LTB LASERTECHNIK BERLIN

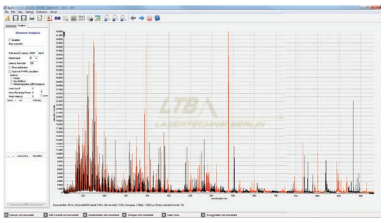
LIGHT. PRECISION. ANALYTICS.

LIBSpector

Benchtop laser class 1 sample chamber for spatially resolved LIBS analysis

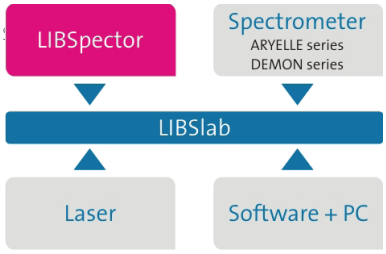
Key features

- For solid, liquid and gaseous substances
- Qualitative and quantitative analysis
- Motorized XYZ stage with joystick
- Pilot laser and video monitoring
- Built-in LIBS laser head optional



LIBS spectrum of steel measured with LIBSpector and ARYELLE 200 spectrometer.

LIBSlab = modular system



Applications

Benchtop laboratory equipment for scientific and industrial applications

The LIBSpector is a compact and intuitive to operate sample chamber for the qualitative and quantitative analysis of samples by means of laser-induced plasma spectroscopy (LIBS). In combination with a high-resolution echelle spectrometer from the ARYELLE and DEMON series and a suitable laser for plasma ignition the LIBSpector is part of our modular LIBS analyzer called LIBSlab – suitable for universal application in science as well as in industry-related quality control.

The beam of the LIBS laser, whose head can be built-in the chamber housing, is directed to the sample via telescope optics and generates a light emitting plasma. The plasma light is guided to the spectrometer via mirror and fiber optics. Sample mapping is provided by an integrated motorized XYZ stage that can easily be controlled either with the supplied XYZ joystick or by software.

All measurements can be monitored in real time with the installed high-resolution CMOS observation camera. The focus of the plasma-generating laser is at the intersection point of the pilot laser beams. Precise sample positioning and focusing is required to ensure accurate LIBS measurement results by simply adjusting the XYZ stage. The optimized optical setup of the model µ-LIBSpector provides a highly reduced laser spot size on the sample surface. Several sample holders for solid, liquid and gaseous substances provide universal application capability and can be adapted to individual customer requirements.

The LIBSpector comes with a laser class 1 housing and is equipped with safety interlock and laser protection window for safe observation. No additional laser safety precautions are therefore required at installation site. Sample-specific dust and particles resulting from laser ablation are extracted by an externally connected exhaust unit.

With the LIBSpector you get a technically extensively equipped and functional LIBS sample chamber in modern benchtop design. It provides excellent conditions for a flexible and safe use of LIBS technology for qualitative and quantitative analysis in the scientific and industrial sectors.

Specifications LIBSpector series

			LIBSpector	µ-LIBSpector
Features			Standard benchtop device for universal laboratory applications in science and industry	Optimized optical setup providing a very small laser spot on the sample surface
LIBS Laser * (typ.)	Wavelength	nm	1,064	266
	Pulse energy	mJ	50	10
	Frequency	Hz	20	20
	Laser type		Nd:YAG	Nd:YAG
	Laser spot size on sample	µm	Ø = 300	Ø = 50
	Built-in laser head		optional	optional
XYZ stage	Travel range	mm	X = 160, Y = 100, Z = 50	
	Resolution **	µm	5	
	Repeatability **	µm	± 10	
	Velocity (typ.)	mm/s	$v_X = 25$, $v_Y = 25$, $v_Z = 5$	
Components	Observation camera			
	Sensor		CMOS	
	Resolution	pixel	max. 2,592 x 1,944 (5 megapixels)	
	Pilot laser			
	Wavelength	nm	635	
	Output power	mW	1	
	Lightning			
	LED lightning			
	Joystick			
	XYZ joystick with preset buttons			
	Sample			
	Sample weight including holder	kg	max. 5	
	Holder for solid samples		yes	
	Holder for liquid samples		optional	
	Holder for gaseous samples		optional	
Safety	Housing		laser class 1	
	Laser protection window		adapted to applied LIBS laser wavelength	
	Interlock		front door, detachable rear panel	
General	Dimensions			
	Width x depth x height	mm	600 x 460 x 735	
	Weight	kg	50	
	Electric supply			
	Power supply	V DC	24	
	Ports			
	Interlock		BNC	
	Measurement signal output		SMA	
	Gas input	mm	push-to-connect tube fitting, Ø = 6	
	Gas output	mm	push-to-connect tube fitting, Ø = 6	
	Exhaust flange	mm	tube, Ø = 38	
	Operating conditions			
	Temperature	°C	+ 10 … + 40	
	Relative humidity	%	max. 80	

* optional, other specifications possible

** each axis

Subject to technical changes.

State: 1.8.2017

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