

LIBS X-Trace

Do not limit your needs in the field of material analysis to the laboratory setups. With the X-Trace and Laser Induced Breakdown Spectroscopy (LIBS) technique you can take the lab to the sample to perform real remote and in-situ chemical analysis of the material. The computer controlled modular device is equipped with high-end instrumentation and is able to perform in-situ analysis at a distance over 20 m.

Mobile laboratory for in-situ spectrochemical analysis

Compact dimensions with the LIBS instrumentation at top-class level.

Modular design

Device composed of a few modules which can be reconfigured based on present requirements and also dismantled for easy transport.

Patented technology

Combination of Stand-Off LIBS (analysis through the air) and Remote LIBS (analysis utilizing optical fibers) techniques via patented beam router.

Remote analysis over 20 m

Possibility of remote analysis – difficult to reach objects or hazardous environments, direct visibility of the sample being the only requirement.

Modern technology

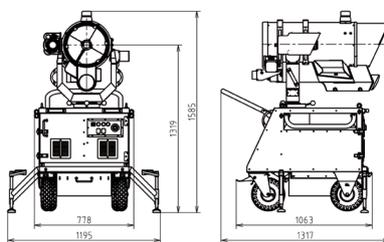
Motorized and automated focusing on the sample, high-performance pulse laser, wide range echelle spectrometer, fast and sensitive EMCCD detector, etc.

User-friendly control

Wireless software control through a laptop or tablet with live view of the remote sample.



LIBS X-Trace



Transport Module

Track comprising of spectroscopy instrumentation and control electronics

Mobility	4 x 260 mm inflatable wheels, 4 x anchor points, 4 x stabilization legs, 2 x foldable handles
Housing and Construction	Al profile frame covered by steel plates, bottom drawer Front door with acces to PC, Laser PSU and pulse generator Back door with acces to spectrometer Front control panel: emergency STOP, key on/off, computer on/off, instrumentation on/off, 2x USB
Spectroscopy Instrumentation	Laser: Nd:YAG, 200 mJ @ 532 nm, 8 ns, 20 Hz ^{I.)} Spectrometer: Echelle, 200 - 1100 nm, resolving power up to 5000 λ/FWHM ^{II.)} Detector: EMCCD, 200 - 1100 nm, QE: 65% @ 530nm, 24% @ 200nm, 30 Hz ^{III.)}
Computers	PC, CPU Intel i7, 8GB Ram, Win 7, broadcasting Wi-Fi network Tablet 11,6", CPU Intel Atom, Win 8, for remote operation
Control Electronics	PSU and voltage transformer box Compact pulse generator, accuracy 10 ns Aiming diode laser, 635 nm 2x cooling fans
Dimensions & Weight	1070 x 780 x 840 mm, 122 kg

Stand-Off Module

Detachable module for wireless remote analysis

Basic Parameters	Distance of analysis: 6-20 m, Autofocus capability, Spot size: < 1,5 mm, Pulse energy: 200 mJ
Laser Focusing	Galilean telescope, 5x beam expander, BK7 lens, AR @ 532 nm Motorized refocusing in the range 6 m – infinity
Signal Collecting	Newtonian telescope, 12" primary and 2" secondary UV enhanced Al mirrors, MgF2 coating Motorized refocusing in the range 6 m - infinity Multimode High-OH silica Ø550 µm optical fiber, 190-1200 nm, SMA ends, armored
Movement	Motorized rotation +- 90 °, movement resolution: 0.1 arcmin Motorized elevation (-14 °) to (+33 °), movement resolution: 0.1 arcminh
Sample View	CMOS camera with motorized zoom objective and autofocus CREE LED spotlight for sample illumination
Other Equipment	Laser rangefinder Warning flashlight
Dimensions & Weight	1070 x 670 x 900 mm, 51 kg

Fiber Module

Detachable module for remote analysis using the optical fibers

Basic Parameters	Distance of analysis: 0-6 m ^{IV.)} , Spot size: < 0.5 mm, Pulse energy: max 25 mJ
Fiber Probe	Laser focusing lens AR coated UVFS light collecting fibre colimator Measurement trigger button Focal point mechanically delimited
Optical Fibers	Multimode High-OH silica Ø550 µm optical fiber, 190-1200 nm, SMA ends, armored Multimode High-POWER Ø910 µm optical fiber, 400-2200 nm, HP SMA ends, armored
Dimensions & Weight	360 x 60 x 215 mm, 2 kg

External Accessories

Tripod, Power generator Honda EU 20i , 1.8 kW

Overall Dimensions & Weight

1070 x 780 x 1580 mm, 175 kg

Power requirements

230 V, 1.4 kW

*I.) Optionally other Nd:YAG harmonic wavelength II.) Optionally Czerny-Turner
III.) Optionally ICCD IV.) Depended on optical fibre length*