Electronic Supplementary Information

Multiscale Structured Germanium Nanoripples as Templates for Bioactive Surfaces

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Figure S1. Cross sectional TEM image of a germanium sample, irradiated with a 5×10^{16} ions·cm^{-2} dose of 26 keV Au^+ ions at 60° of incidence. Nanowires are present on the top as well as on the side of the ripples facing the ion beam; the nanowires on the top are curled in the direction opposite the ion beam. The EDX analysis (data not shown) confirms that the darker regions on the top of the nanowires are very rich in Au. An amorphous thick layer is present on the side of the ripple facing the beam, whereas it is thinner on the other side.

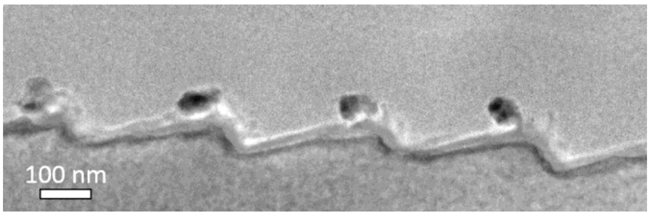

Figure S2. A schematic rapresentation of the procedure followed to calculate the mean roughness R_Z from a 2D AFM topography. For readability reasons, only the first 3000 nanometers of one AFM linear scan are shown. Along the first 1800 nanometers, all consecutive ranges of lenght equal to one period λ are shown; the ranges are obtained by consecutively moving point by point the λ period along the cross section profile. In the 1800-3000 nm range, only two wavelenghts λ are shown, and in both cases the difference between the highest and the lowest Z values within the length λ is pointed out. The final mean roughness R_Z was obtained by averaging all the differences measured in this way in all linear scans and the error given is the associated standard deviation.

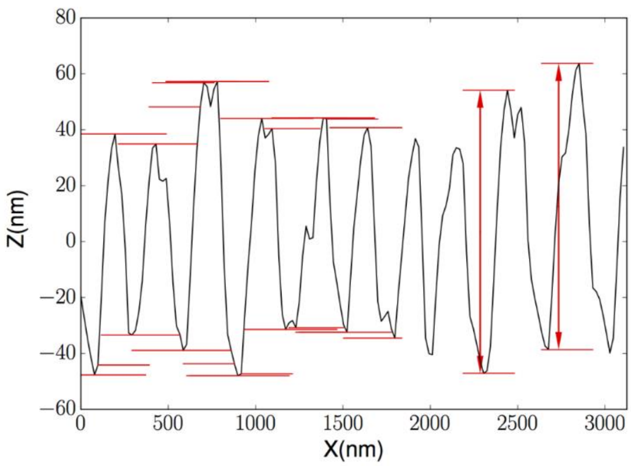

Figure S3. The one-dimensional height-height (Z-Z) autocorrelation function calculated from the 2D AFM topography of sample Ge-LD (as in Figure 2a).

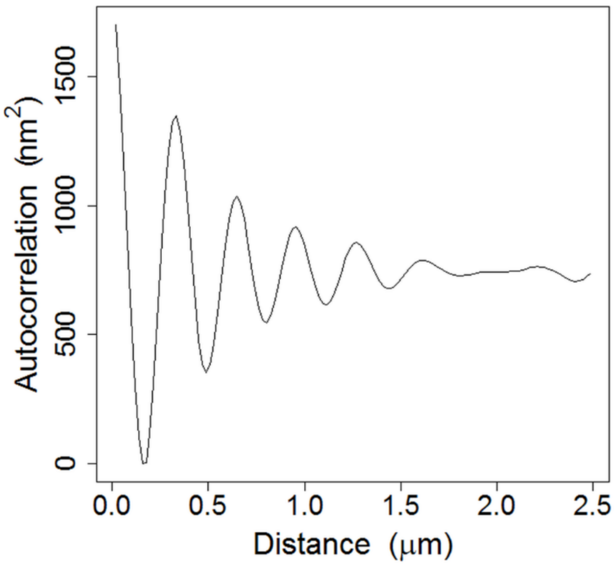

Figure S4. A SEM image at 50k magnification of sample Ge-LD. The arrow indicates the projection of the ion beam direction.

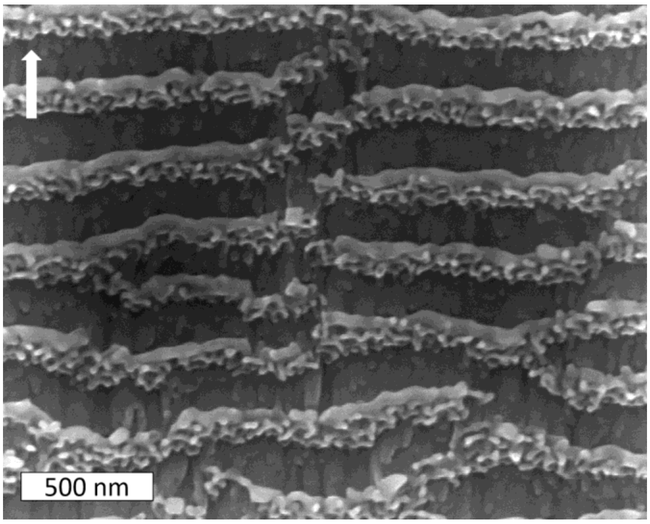

Figure S5. A SEM image at 50k magnification of sample PFPE-LD.

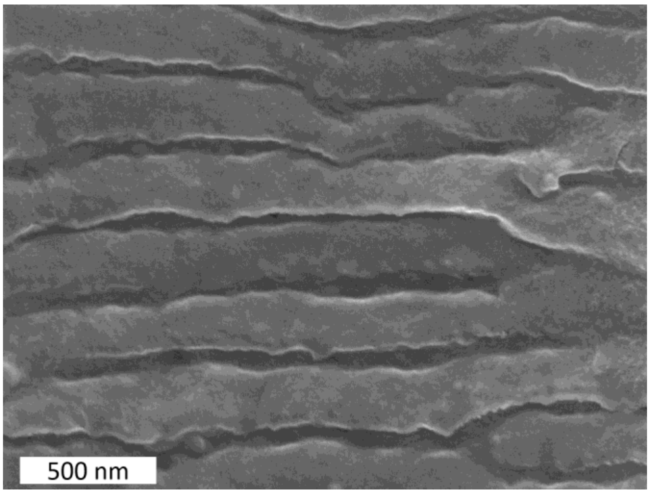

Figure S6. An AFM 2D topographic image obtained from sample COC-LD.

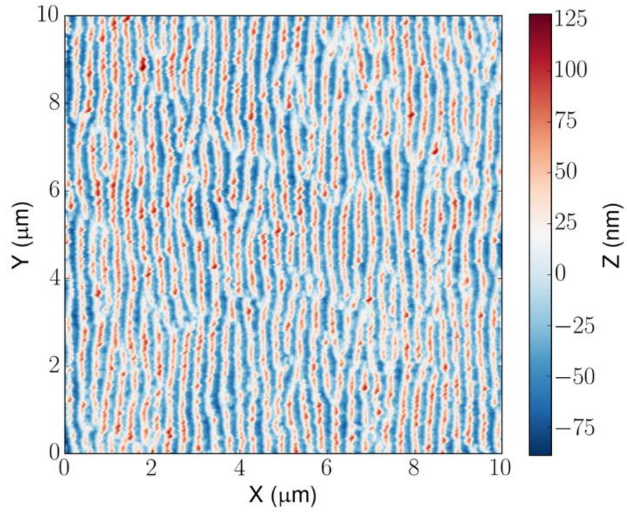

Figure S7. An AFM 2D topographic image obtained from sample PFPE-LD.

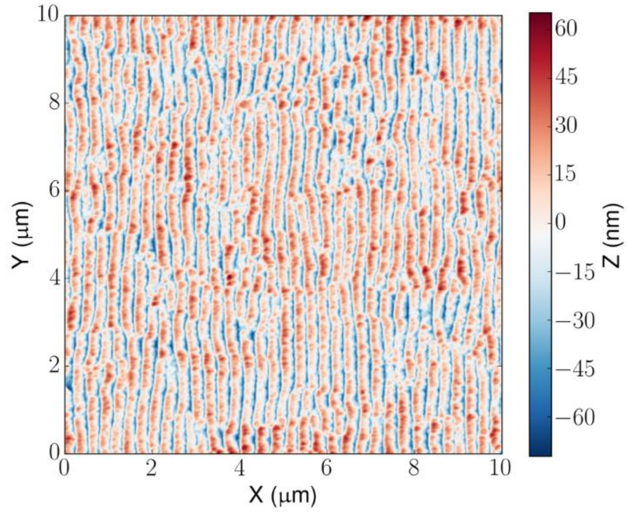

Figure S8. A visual sketch of the dependence of the ripple long-range regularity on the Au^+ fluence. The four germanium samples have been irradiated with Au^+ions of 26 keV kinetic energy, 60° incidence angle, and fluence of (a) 2×10^{16} ions cm^{-2}; (b) 5×10^{16} ions cm^{-2}; (c) 1.0×10^{17} ions cm^{-2}; (d) 4.3×10^{17} ions cm^{-2}. The arrow indicates the projection of the ion beam direction. The degree of order increases with the fluence of the incident ions.