Confocal Laser Scanning Microscopy

Measurement Services - Leica TCS SPE

Overview

Measurement and Visualization of Surface structures and Fluorescence

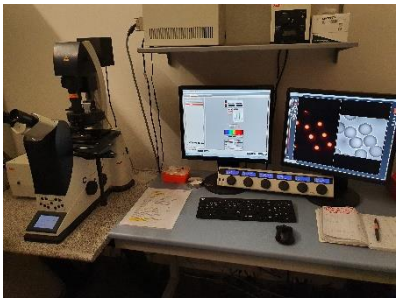
Confocal Laser Scanning Microscopes (CLSM) are widely used to resolve detailed structure of specific objects such as cells, particles surfaces by different fluorescence channels. It yields sharp images of the plane of focus without disturbing fluorescent light from the background. The Scan of different planes in z-direction allows the creation of three-dimensional images of the object or also the quanti-fication of fluorescent objects inside of such objects (right image).

Due to 4 different laser excitation wavelengths (405, 488, 532 and 635 nm), and free choice of emission region, quite different fluorescence dyes can be used simultaneously for imaging specific parts of the objects in different channels. Different dry (10x) and oil immersion objectives (40x and 63x) and Zoom until 32x enable the investigation of quite different object sizes down to 300 nm.

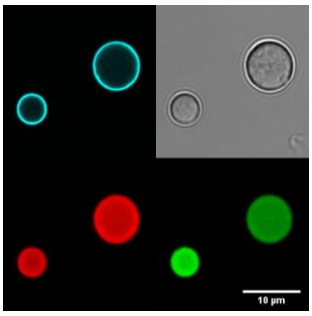
By using several standards and fluorescence labeled polyelectrolytes we can also offer semi-quantitative measurements of surface charges, homogeneity of mesoporous materials (HPLC materials), penetration of dyes or labeled polymers into filtration materials or gel matrices, permeability of membranes and many investigations more.

Possible Sample Measurements:

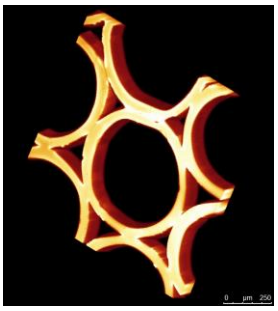
- Fluorescent or opaque samples
- Particles > 300 nm diameter
- Time-series of processes (diffusion, adsorption $\Delta t > 3$ s)
- Z-stacks (z-resolution 600 nm), three dimensional images
- Determination of permeability by differently sized analytes
- Surface (zeta)-potential with high spatial resolution



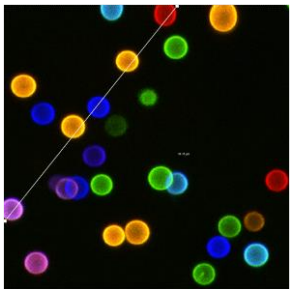
Leica TCS SPE Confocal Laser Scanning Microscope

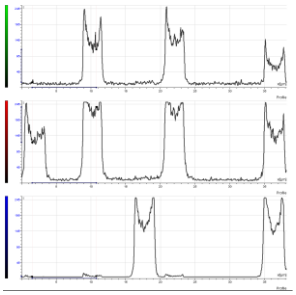


LbL-Capsules (labeled with Cy5) filled with Streptavidin-Rhodamine and bound Biotin-Fluorescein (Surflay)

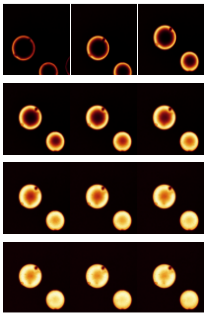


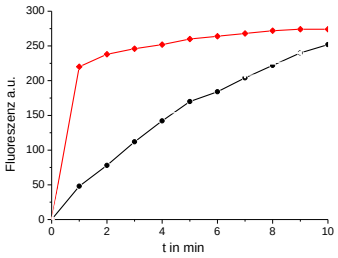
Mesoporous glass boundles visualized by adsorption of fluorescent polyelectrolytes (Surflay)





Left: LbL-Capsules using combinations of 3 differently labeled polyelectrolytes
Right: Fluorescence intensities of different channels along line in right image





Left: Time dependent CLSM images of diffusion of Proteins in mesoporous silica particles Right: Analysis for Proteins of different size (Black 60 kD; Red 15 kD)

Prices on request in dependence on type of measurement!

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