

SUPPORTING INFORMATION

Directional nanotopographic gradients: a high-throughput screening platform for cell contact guidance

Qihui Zhou,^{a,b} Philipp T. Kühn,^{a,b} Thirsa Huisman,^a Elsje Nieboer,^a Charlotte van Zwol,^a Theo G. van Kooten,^{a,b} and Patrick van Rijn^{a,b,c*}

^a Biomedical Engineering Department-FB40, University of Groningen, University Medical Center Groningen, A. Deusinglaan 1, 9713 AV, Groningen, The Netherlands.

^b W.J. Kolff Institute for Biomedical Engineering and Materials Science-FB41, University of Groningen, University Medical Center Groningen, Antonius Deusinglaan 1, 9713AW Groningen, Netherlands.

^c Zernike Institute for Advanced Materials, University of Groningen, Nijenborgh 4, 9747 AG, Groningen, Netherlands.

S1: Experimental setup and approach for surface wrinkle gradient formation

S2: Details on sub-nano wrinkle features

S3: Images for focal adhesion area/cell determination

S4: Analysis of surface features reached with longer oxidation times

S5: Linearity analysis of focal adhesion area/cell on non-gradient substrates

S1: Experimental setup and approach for surface wrinkle formation

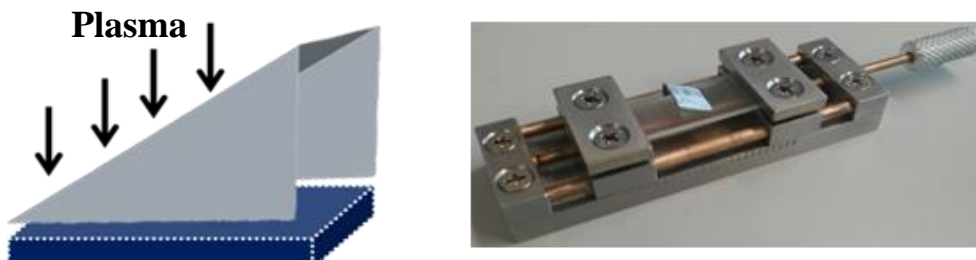


Figure S1. Schematic diagram and picture of formation of wrinkle gradient by air plasma oxidation.

S2: Details on sub-nano wrinkle features

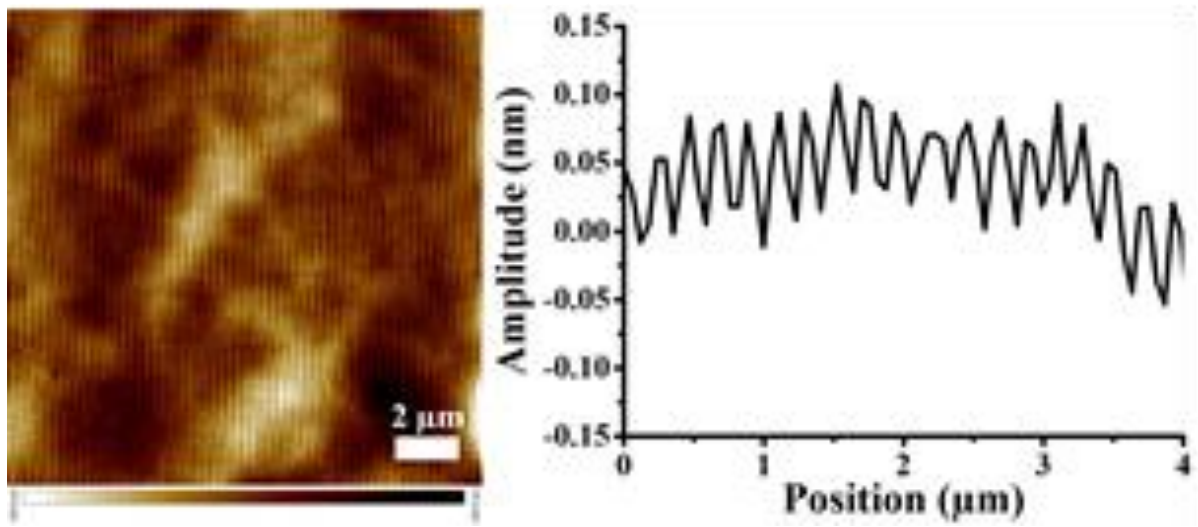


Figure S2. Zoom of surface features on position 0 cm on gradient formed using 50 s plasma treatment determined by atomic force microscopy.

S3: Images for focal adhesion area/cell determination

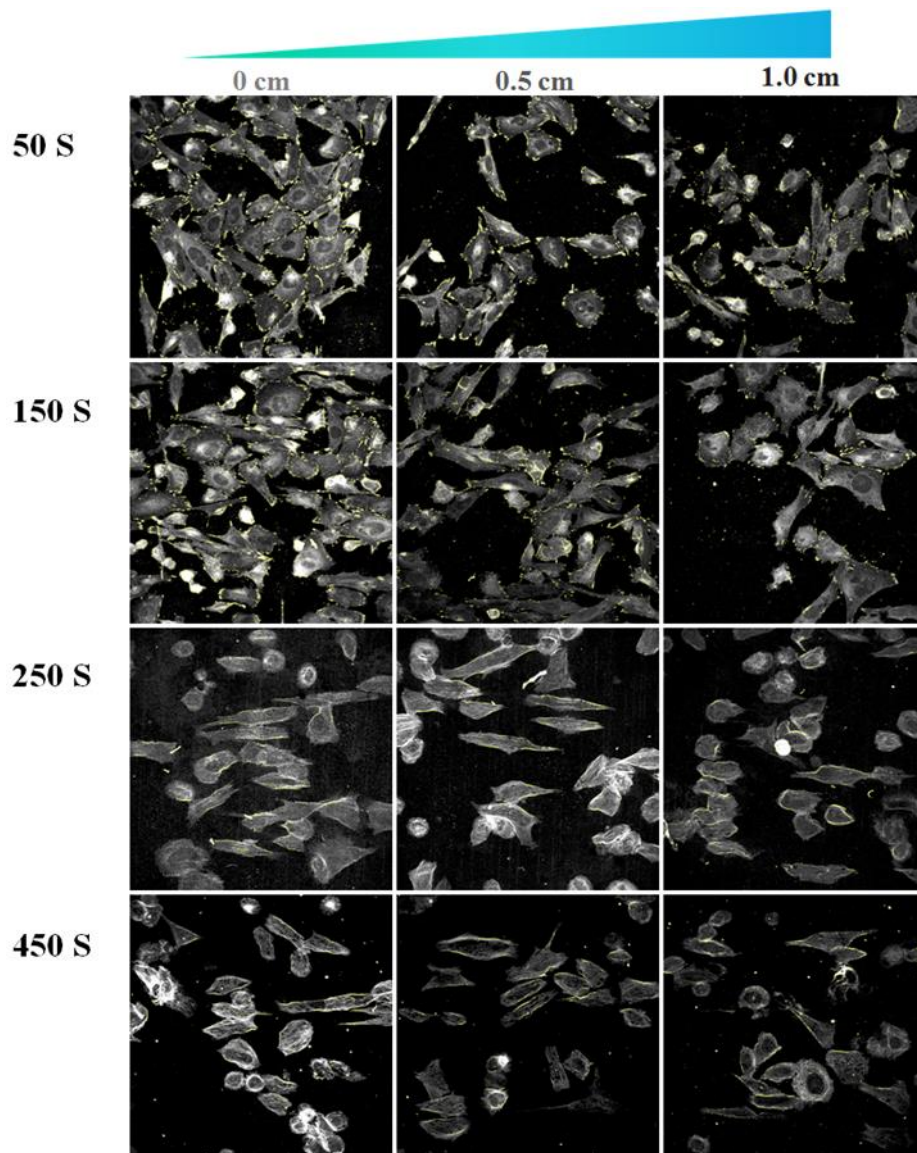


Figure S3. The highlight of focal adhesion contact points via Focal Adhesion Analysis Server (http://faas.bme.unc.edu/upload?static=1&max_adhesion_count=5000) for SaOs after 2 days cultivation on gradient surfaces.

S4: Analysis of surface features reached with longer oxidation times

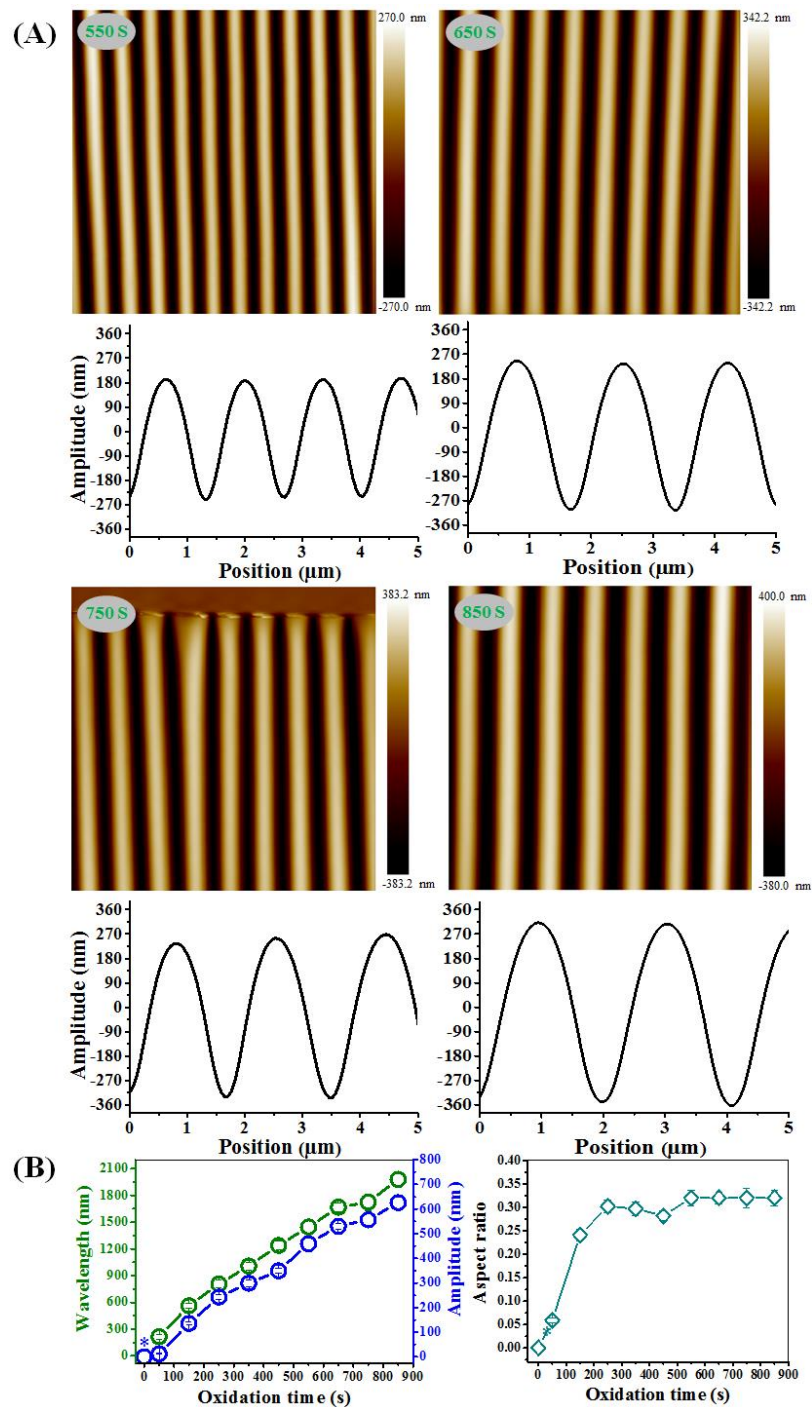


Figure S4. Dependence of the wavelength, height and aspect ratio of created wrinkles on the plasma oxidation time from 0 s-850 s with a fixed initial strain (30% substrate elongation). * indicates approximate value.

S5: Linearity analysis of focal adhesion area/cell on non-gradient substrates

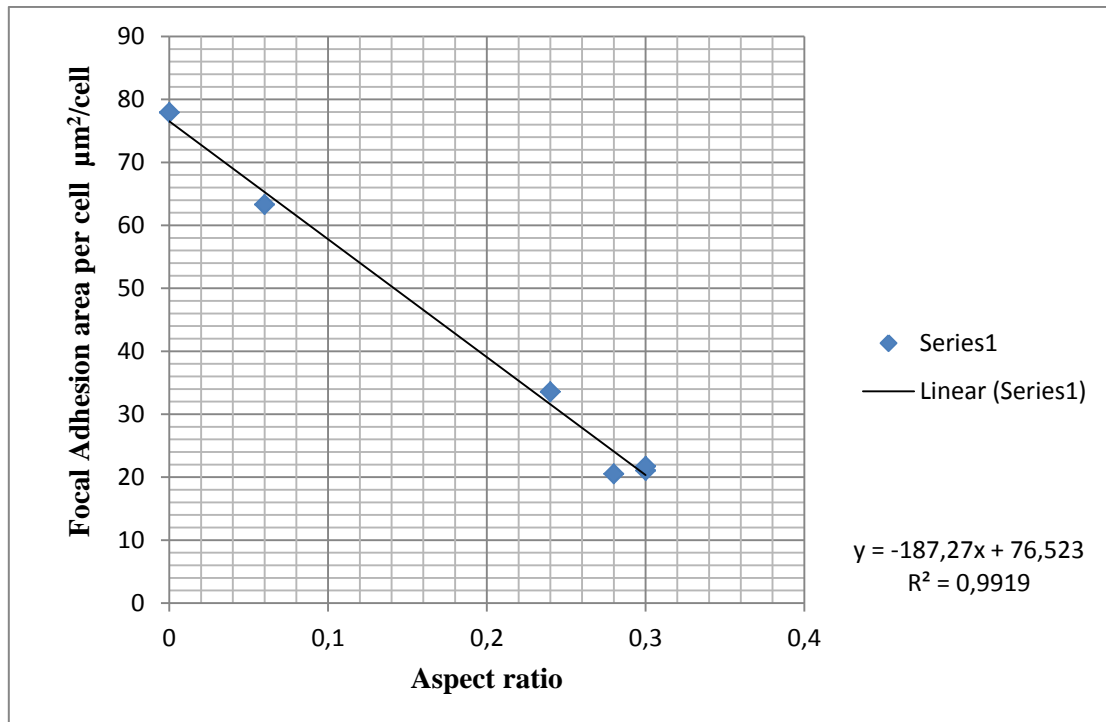


Figure S5. Determining the degree of linearity of wrinkle aspect ratio vs focal adhesion area/cell shows an R^2 -value of 0.992 indicating that the trend can indeed be perceived as linear.