

# Femtocut®: A system for Nanoprocessing with femtosecond laser pulses

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## ABSTRACT

Femtocut® is a powerful tool for a few microns to sub- $\mu\text{m}$  processing in several materials like dielectrics, polymers and metals as well as biological cells or tissues [1]. By using High numerical aperture objectives, it is possible to obtain once sub- $\mu\text{m}$  features from a near-infrared (NIR) femtosecond laser-scanning microscope. With such a system it is obviously possible to obtain fluences in the range of a few hundred mJ to a few J/cm<sup>2</sup> above the ablation threshold of lots of materials even with a simple oscillator (nJ) which is a cost-effective and reliable system compared to amplified lasers systems ( $\mu\text{J}$  or mJ/pulse).

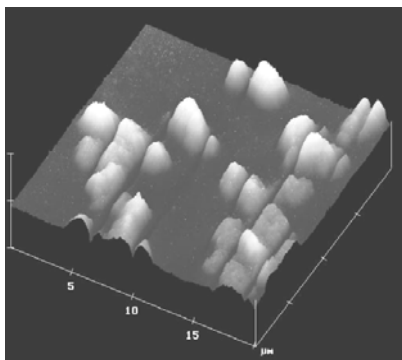


Figure 1: Laser dissection of human chromosomes

The system is based on a microscope supplemented with a scanning unit. The scanning unit is optimized for usage of near infrared femtosecond pulsed laser beam. The scanning unit consist of a galvoscaner, a beam expander, a power meter and power adjustment by filter turret or continuously with a Glan-Calcit polarizer as well as a control unit.

[1] K. König, F. Garwe, A. Czaki, G. Maubach, I. Riemann, W. Fritzsche, "Nanoprocessing of DANN with femtosecond laser", Proc. SPIE, 5462, 27-36 (2004).