH mixtures with ratios 1:0, 9:1, 7:3, 1:1, 3:7, 1:9 or 0:1 after an exposure to $10 \mu\text{L}$ of the buffer (5 mM Tris, 40 mM MgCl_2 at pH 9) for 1 h. All the samples are then etched with HF vapor for 60 s. Values are determined from AFM images presented in Fig. S1.

Table S2. Mg²⁺ concentrations (atom/cm²) determined by ICP-MS measurements on several SiO₂ substrates. 10 μL of the buffer are deposited on a 2 cm × 2 cm piece of SiO₂ substrate and an incubation time of 1 hour is applied for each sample. After this time, a rinsing with a mixture of DIW/EtOH with different ratio is applied on substrates for 30 s. Buffer is fixed to 5 mM Tris, 40 mM MgCl₂ at pH 9.

Ratio DIW/EtOH	Concentration Mg ²⁺ (atom/cm ²)
1:0	4.5 x 10 ¹²
9:1	7.1 x 10 ¹²
7:3	7.6 x 10 ¹²
1:1	7.6 x 10 ¹²
3:7	7.9 x 10 ¹²
1:9	1.2 x 10 ¹³
0:1	1.2 x 10 ¹³

Table S3. Density of DNA origami (number of DNA origami/ μm^2) after rising with 9:1 (v:v) DIW/EtOH. Samples were exposed to HF etching. The concentration of DNA origami is 1.5 nM

Solvent	9:1 (v:v) DIW/EtOH		
Rinsing time (s)	10	30	60
Density (DNA/ μm^2)	2 ± 0.6	1.9 ± 0.5	1.4 ± 0.8

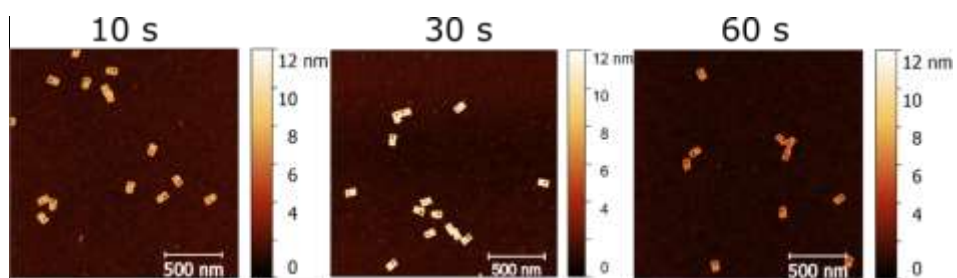


Figure S3. AFM images of SiO₂ substrates (thickness = 15 nm) after HF vapor etching (60 s). Samples were exposed to a buffer solution only (5 mM Tris, 40 mM MgCl₂, pH = 9) and rinsed by 9:1 (v:v) DIW/EtOH mixture for 10, 30 or 60 s.

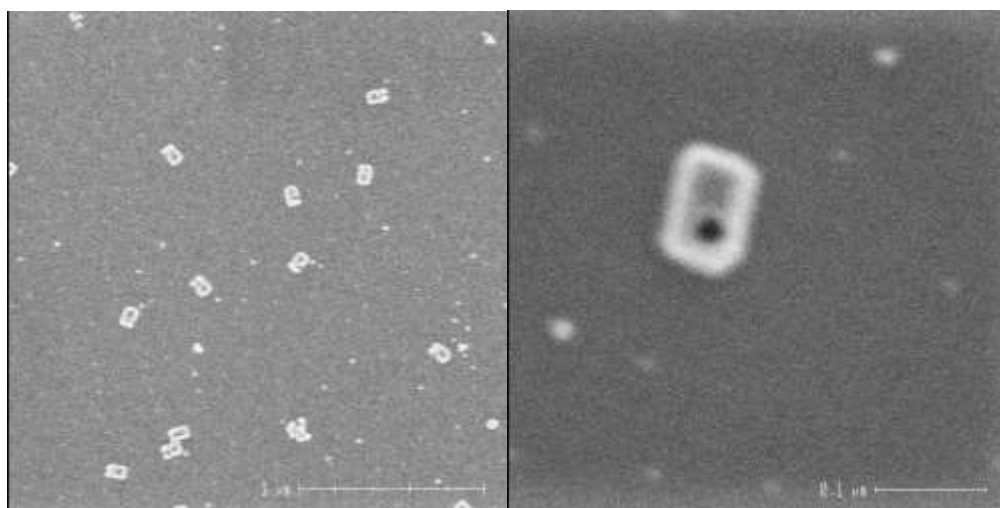


Figure S4. SEM image of Si patterns after 20 s of etching time with a large view (scale bare is 1 μm) and with closed view (scale bare is 0.1 μm)