

TECHNOLOGY OFFERS

Stabilization of Focus in High Resolution Microscopy (P-1260)

A technique for monitoring and correcting the relative position of a microscope objective to the sample

EXECUTIVE SUMMARY

The invention describes a method in which monitoring and correcting of a relative position of a microscope objective with regard to a sample is easily realized and does not disturb the primary use of the microscope objective. The procedure is carried out using a test beam directed onto a reflective surface connected to the sample and on the other hand using a test beam directed onto a reflective surface connected to the objective. Both results are registered, evaluated and used for correction. In fact, with increasing spatial resolution achieved by ultrahigh resolution microscopy techniques like STED the requirements to be fulfilled in keeping a fixed relative position of the microscope objective with regard to the sample increases further.



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Category

Microscopy

Indication

Development stage

Prototype

Seeking

Licensing

BENEFITS

- Monitoring and correcting relative position without disturbing the use of the microscope objective
- Test beam directed onto a reflective surface connected to the sample/objective evaluated
- Necessary for ultra-high resolution microscopy with increasing spatial resolution

TECHNOLOGY BACKGROUND

The relative position of a microscope objective with regard to a sample is essential in imaging the sample using the microscope objective. If relative position varies unnoticed, the plane of the sample imaged using the microscope objective will also vary unnoticed. As a consequence, a series of images which are intended show the same sample location at consecutive points in time, for example, in fact show the sample at different focal planes or laterally shifted. Further, with any laser scanning microscopy requiring a longer period of time for even imaging one plane of the sample once, a distorted image of the sample will be generated, if the relative position of the microscope objective with regard to the sample varies.

DEVELOPMENT STAGE

A prototype has been successfully tested in experiments.

APPLICATIONS

The invention can be used in high resolution microscopy such e.g. in a STED microscope.

INTELLECTUAL PROPERTY

Patent application submitted.

- Priority EP 3287829 dated Aug 25, 2016.
- International PCT application published as WO2018036877A1.
- EP3504576A1 (pending) and US10416431B2 (granted).

PUBLICATIONS & REFERENCES

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Working at the interface of research and industry, the Innovation Management of the German Cancer Research Center (DKFZ) helps to get new cancer medications, diagnostic tests, and research instruments onto the market as quickly as possible.

The DKFZ with its more than 3,000 employees is the largest biomedical research institution in Germany. At the Center more than 1,300 scientists investigate how cancer develops, identify cancer risk factors and endeavor to find new strategies to prevent people from getting cancer. They develop novel approaches to make tumor diagnosis more precise and treatment of cancer patients more successful. DKFZ is a member of the Helmholtz Association of National Research Centers, with ninety percent of its funding coming from the German Federal Ministry of Education and Research and the remaining ten percent from the State of Baden-Württemberg