

## LASU - Laser Applied Stimulation & Uncaging

Optogenetics and uncaging



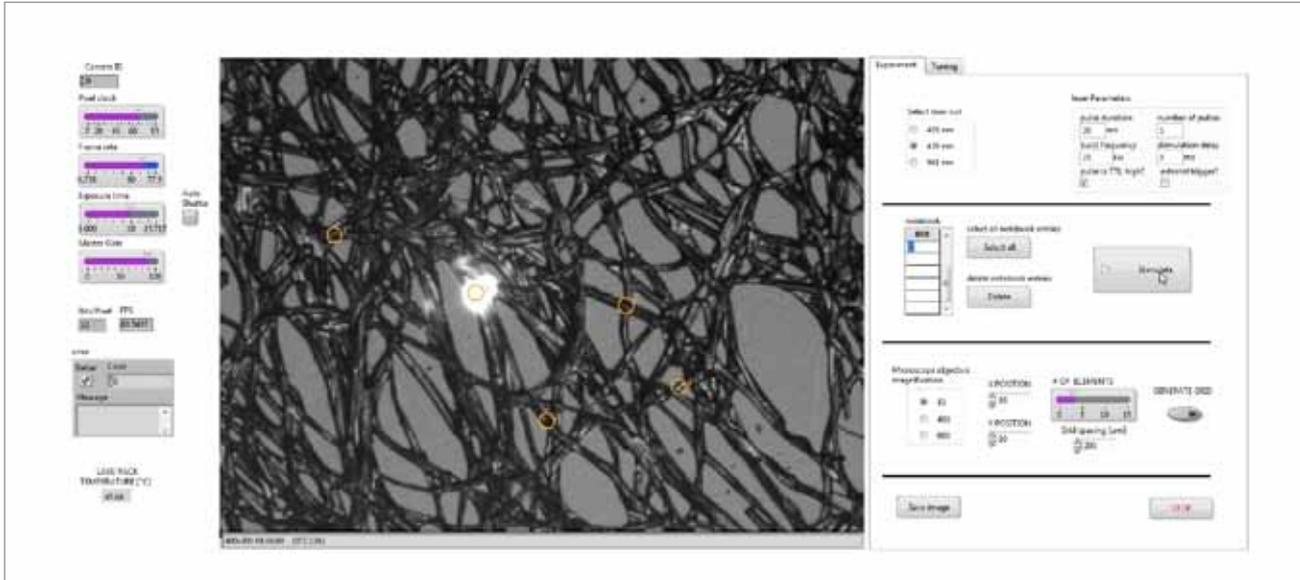
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# LASU - Laser Applied Stimulation & Uncaging

## Two techniques, one system

The LASU system is perfect for users engaging in optogenetics, uncaging or other photostimulation experiments. The laser spot positioning is accurate and repeatable enabling fast experimental manipulation of biological systems.



The LASU control software with custom selected points

### Uncaging & photostimulation in one

The LASU system offers the choice of laser wavelengths suitable for “channel rhodopsin” and “Halo rhodopsin” as well as for “Uncaging”.

The LASU system can include just a single wavelength or incorporate numerous laser modules meaning that this system is perfect for both research techniques.

### Modular

Based on the highly successful design of the Scientifica award winning Multiphoton Imaging System, LASU uses ‘Galvo’ mirrors for fast, accurate and repeatable laser spot positioning.

The LASU system fits directly onto the Scientifica upright microscope “SliceScope” making it an easy upgrade for existing rigs as well as a perfect choice for any lab wanting to carry out in vitro optogenetics or uncaging.

### Compact

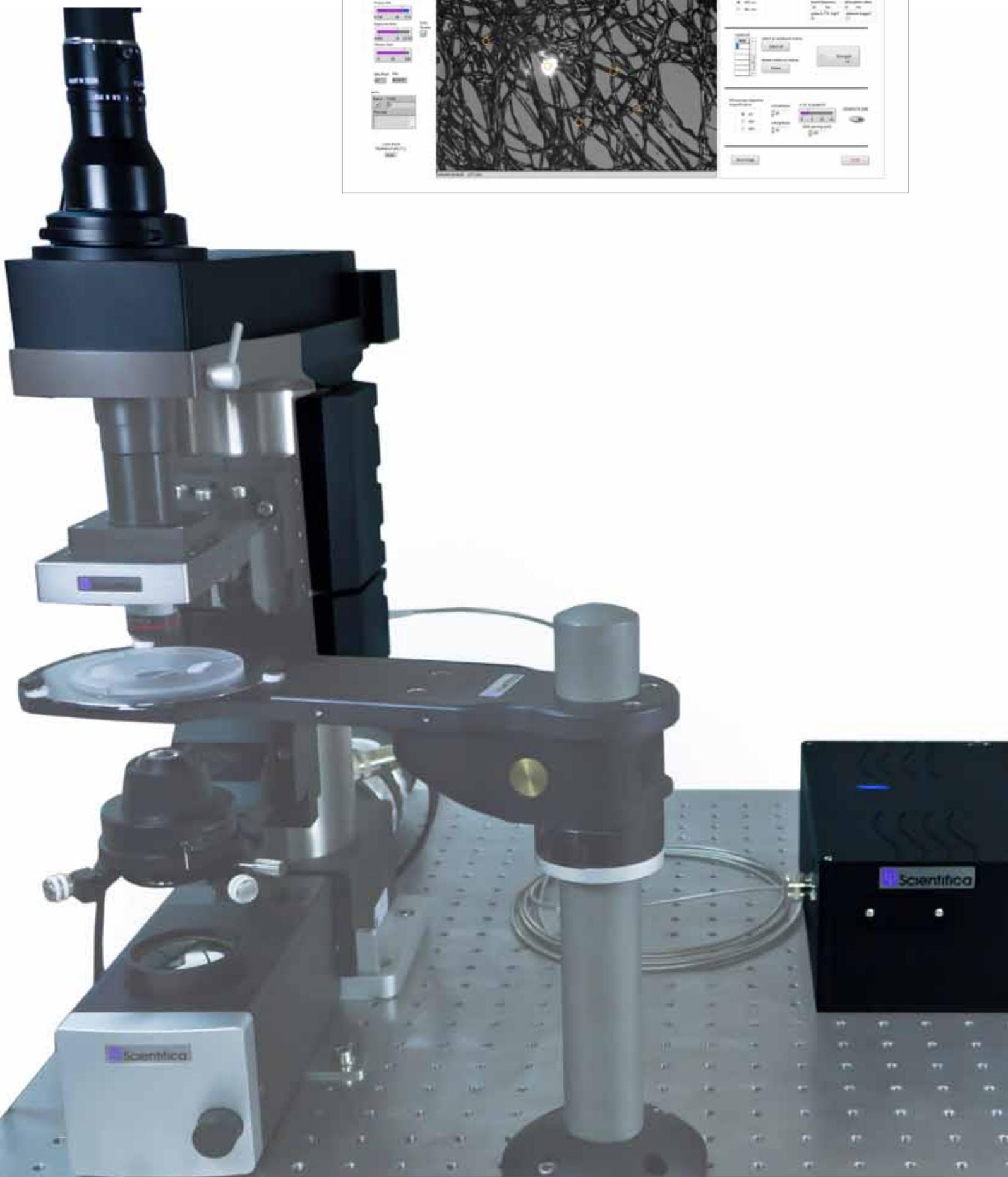
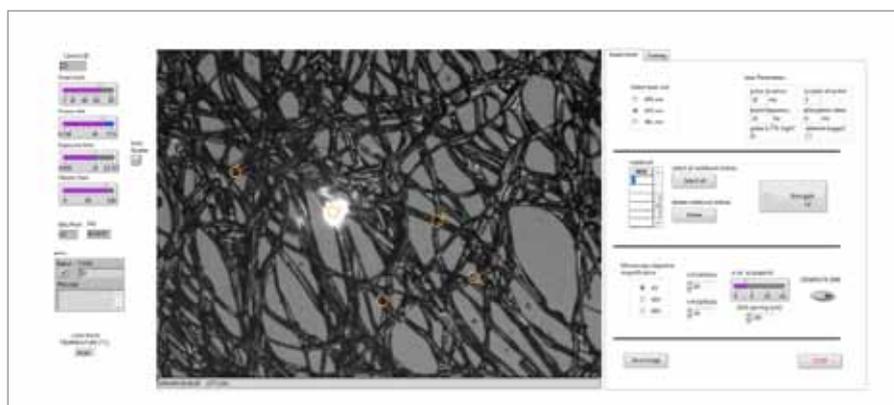
The compact nature of the LASU scan head and the Laser modules, with the benefits of free space or fibre launched laser input, means that this system can be mounted on most standard anti vibration tables.

This will help to save on lab space and help save money.

### Software

LASU is controlled entirely through its own software which includes a wide range of easy to use functions allowing for instant “out of the box” use.

LASU software displays a live feed from the camera and comes pre-installed on the PC supplied with the system. The complete control through the software means spot positioning, laser power and pulse frequency can all be manipulated through the clear graphical interface.



### Modular

The highlighted sections in the image above show the included LASU components, attached to the SliceScope microscope.

The compact laser housing modules free up space around your system and allows you to use existing antivibration tables



## Laser housing unit

The LASU laser housing unit includes high-speed triggering electronics, the laser diode and the coupling optics, all in one compact box.

The units can be supplied with a single laser or combined with additional laser boxes, which can be individually controlled or triggered via the LASU software.

Laser wavelengths available for Optogenetics:  
473 nm  
561 nm

Laser wavelength for Uncaging:  
405 nm

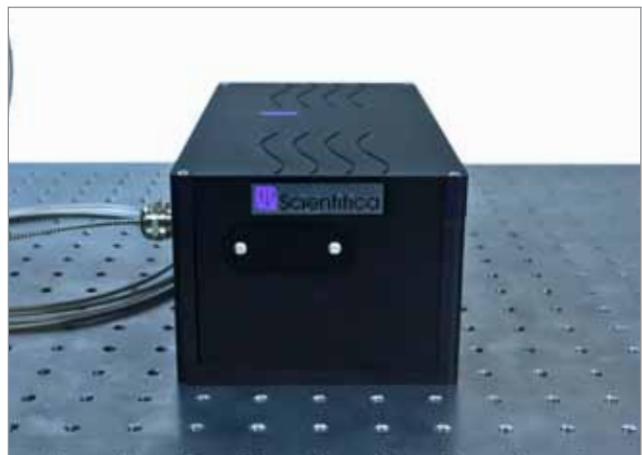
### Benefits include:

- Compact package to fit onto existing table
- Multiple wavelengths available
- Combining units together for several applications
- Light is produced at the specified wavelength
- High-speed triggering
- Intensity control

## Modular advantages

The laser housing unit is bolted securely to the antivibration table to maximise stability. As additional laser modules are added they can be simply aligned with existing laser units.

This makes upgrading and developing the system simple and cost effective.



Choose between fibre coupling or free-space launch optics to suit future research



### Fibre coupling

Fibre coupling gives the advantage of greater flexibility when placing the Laser Housing Unit. Perfect for smaller optical tables or if you wish to have the unit mounted remotely from the table top itself.

#### Benefits include:

More space efficient - can be placed anywhere

Ideal for smaller laboratory tables

Fibre is directly connected to the scanhead, simplifying system alignment

Microscope moves relative to the microscope, ideal for electrophysiology integration



### Free-space

Free-space launch optics are ideal if your microscope is fixed to the table. This method maximises light efficiency and would be typical if you wish to move your sample relative to the microscope. Free-space laser launching is often employed with two photon lasers.

#### Benefits include:

Versatility to adapt the system as your research needs evolve

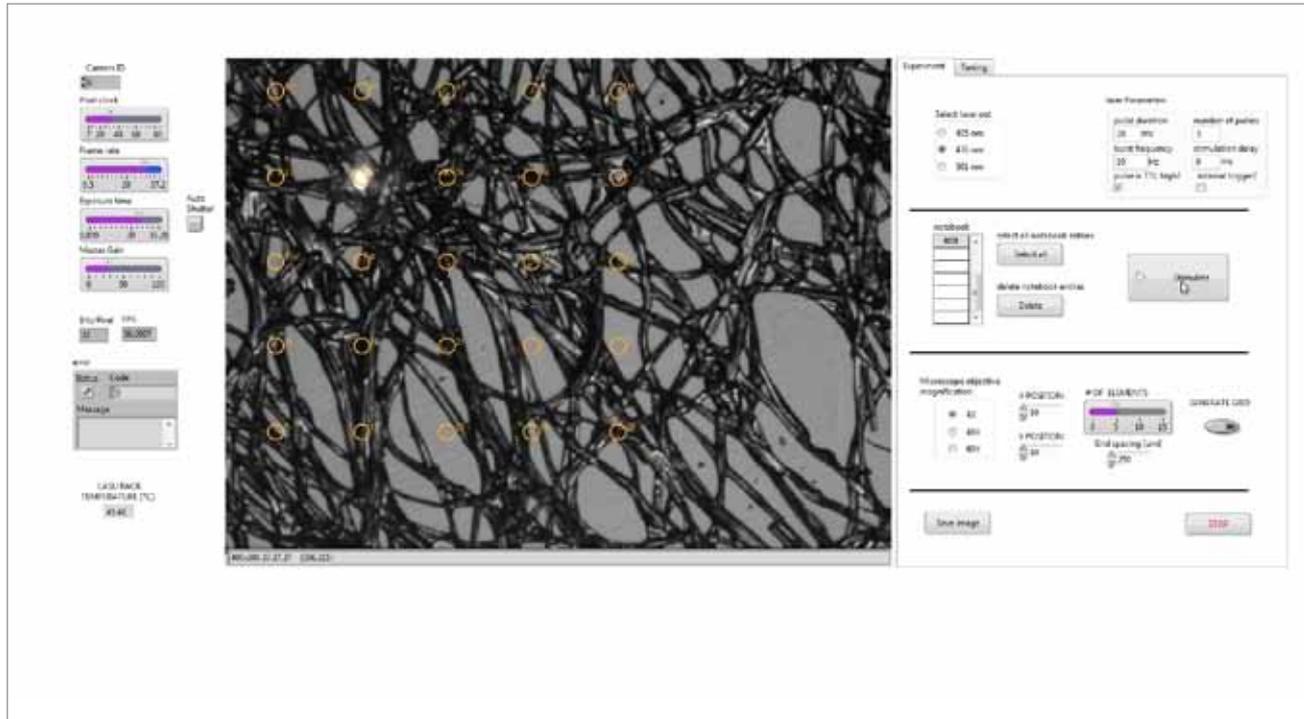
Ideal when moving your sample relative to your microscope

More efficient laser power



# Software

The LASU software has been developed by Scientifica and the University of Amsterdam, specifically for use with this system. It comes with a variety of functions as standard, allowing for instant “out of the box” use.



## Software functions

The LASU software has a range of functions that make it easy to use. It displays a live feed from the camera, and comes pre-installed on the PC supplied with the system.

Functions:

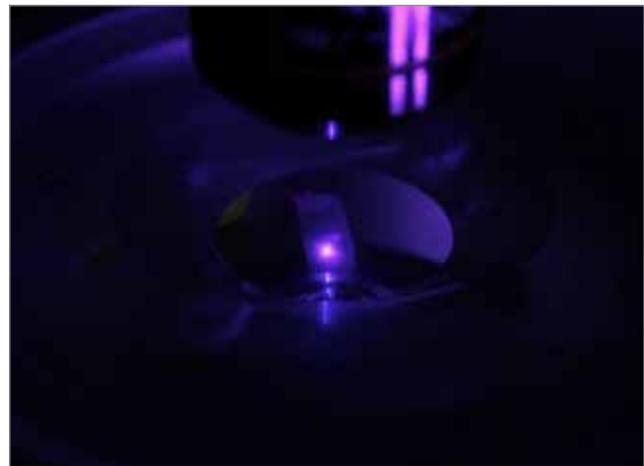
- Custom point generation
- Deleting unwanted points
- Stimulating points
- Grid Generation
- Camera control parameters
- Laser power control
- Laser pulse frequency
- Adjustable frame rate, pixel clock, intensity control, exposure, gain and image optimisation

### Benefits include:

Point of stimulation will be visible, when using a single camera and when the sample contains a fluorescent marker

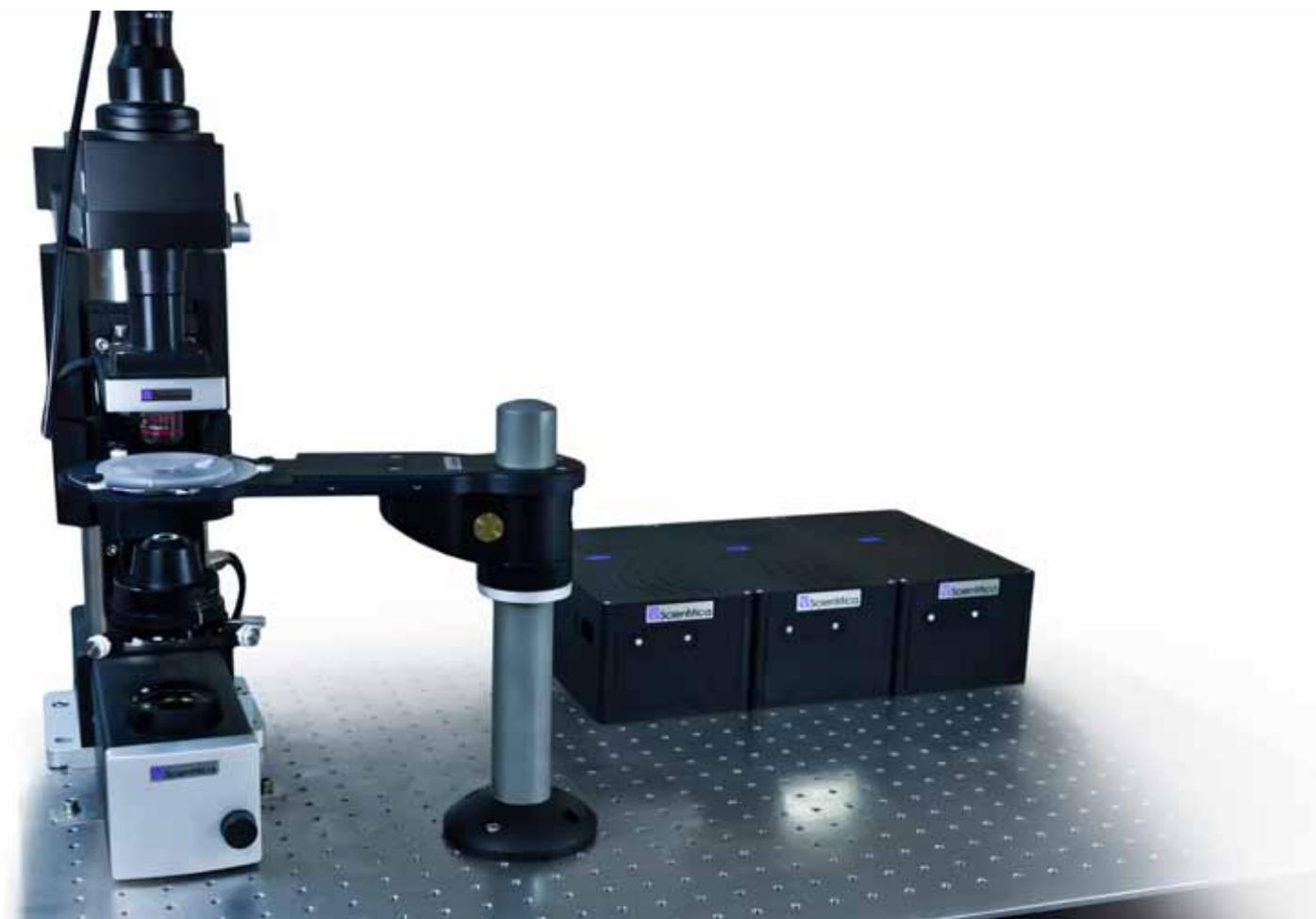
Easy to use interface for basic control of spot positioning, camera and laser

Grid points can be saved for future experiments



## Benefits of software control

With no physical shutter on your table, the LASU system minimises vibrations, is more compact, and the laser doesn't need to be permanently switched on. Additionally, being able to adjust the intensity within the software means fast experimental control and more space on your antivibration table.



## Warranty & support

Scientifica's success is founded on supplying superior support and application of our significant manufacturing experience. We would therefore really value the opportunity to understand your applications better and to offer no obligation advice on equipment, configurations and compatibility.

The standard warranty for all Scientifica designed and manufactured goods is two-years. However, Scientifica's LASU system, includes components from other companies, which offer a twelve-month warranty. For an extended warranty on the full system (including some external companies) please contact your Scientifica representative. All warranties cover defects in manufacturing and materials. In this unlikely event, Scientifica will manage the repair and replacement of all components.

Our team of customer support engineers is dedicated to providing you with the very best advice and support, should you experience any difficulties with our products. With all products we offer a complete installation support service.

# Scientifica

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