nano-FTIR – imaging and spectroscopy at 10nm spatial resolution

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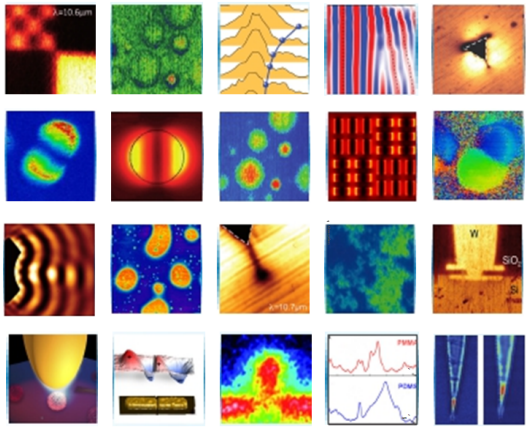
Scattering-type scanning near-field optical microscopy (s-SNOM) has emerged as one of the key technologies to study the optical properties of physical, chemical and biological materials on the 10-nm length scale – far beyond the diffraction limit of light1. With the development of Fourier transform infrared spectroscopy on the nanoscale (nano-FTIR), we have successfully extended s-SNOM towards a complete spectroscopic analysis tool that is capable of analyzing complex nanostructures (Figure 1), embedded structural phases in biominerals2 (bones), organic semiconductors3 and two-dimensional materials4. Additionally, the modular design of the microscope enables a straight-forward realization of pump-probe near-field measurements5 and even the incorporation of existing light sources, e.g. synchrotron radiation6. In this presentation we will introduce the basic principle of near-field microscopy and nano-FTIR and address their impact and key applications in the field of organic and bio-materials.



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