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Supporting Information

Polydopamine-polyethylene glycol-albumin antifouling coatings on multiple substrates: variations in structure as a function of substrate surface properties and their effects on antifouling properties

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Comparison of AFM Images in Air and Water

AFM imaging of selected surfaces was conducted in water as an environment more akin to that in which the materials are expected to be used in sensor applications. In general differences between images in air and water were found to be minimal. Images of PDA-modified glass in air and water, respectively, are shown as a typical example.

Methods

Atomic force microscopy (AFM) height images of polydopamine (PDA)-modified glass surfaces were taken using a Bruker BioScope Catalyst AFM (Billerica, MA). Images were obtained both in air and Milli-Q water (18.2 MΩ.cm) using ScanAsyst mode with PeakForce tapping. The cantilevers used were ScanAsyst-air (silicon tip on nitride cantilever, spring constant k = 0.4 N/m) for measurements in air, and ScanAsyst-fluid (nitride coated silicon tip on nitride cantilever, spring constant k = 0.7 N/m) for measurements in water. Image scans were conducted at 1 Hz and set to acquire 512 samples/line. NanoScope Analysis software ver.1.5 by Bruker Corporation was used for image analysis of particle features and surface roughness (see main article for full description). AFM data are reported as mean ± SD for three 2x2 µm images.

Results and Discussion

AFM images are shown in Figure S1. The root mean square (RMS) surface roughness parameter was determined to be 25.3 ± 9.4 nm in AFM-air and 28.8 ± 7.9 nm in AFM-fluid modes, and was not significantly different between

the two modes with a p-value of 0.32 (Student t-test). Particle density, height, and diameter in AFM-air were 3.3 ± 1.1 μm^{-2}, 37.2 ± 10.9 nm, and 124 ± 22 nm, respectively. Particle density, height, and diameter in AFM-fluid mode were 5.4 ± 0.9 μm^{-2}, 39.1 ± 4.6 nm, and 140 ± 7 nm, respectively. Again differences between the air and fluid modes were not statistically significant (p-values > 0.1). From these data, we conclude that the PDA surface morphology is the same in air and water environments.

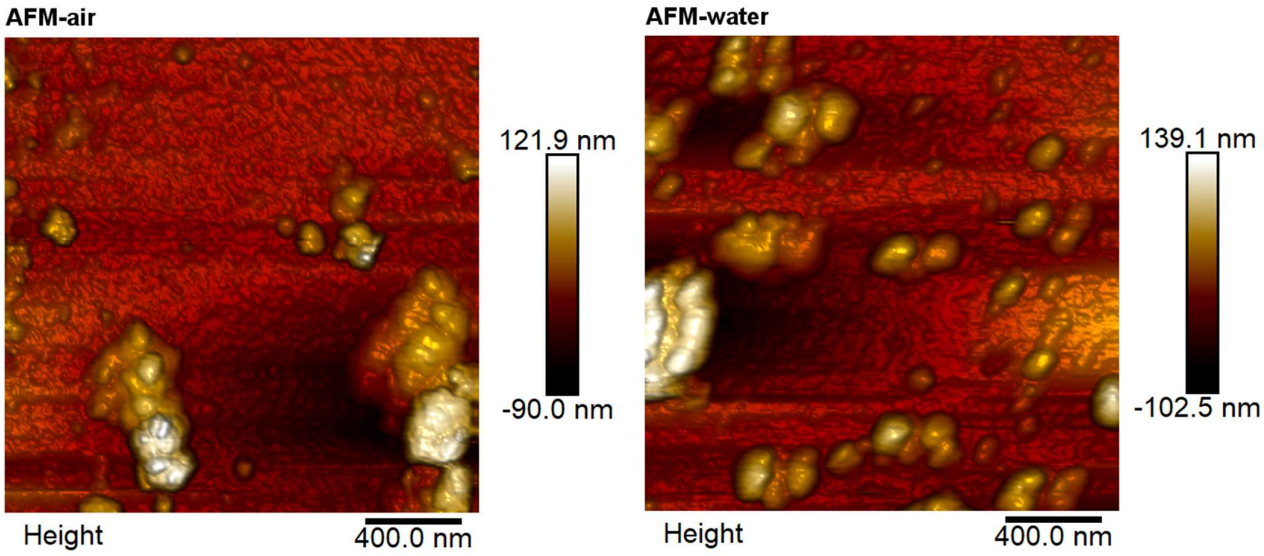

Figure S1. AFM height images of glass-PDA in air and water.