

Electronic Supplementary Information

Coral-like plasmonic probes for Tip-Enhanced Raman Spectroscopy

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AFM analysis of the coral-like nanotexture

The depth of the coral-like structure was obtained by AFM analysis. For the seek of simplicity, AFM measurements were performed on glass coverslips undergoing the same treatment (Cr/Au/Ag layers sputtering + air-plasma + Ar-plasma). Importantly, the presence of a different substrate does not affect the morphological features of the coral-like nanotexture, as revealed by SEM and XRD analysis.

Figure S1 reported below shows both the topographical- (part a) and the phase-map (part b) on a 5 μm x 5 μm region of the treated coverslip. It was obtained by acquiring 512 points for 512 lines. Fig. S1c reports, instead, the height of the topographical map along the blue line highlighted in part a and b.

Topographical map reveals that RF treatment is able to produce a deep etching of the Ag-layer. A more quantitative analysis of this effect is displayed in Fig. S1d, which reports the height distribution of the points of the levered topographical map. As it is possible to see, the 5% to 95% height excursion roughly corresponds to 30 nm (a value matching the Ag-layer thickness), which suggests that the whole Ag layer (not only the uppermost part) is nanostructured. However, a definitive proof of this issue can be, in principle, only obtained by techniques such as EDX (Energy Dispersive X-ray Analysis), which is able to provide accurate mapping of Ag distribution on the underlying Au-layer.

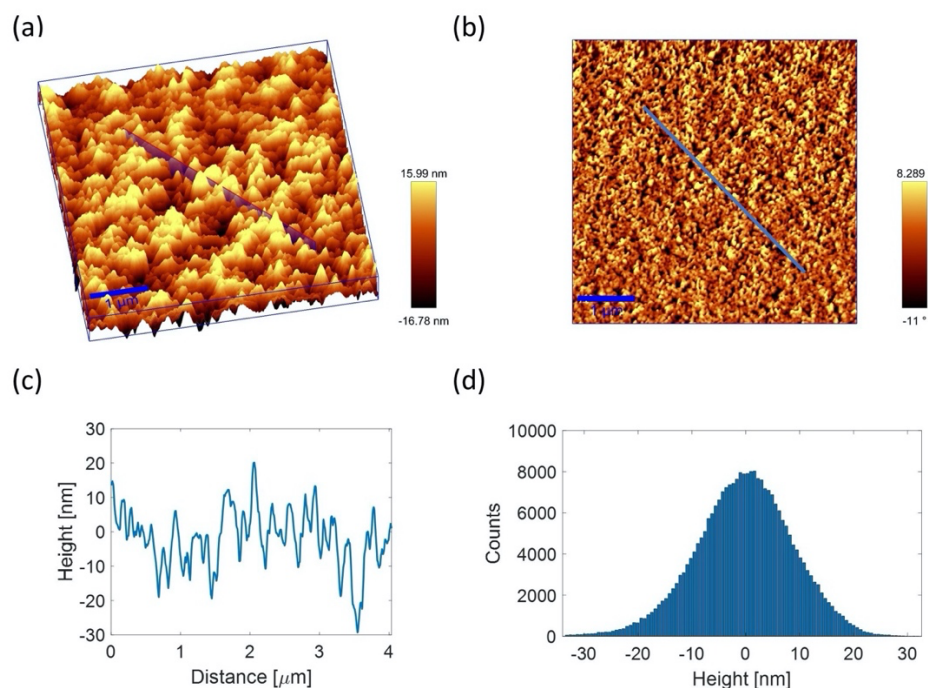


Fig. S1: AFM analysis of the coral-like nanotexture obtained on a glass coverslip. **a:** Topographical map in a 5 μm x 5 μm region. **b:** Phase map of the same region in a. **c:** Height of the nanostructured coverslip along the section highlighted in a and b by the blue line. **d:** Heights distribution of the levered map reported in a.