VISISCOPE 4ELEMENTS
FLAT-FIELD CONFOCAL MICROSCOPY WITH FRAP, ABLATION AND TIRF FEATURING A SELF-OPTIMIZING LASER MERGE SYSTEM

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1. AIMS

This oral presentation will give the listener an overview of new developments in Spinning Disk Microscopy and complementary micromanipulation and imaging methods.

2. SCOPE

Spinning Disk Confocal Microscopy allows researchers to image fast processes in living cells with minimum photobleaching [1]. This makes it an ideal imaging approach to combine with advanced sample manipulation methods like Fluorescence Recovery After Photobleaching (FRAP), Photoactivation (PA) and Ablation.
Over the past two decades, Visitron Systems GmbH has been pioneering new technical developments in this field. One recent result of this effort is an integrated FRAP/Ablation System that can be combined with TIRF and Widefield Imaging all on the same port. At the click of a button, researchers can now cut microscopic structures in 3D space, image membrane processes in TIRF mode and rapidly switch to fast confocal imaging to detect cellular events in confocal mode.
Since all methods are laser based, the efficiency of the laser to fiber coupling should be as high and as stable as possible. To achieve this, our engineers have created a self-optimizing system that can be used even during an ongoing experiment session.

2. FIGURES, EQUATIONS AND REFERENCES

Figure 1: VisiScope 4Elements with Confocal, VS-Homogenizer, FRAP/Ablation and TIRF.

Image shown with Nikon Ti-E inverted microscope. Upright and inverted microscopes from Zeiss, Leica, Olympus and Nikon are supported as well.

[1] R. Gräf; J.Rietdorf, and T. Zimmermann, "Live Cell Spinning Disk Microscopy", *Advances in Biochemical Engineering, 95*, 57-75 (2005).