QUANTITAVE ANALYSIS OF THE IMAGES OBTAINED IN SCATTERING NEAR FIELD OPTICAL MICROSCOPY

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Far field sub-diffraction limited resolution has been achieved by a few imaging techniques, such as: stimulated emission depletion (STED) microscopy, photoactivated localization microscopy (PALM)and stochastic optical reconstruction microscopy (STORM). All these techniques require fluorescent labels and the main disadvantages of fluorescent microscopy techniques are the connection between laser wavelength and fluorescent marker and also difficulty to attach the marker to the interesting region of the samples Moreover they may not attach to correct molecule or functional group of interest that create problems in interpreting images. In our work we present a new method of quantitative analyses using the images obtained by using a scattering-Scanning Near field Optical Microscope(s-SNOM). The techniques are label free and the best resolution was less than 10 nm and it relates to the tip size of the atomic force microscope (AFM). Previously we reported a method used for quantitative analyses based on dielectric function imaging in s-SNOM [1-2].
In the present work we present a new method of quantitative analysis in nanoscale imaging techniques. We demonstrate that s-SNOM potential for surface characterization can be augmented by employing the phasor representation to represent typical s-SNOM data (in the form of amplitude and phase images) in an alternative way. Our results show that representing s-SNOM data in the phasor space can be very useful for surface characterization of different types of materials and can be successfully used for differentiating different materials types (or different species of the same type)

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