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Application Notes

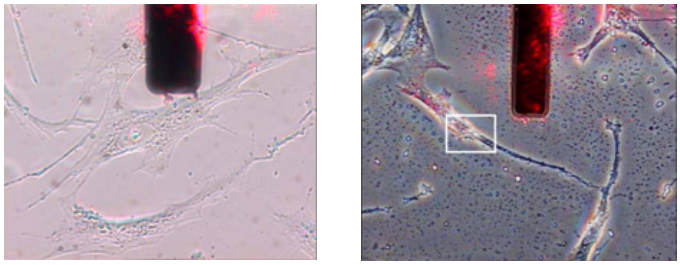
# Life Sciences

## COMBINED OPTICAL AND SPM INVESTIGATIONS OF BIOLOGICAL SAMPLES.

The optical microscopy methods such as bright field imaging, phase contrast, fluorescence imaging and other have found a wide use in various branches of biological research. Most of biological laboratories use these methods for routine investigations. However the resolution of all these methods is limited by the light wavelength.

Solver BIO SPM based on inverted optical microscope (Olympus IX-70) enables to combine convenient optical techniques with scanning probe microscopy methods. Specially designed illumination system provides original sample lightning from microscope condenser when AFM head is mounted. Thus without any loss of optical images quality one can use all benefits of SPM: nanometer-scale resolution, measurements of local adhesion and elasticity, nanomanipulations with the scanning tip, measurements of force curves and so on.

Fig. 1 shows bright field and phase contrast optical images of human embryo fibroblast cells obtained during AFM scanning process. Cells were grown and fixed on cover glass then dried. Fig. 2 shows 3D AFM image of the marked area (samples courtesy of Dr. A. A. Manykin, Institute of virology RAS).



a) b)

**Fig. 1** Bright Field (a) and Phase Contrast (b) optical images of fibroblast cells with scanning SPM cantilever engaged.

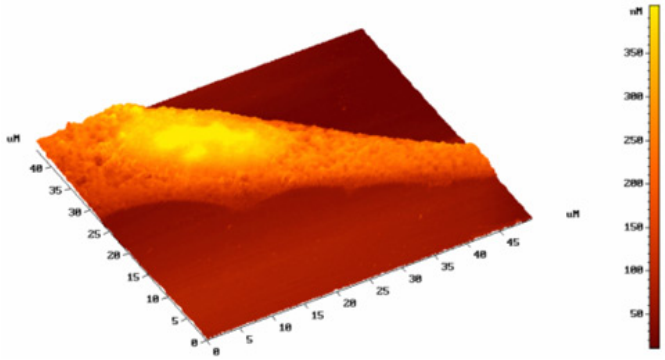


**Fig. 2** 3D AFM image of the fibroblast cell in air (scan area is marked with the rectangle on Fig.1b)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