

HD DVD substrates for Surface Enhanced Raman Spectroscopy Analysis: Fabrication, Theoretical Predictions and Practical Performance

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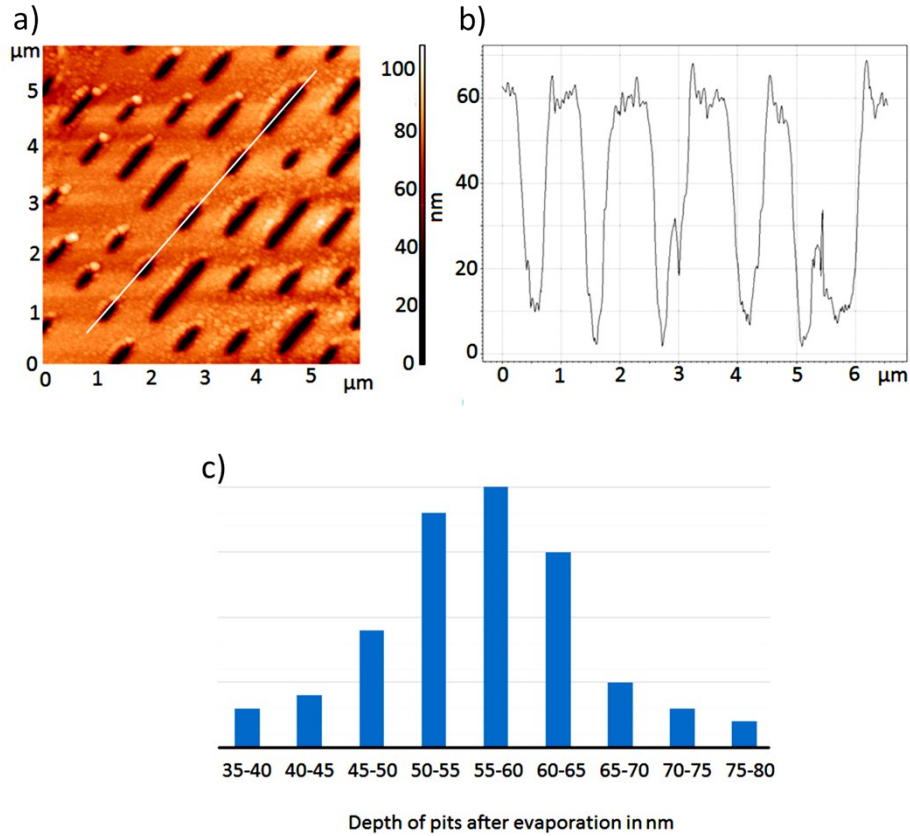


Figure S11 – Evaluation of the depth of the encoding pits after evaporation of a 30 nm gold layer. a) 2D representation of the encoding pit structure. b) Extracted line profile along the line highlighted in a). c) Histogramm of the measured depth of encoding pits.

The average pit depth is $55 \text{ nm} \pm 9 \text{ nm}$ (standard deviation). For the calculations an average depth of 60 nm was assumed. This is in line with the estimations made for assumed encoding pit lengths.

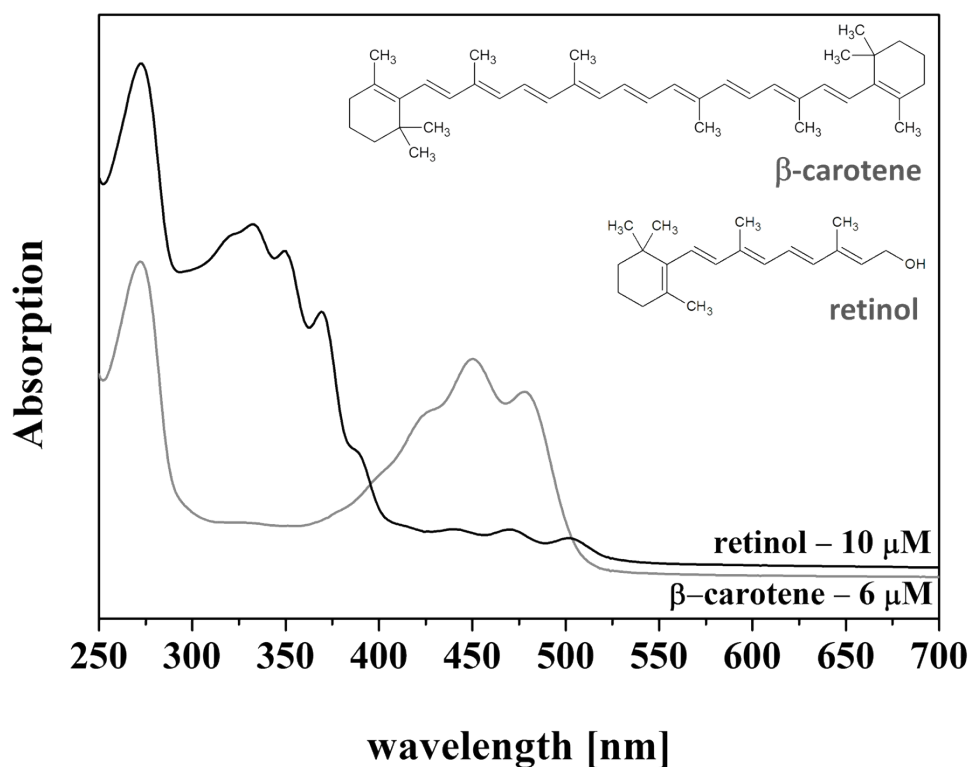


Figure S12 – Absorption spectra of retinol and β -carotene and schematic representation of the chemical structure of retinol and β -carotene.

The analytes β -carotene and retinol show a strong absorption in the UV and VIS spectral range. This behavior has been widely discussed and explained by considering their chemical structures. More exactly, β -carotene is characterized by a conjugated π -system with 9 double bonds in its hydrocarbon backbone while retinol has just 4 such repeating units.^{51, 52} Since the Raman and SERS measurements were performed applying 785 nm as excitation wavelength, no additional resonance Raman contribution to the overall Raman spectrum is expected.