

LIBS Interaction Chamber

Configurable equipment

From the basic manipulator set up to the complex - fully equipped research system by step by step upgrades.

Designed by scientists for scientists

Designed to be opened and ready for various researcher`s extensions and experiments. Allows to fully concentrate on the LIBS method and its results rather than troubleshooting and system building.

Number of Modules

Sample view and illumination, laser beam focusing, plasma radiation collecting, CMOS cameras, gas purging / extraction, etc.

A versatile vacuum interaction chamber specialized on the Laser-Induced Breakdown Spectroscopy (LIBS) technique.

LIBS Interaction Chamber is a component of the Sci-Trace - LIBS research system.

Simulation of different atmospheric conditions

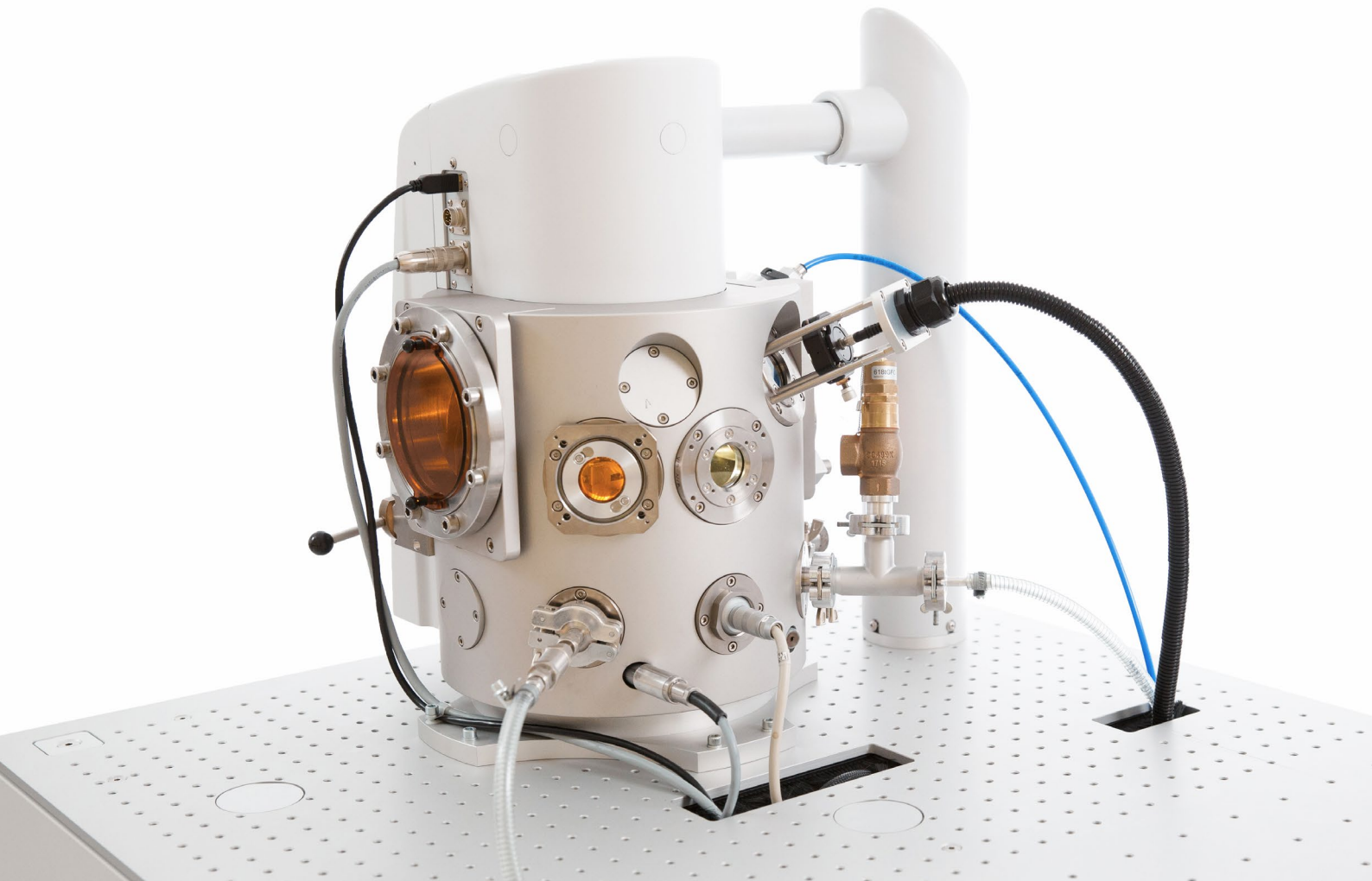
1-1300 mbar with air, and other gases as e.g. He, Xe, Ne, CO₂ etc.

Operating convenience

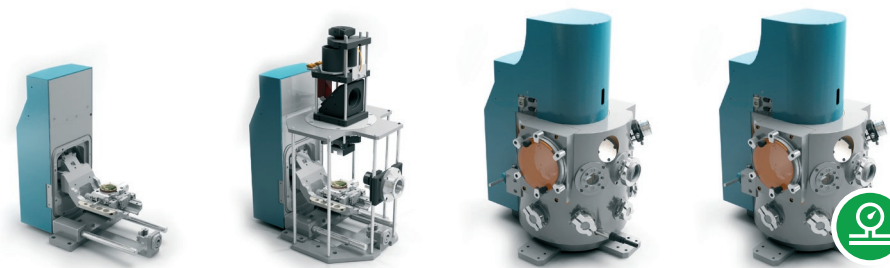
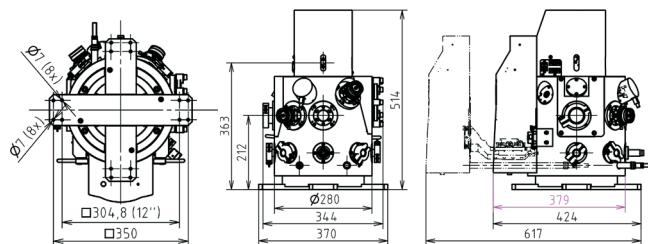
Intuitive control software and powerfull spectra processing software - the AtomAnalyzer.

Safety during the analysis

The laser - matter interaction is enclosed, no intense laser reflections and no toxic vapors in the lab.



LIBS Interaction Chamber



Manipulator Set

Cage Chamber

Vacuum Chamber

Full Chamber

3-axis Motorized Stage	Controlled via software, up to 2 μm movement resolution, High Vacuum ready ^{I.)} , travel range 60 × 80 × 40 mm, including series of sample holders	✓	✓	✓	✓
Chamber Body	Cage body - Frame construction for mounting optomechanics	Optional	✓	–	–
	Vacuum body - Rigid one-piece body, VHV ready	Optional	Optional	✓	✓
Input Ports	Aiming to a common centre + lateral ports	–	6	11 + 4	11 + 4
	100 mm viewport with laser filter plexiglass ^{II.)}	–	–	✓	✓
Primary Input Module	Highpower laser-focusing objective lens + motorized defocus, Sample view HD CMOS camera, 4-segment illumination ring	–	✓	✓	✓
Lateral Input Module	Laser focusing doublet lens for orthogonal Double-pulsed LIBS	–	Optional	✓	✓
Radiation Collection Module	Achromatic doublet lens 175-1300 nm, SMA output	–	Optional	✓	✓
Secondary Camera Module	Stage view HD camera, protective laser filter, ext, trigger capability ^{II.)}	–	Optional	✓	✓
Pressure Regulating Module	Pressure regulator, range 1-1300 mbar ^{III.)} , equalizing valve, safety valve	–	–	Optional	✓
Gas Purge Module	Sample cleaning, creating local inert gas atmosphere	–	Optional	Optional	✓
Gas Extraction Module	Extracting potentially dangerous vapors	–	–	Optional	✓
Sound Pressure Module	Measuring an ablation shockwave intensity	–	–	Optional	Optional
Digital Delay Generator	4-channel, USB, 10 ns time resolution	–	–	Optional	✓
Software	Sci-Trace Controller	✓	✓	✓	✓
	LabView control libraries	✓	✓	✓	✓
	AtomAnalyzer : Advanced spectra processing software	Optional	Optional	✓	✓
Dimension and weight	Manipulator + chamber body	180 × 379 × 400 mm, 25 kg	275 × 626 × 500 mm, 35 kg	344 × 379 × 514 mm, 125 kg	344 × 379 × 514 mm, 127 kg
Control electronics	Table-top box or standalone rack	241 × 450 × 127 mm, 3 kg		840 × 608 × 620 mm, 52 kg	

I.) Optionally Ultra High Vacuum ready, **II.)** Nd:Yag laser filter: OD 6 (190-315 nm), OD 7 (500-532 nm), OD 5 (885-1064) , **III.)** Possible to use an atmosphere of air, He, Ne, CO₂, etc.