APPLIED PHOTONICS
LASER SPECTROSCOPY SOLUTIONS

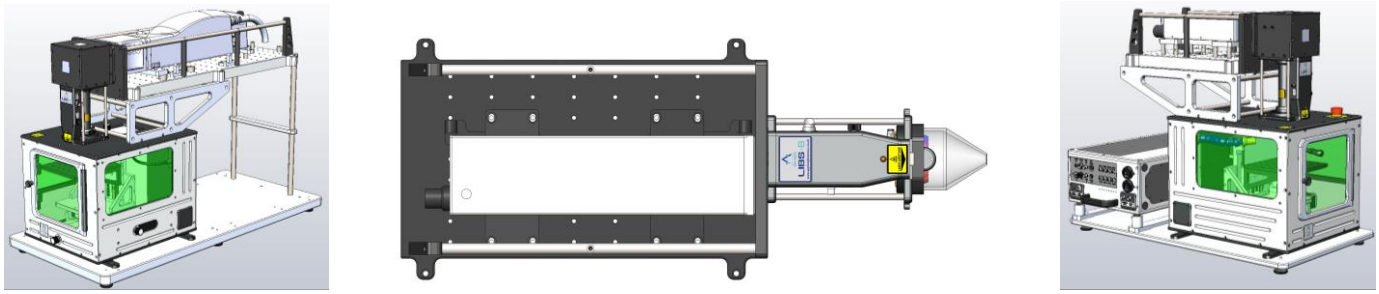
LIBS-6™ & LIBS-8™

Integrated LIBS Modules

Integrated modules for configuring a customised LIBS system
Compatible with a range of pulsed lasers and UV-Vis-NIR spectrometers

LIBS-6 module (left) and fitted to one of our modular SC-2L sample chambers (right). Laser head and adaptor platform not shown

Essentially "LIBS system building blocks", the LIBS-6 and LIBS-8 modules may be used together with a variety of Q-switched Nd:YAG lasers and optical spectrometers to form customised LIBS systems. This allows the user to assemble a LIBS system that best suits the requirements of their specific application or experimental research. The LIBS modules remove the need to design and construct your own laser focussing optics and plasma light collection optics by combining these features into a compact, integrated and easy to use device. An optional integrated video camera is also available.



Example configurations – Left: LIBS-6 module coupled to a Quantel Q-smart laser and SC-2XL manual sample chamber
Centre: LIBS-6 module coupled to a Litron Nano LG 300-10 laser in an open beam configuration
Right: LIBS-8 module coupled to a Litron Nano SG 150-10 laser, XYZ-750 motorized sample chamber and SpectroModule-8

Features

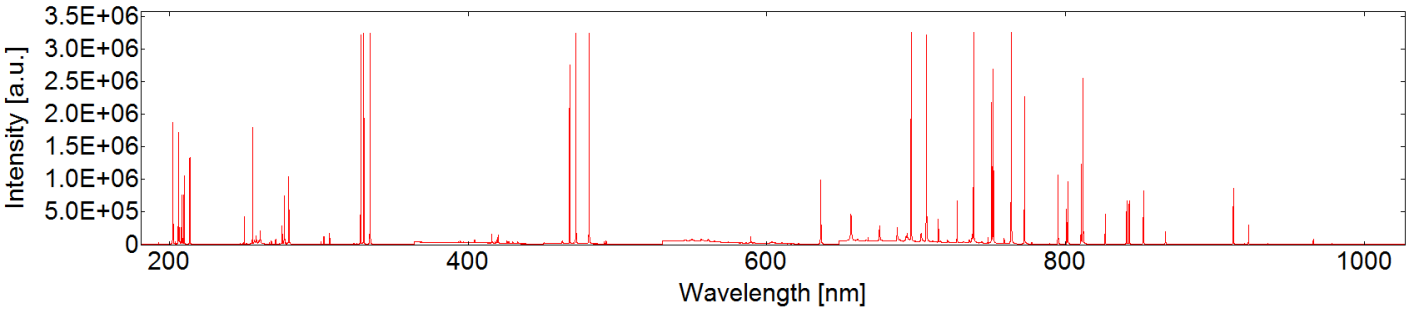
- Allows easy conversion of a standard Q-switched Nd:YAG laser into a LIBS device (requires: adaptor platform to attach LIBS module to laser head, suitable spectrometer(s), fibre-optic cables and computer)
- Available in 6-channel (LIBS-6) or 8-channel (LIBS-8) versions
- High-efficiency plasma light collection optics – LIBS-6: 1 DUV, 2 UV-Vis, 3 Vis-NIR channels. LIBS-8: 1 DUV, 3 UV-Vis, 4 Vis-NIR channels
- May be supplied with laser beam expander optics configured for all harmonic wavelengths of Nd:YAG lasers (contact us for available options).
- Integral laser beam expander with adjustable focus (theoretical minimum spot size typically 30 - 100 microns depending on laser used)
- Adjustable nozzle aperture – provides a convenient means of setting the distance to the sample.
- May be used in 'open beam' configuration (Class 4) or with fully-interlocked (Class 1) modular sample chambers
- Fully compatible with our range of modular sample chambers
- Working distances (nominal distance to sample): ~100 mm. Custom versions also available.
- Gas purge facility for supplying inert gas (argon, helium, nitrogen, air) to sample surface
- Optional imaging camera kit (IMG-HR) for viewing sample surface. Kit includes high resolution colour camera, dimmable high-brightness white LEDs for illuminating sample and a USB video converter for connection to a PC.

General Specifications

Technology:	Laser-Induced Breakdown Spectroscopy
Laser source:	Q-switched Nd:YAG (specify make, model and configuration of laser when ordering LIBS module)
Spectrometer:	LIBS modules are compatible with various fibre-optic coupled spectrometers (contact us for advice)
Plasma light collection:	Six (or eight) collection lenses arranged in a circular array and covering wavelength range ~182 – 1016 nm
Fibre-optic interface:	Six (or eight) SMA 905 connectors located at rear of optics holder (see below). Use multiple single-core fibre-optic cables for multiple spectrometers or 6-into-1 (or 8-into-1) fibre optic bundle for single spectrometer. Contact us for advice
Laser beam expander:	Adjustable focus (approx. +/- 7 mm). Minimum spot size typically 30 - 100 microns depending on laser. Beam expander designed to suit specific Nd:YAG laser and operating wavelength
Dimensions:	Approx. 265 (L) x 122 (W) x 122 (H) mm, weight: ~2 kg
Sample interface:	"Open beam" path to sample or via use of one of our modular sample chambers
Optional sample chambers:	Compatible with our range of modular sample chambers. See our website for further details
Optional imaging camera:	LIBS-6 and LIBS-8 modules are fully compatible with our IMG-HR imaging kit
Optional software:	Data acquisition, processing and recording via user-friendly LIBSoft™ software (please contact us for details on which lasers and spectrometers are supported by LIBSoft). NB. LIBSoft is not necessary for operation of LIBS modules
Product classification:	Class 4 when used without modular sample chamber. Class 1 laser product when used with modular sample chambers and instructions given in User's Manual are adhered to

Example configurations

Typical system configuration: LIBS-8 module, Litron Nano SG 150-10 laser head, LPU 350 laser power supply, AP-Nano S adaptor platform (for mounting laser head to LIBS-8 module), XYZ-750 modular sample chamber, SpectroModule-8 eight channel LIBS spectrometer



Example spectrum of high-purity zinc with argon purge gas (50-shot accumulation, 10 µs delay, 50 mJ laser pulse energy)

Specifications subject to change without notice

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