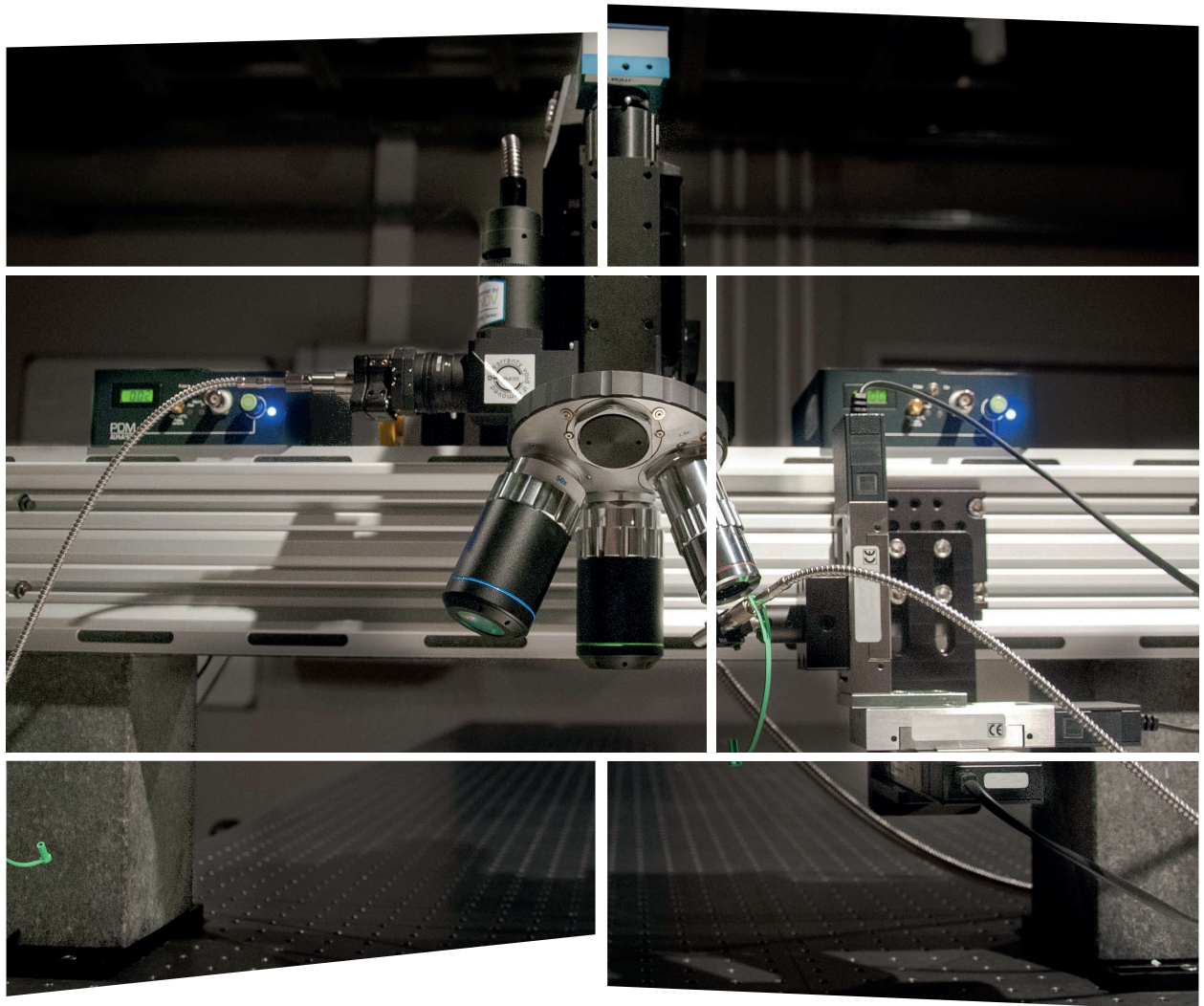


S-LMS

Single Laser Microscope Station
for laser fault injection



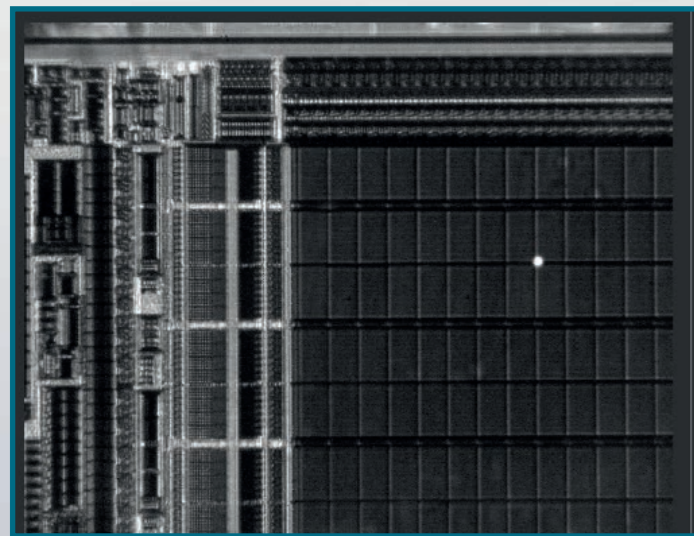
ALPhA **NOV**

Optics & Lasers Technology Center

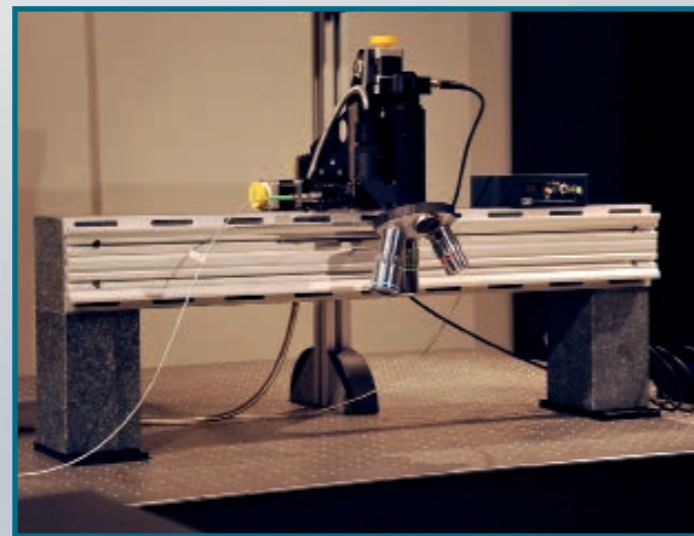
S-LMS

Single Laser Microscope Station for laser fault injection

The S-LMS microscope allows to inject, focus, and scan one laser spot down to 1 μm spot size and to observe at the mean time the sample from the back side with an IR camera.



IR view of chip from the back side and the laser spot injected through the microscope.



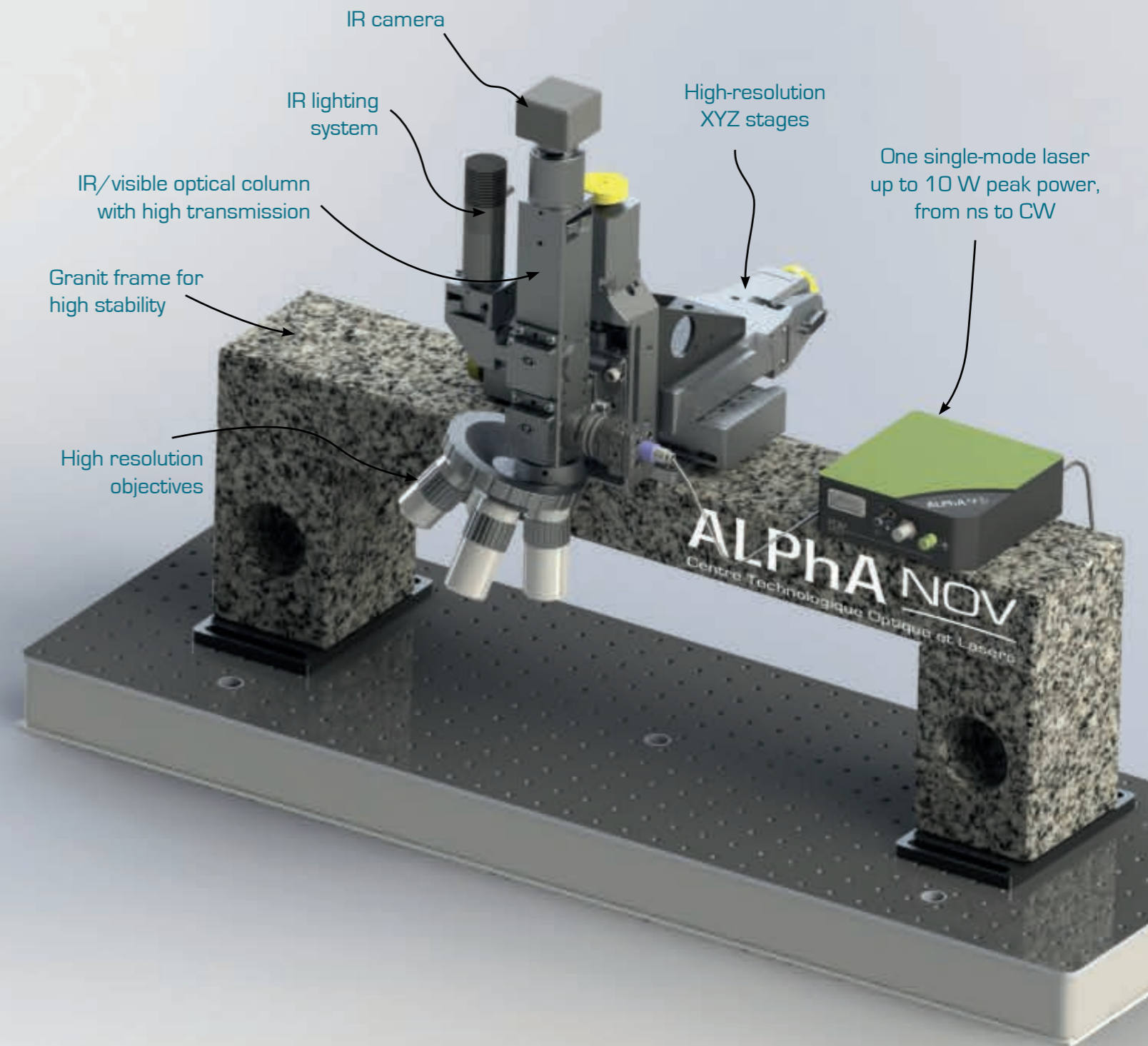
S-LMS system on high resolution XYZ stages.

Features

- Observe simultaneously the paths through the silicon and the laser spot with high quality IR vision
- High spatial precision with a spot size down to 1 μm
- Temporal precision of laser pulses: jitter < 8 ps ; pulse duration from 800 ps ; on-demand pulses
- High transmission optical system at 980 nm and 1064 nm (> 92%)
- Automatic scanning with XYZ high resolution motorized stages
- Granit frame for high stability
- Double spot upgrade available

Compatible with

- Photoemission option
- Laser Thermal Stimulation option
- esDynamic software platform



eShard The S-LMS is now fully compatible with esDynamic Analyst Development platform from eShard

esDynamic software platform allows security experts to analyze, attack, pinpoint and refine the security of their products by performing side-channel, white-box cryptography analysis or fault injection. With esDynamic platform, eShard offers dedicated contents in its Hardware Analysis module to drive ALPhANOV equipment and perform precision fault injections attacks.

Technical Specifications

Single-mode fibered lasers

	PDM+/PDM+ HP	PDM4+ and PDM4+ HP
Pulse duration	From 1.5 ns to CW	From 1.5 ns to CW
Peak power	Up to 3.2 W	Up to 10 W
Wavelength	980 nm ; 1064 nm	980 nm ; 1064 nm
Repetition rate	From single-shot to 250 MHz	From single-shot to 250 MHz
Command interface	TTL/LVTTL / Software & DLLs	TTL/LVTTL / Software and DLLs
Beam quality	Single-mode	Single-mode

InGaAs IR Camera

Captor	640x512 μm
Dynamic range	140 dB
Interface	USB (software included)

Electrical

Voltage	220 V/110 V
Intensity	16 A

Optical column

Transmission typ.	>92% at 980 and 1064 nm
Signal type	Adapted for single-mode or multimode lasers
Vision	High Resolution IR camera
Lighting system	LED IR lighting system

Positioning system

	Microscope positioning
Axes number	3
Travel range	52 mm
Resolution	0.315 μm
Repeatability	+/- 0.8 μm
Max velocity	20 mm/s

High-transmission objectives recommended (others on demand)

Objectives ⁽¹⁾	50X	20X	2.5X
N.A	up to 0.7	Up to 0.6	0.1
Typ. spot size	Down to 1.3 μm	Down to 2.2 μm	25 μm
Field	190x150 μm	480x380 μm	3800x3000 μm
Working distance	10 mm	10 mm	28 mm
Typical transmission (with microscope)	up to 80%	up to 80%	up to 80%

[1] Other objectives available

Options

- Optispot technology
- Photoemission kit
- Laser thermal stimulation kit
- Complete automatic setup with CE certified laser enclosure
- Ultra high resolution objectives

Mechanical

indicated dimensions

