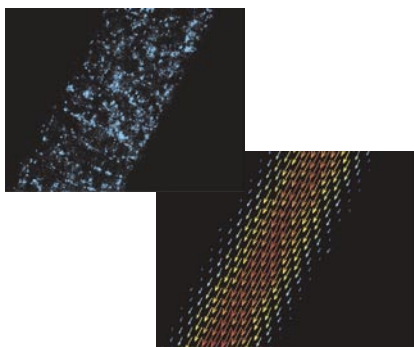


FlowMaster MITAS

laser imaging microscope
for the total analysis
of microfluidic flows



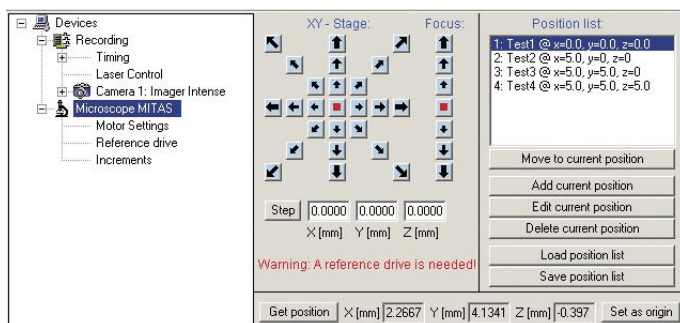
flow field imaging in μ -channels
[PIV]

LaVision's **FlowMaster MITAS** is an inverted laser imaging microscope for the routine and laboratory use in microfluidic flows.

MITAS supports the imaging techniques μ -PIV and LIF to measure flow fields, concentration, mixing, particle size, motion and fluid temperature with high spatial and temporal resolution. The **FlowMaster MITAS** laser imaging system comprises a fully motorized 3-axis microscope stage with a high performance controller and a high precision microscope objective. For standard PIV applications a 500 mW DPSS laser for pulsed illumination and a highly sensitive, dual frame-multiple exposure CCD camera is used. A system PC with built-in synchronisation unit controls the complete laser imaging system. LaVision's modular DaVis software is used for advanced image acquisition and data analysis.



The xyz (focus)-traverse system can be operated manually using a joystick or the device control manager in DaVis, which contains a position list with a number of positions. Every position can be added, edited and deleted and an **easy repeatability of each position** is guaranteed after e.g. lens exchange.



position list in the main dialog of DaVis

The light is delivered through an optical fiber to the microscope. A built-in pilot LED is used for target focusing. The filter cube exchange box allows a fast adaptation for different excitation and emission wavelengths. CCD camera, light source and synchronization are also under DaVis control. Adapters for c-mount and M42 are included.

LA VISION UK LTD

DOWNVIEW HOUSE/ GROVE TECHNOLOGY PARK
GROVE/ OXON/ OX12 9FF, UNITED KINGDOM

E-MAIL: SALES@LAVISION.COM/ WWW.LAVISIONUK.COM

PHONE: +44-(0)-870-997-6532/ FAX: +44-(0)-870-762-6252

LA VISION GMBH

ANNA-VANDENHOECK-RING 19
D-37081 GOETTINGEN / GERMANY

E-MAIL: INFO@LAVISION.COM/ WWW.LAVISION.COM

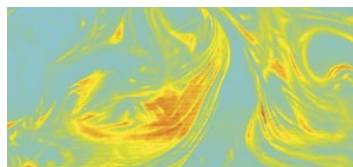
TEL: +49-(0)5 51-9004-0 / FAX +49-(0)551-9004-100

LA VISION INC.

211 W. MICHIGAN AVE. / SUITE 100
YPSILANTI, MI 48197 / USA

E-MAIL: SALES@LAVISIONINC.COM/ WWW.LAVISIONINC.COM

PHONE: (734) 485 - 0913 / FAX: (248) 465 - 4306



fluid mixing (ph, temperature)
[LIF]

Applications

- ▶ micro-fluidics
- ▶ MEMS research and prototyping
- ▶ blood flows
- ▶ micro mixing
- ▶ forensics
- ▶ shape and growth of micro organisms
- ▶ boundary layer
- ▶ small scale transport and chemistry
- ▶ fuel cells
- ▶ μ -particle flows

Ordering Information

part number	Description
1108630	FlowMaster MITAS incl. 10 x objective
1103198	500 mW cw Laser
1108437	optical fiber for cw laser light coupling, 1 m
1108438	optical fiber for cw laser light coupling, 2 m
1108436	optical fiber for cw laser light coupling, 4 m

Data provided by LaVision is believed to be true.
However, no responsibility is assumed for
possible inaccuracies or omissions. All data are
subject to change without notice.

Jul-09

FlowMaster MITAS imaging performance with high sensitive **Imager intense** camera:

magnification	5 x	10 x	20 x	40 x	63 x
Numerical Aperture _{lens}	0.15	0.3	0.4	0.6	0.75
field of view _{sys} (μm^2)	1200x900	600x450	300x225	150x112	100x75
depth of field _{lens} (μm)	28	7	4	1.7	1.1
z-resolution (μm)	46	16	6	2.5	1.5
lateral resolution _{sys} (μm)	3.5	1.8	0.9	0.5	0.4
working distance (0.75 mm cover glass)	18.5 mm	5.5 mm	7.9 mm	2.9 mm	1.7 mm

FlowMaster MITAS_{sys} imaging specifications are different for other camera models

FlowMaster MITAS imaging with the standard light source: With the standard 500 mW DPSS laser 1 μm (2 μm) fluorescent particles are detected up to a maximum velocity of 2 cm/s (4 cm/s). For more light sensitive applications, e.g. for higher flow velocities or smaller particles the DPSS laser can be replaced with a more powerful DPSS laser or with a double-pulse PIV laser delivering high power nanosecond pulses to freeze even the fastest fluid motions. High speed imaging in combination with a high frame rate CMOS camera is available as an option.

FlowMaster MITAS traverse system performance:

traverse data	range	resolution	precision
x-traverse	120 mm	0,05 μm	$\pm 3 \mu\text{m}$
y-traverse	120 mm	0,05 μm	$\pm 3 \mu\text{m}$
z-focus	20 mm	0,05 μm	$\pm 3 \mu\text{m}$
sample stage opening	84 x 70 mm		

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