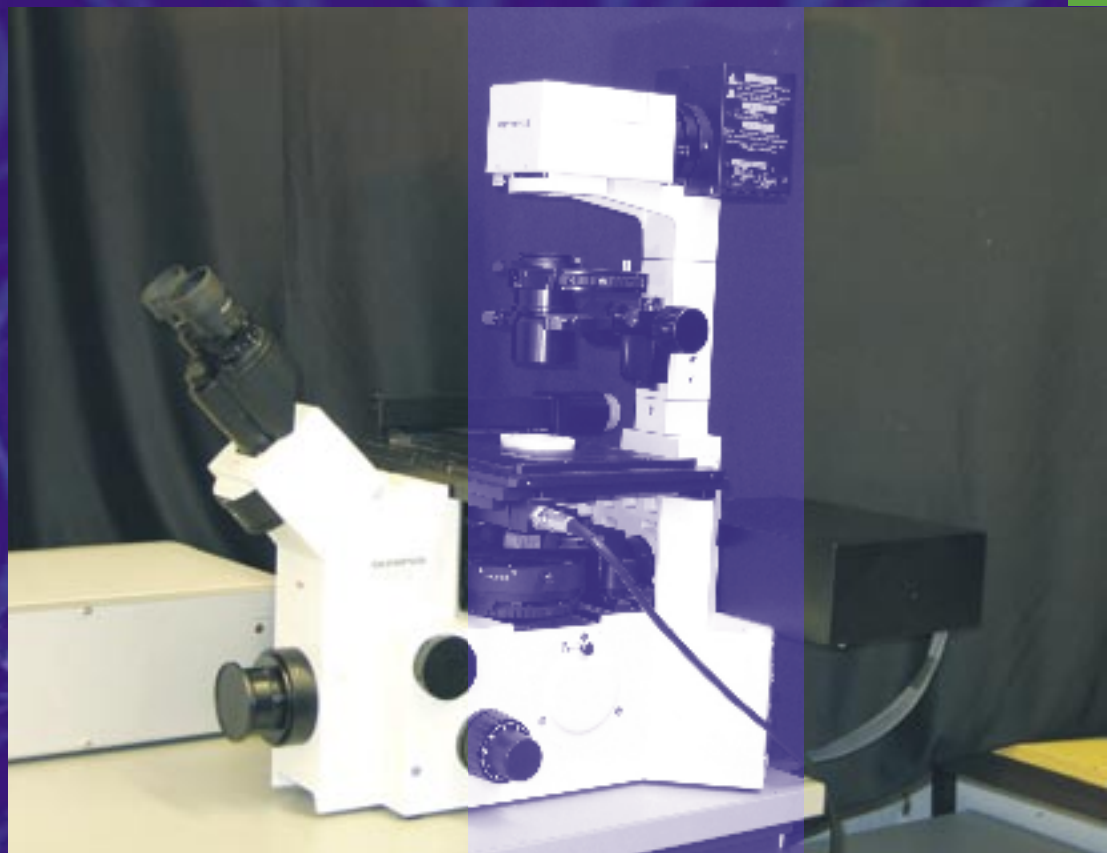


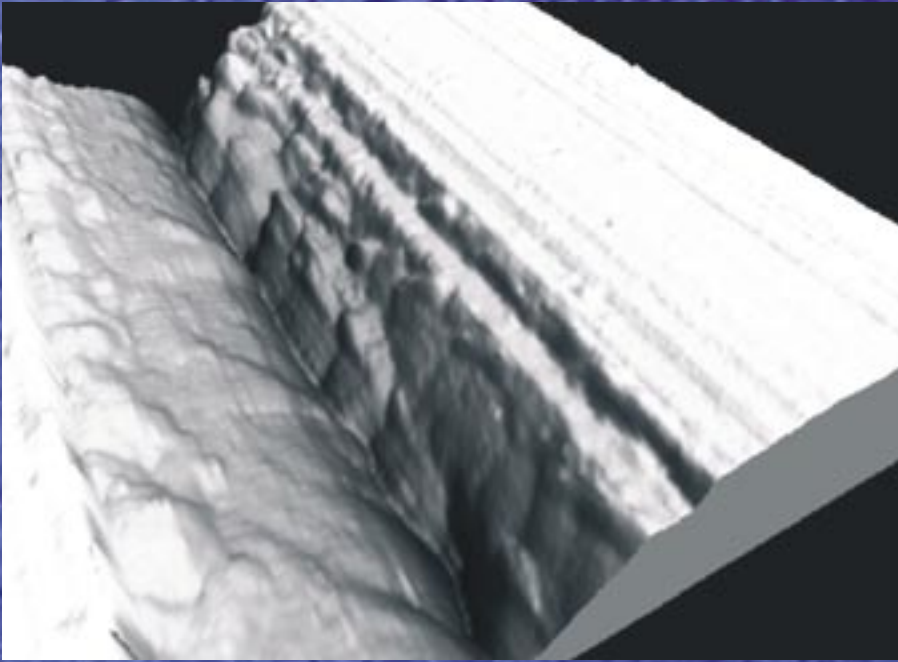
femt-O-cut[®]

Nanoprocessing with femtosecond near infrared laser pulses



Ultraprecise cutting and hole-drilling combined with high-resolution non-invasive 3D imaging:

- Targeted transfection for optical gene transfer
- Intra-cellular chromosome dissection
- Separation of single cells from histological sections
- Optical knocking-out of cellular components
- Nanoprocessing and optical waveguide writing
- Optical data storage



femt-O-cut®

A system for 3D nanoprocessing in transparent materials and living cells

Product description

The system femt-O-cut® uses compact femtosecond NIR lasers for 3-dimensional nanoprocessing in transparent materials. Low energy (sub-nanojoule to nanojoule) pulses at high repetition rates of up to 90 MHz are focused by high numerical aperture (NA 1.3) optics for optical breakdown in sub-femtoliter volumes. The beam intensity is regulated by a motorized attenuator. Several TW/cm^2 can be reached in the focal region to enable ultraprecise ablation with a minimum cut size below 70 nm (FWHM) by multiphoton ionization.

The device is based on a conventional microscope which is equipped with a high-speed galvoscanning unit. Full-frame scans, region-of-interest (ROI) scans, line scans as well as single point ablation (spot scan, drilling) can be performed with submicron accuracy. A motorized stage is used for large area processing. For vertical positioning the focusing optics are mounted on a piezo-driven stage with an accuracy of 40 nm.

femt-O-cut® also represents a diagnostic tool for non-invasive tomography. This allows for the observation of the samples by high-resolution imaging to select the target area as well as to monitor the result of the ablation procedure.