

Equipment name

ZEISS LSM Laser Scanning Microscope

**Category**

C: Particle Characterizations in and ex-situ
D. In-vitro toxicity studies
E.NPs uptake and interaction with biological system

Institute

NILU, Norwegian Institute for Air Research

Localization

Health effect Laboratory , Norwegian Institute for Air Research (NILU), Kjeller 2007, Norway

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Short technology description/ Overview

The laser scanning 3D microscope uses laser light in a confocal beam path in order to capture defined optical height sections of the sample and combine them in a three-dimensional image stack, which is the basis for topographic calculations. Surface height differences ranging from the nanometer to the millimeter scale can be determined with equal precision and 16 bit resolution ensures excellent image and topography quality and good edge detection.

Confocal reflected light measurements with LSM is useful tools to discover sub-surface structures such as cavities and inclusions in semitransparent materials or image sample topography with outstanding depth of field.

In the fluorescence mode, LSM 700 generates additional information about properties and structure of your sample, for example revealing structural defects or highlighting phase separations. The use of fluorescent dyes is also highly effective for visualization and subsequent examination of cracks, as any slope angle up to 90 degrees can be recorded and displayed.

Cell culture chamber and CO₂ thermostat

Technical specification

- Measurement of basic parameters of nanoparticles: area, angles, perimeter, diameter, centre of gravity etc.
- Analysis of surface of different material's surface.
- Observation of the impact of nanomaterials on living cells.
- Analysis of morphology of living cells.

Main features

- **Component**

Scanner: Two independent galvanometric scanning mirrors with ultra-short line and frame flyback

Scan resolution: 4 x 1 to 2048 x 2048 pixels, continuously adjustable

Pinhole: Motorized master pinhole, diameter continuously adjustable

- **Software**

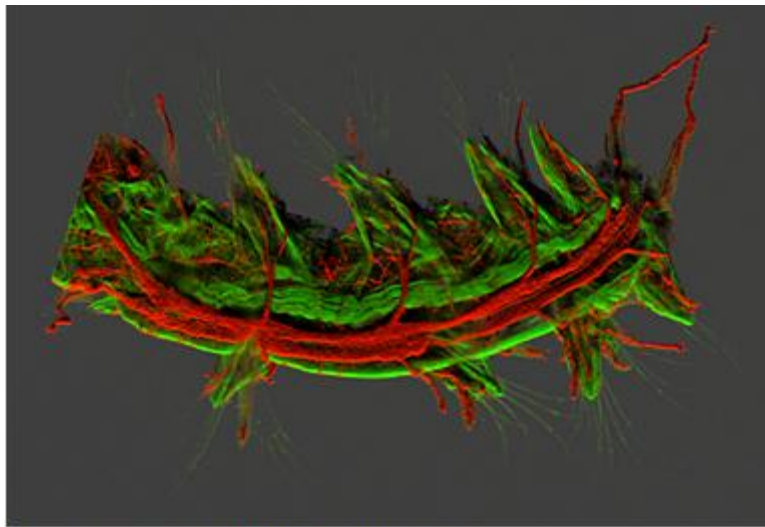
Standard software : System configuration, ReUse function (restoration of acquisition parameters), Crop function, Spline scan (scanning along a freehand defined line), image processing, presentation, analysis and measurement, data archiving

Optional software : Topography package, StitchArt plus package (capture of multiple XY profiles and multiple XYZ stacks with reflected light), LSM VisArt plus (fast 3D and 4D reconstruction and animation), 3D for LSM, 3D Deconvolution

- **Objectives**

More than 40 reflected light objectives

Typical samples & images



Platynereis dumerilii (Bristle Worm) 3D reconstruction.
Red: Nervous system, stained with Alexa 555.
Green: Muscles, stained with Alexa 488.

Other information

