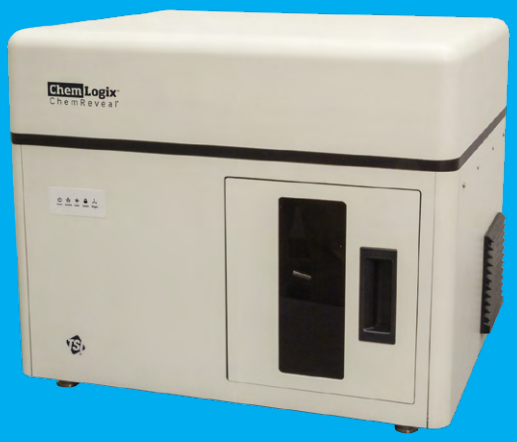
CHEMREVEAL®
LIBS DESKTOP ANALYZER

ELEMENTAL ANALYSIS BASED ON LASER INDUCED BREAKDOWN SPECTROSCOPY

The ChemReveal® LIBS Desktop Analyzer offers rapid elemental analysis of solid materials. Based on advanced Laser-Induced Breakdown Spectroscopy (LIBS), the ChemReveal LIBS instruments are designed to analyze light elements (H, He, Li, Be, B, C, N, O, F, Ne, Na, Mg, Al...) and heavy metals simultaneously to determine bulk and trace element compositions. With high-resolution imaging of samples, computer-controlled sample manipulation, and application-specific combination of laser, spectrometer and detector, the instruments allow for detailed surface and depth profiling of solid samples - great for use on probing coated materials. Designed for laboratory use, with high sensitivity and user flexibility - the ChemReveal LIBS instrument is optimal for researchers, scientists and analytical test technicians.



This analyzer requires little to no sample preparation, allowing for solid samples to be loaded as-is and analyzed within seconds. There is no need for laborious and costly acid digestions - the ChemReveal LIBS analyzer provides lab-trusted, rapid screening capabilities for positive material identification and inspection. Designed for: 1) robustness - including alignment-free operation due to one-bench mounting for all optical-mechanical components, and 2) serviceability - direct access to laser flashlamps for easy replacement, and intuitive systems diagnostics front-panel LEDs for rapid status checks, this Desktop LIBS Elemental Analyzer provides reliable results in even demanding industrial applications.

The ChemReveal LIBS desktop analyzer is equipped with advanced, industry-standard chemometric software supporting quantification, library matching, and sample classification. In conjunction with our ChemLytics™ analytical software, the software suite supports both customer-built and pre-loaded libraries/calibrations, for the classification and quantification of materials. Backed by TSI's global service and support, and built with TSI's more than 50 year history for building outstanding quality instrumentation, the ChemReveal LIBS desktop analyzers are the ideal choice for your elemental analysis needs.

Features and Benefits

+ Full elemental analysis - Light elements of Z<12 (e.g. C, H, O, N, Li, B, Be) and heavy elements
+ Rapid analysis - seconds to minutes
+ Little or no sample preparation - solid samples analyzed as is, or pelletized powders (excipients or binding agents optional)
+ No reagents required, environmentally safer
+ Less sample required than other elemental analyzers
+ Depth profiling and spatial mapping at a micron-scale
+ Micro- to macro- analysis - targeted and flexible spot analysis
+ Qualitative sample classification or quantitative element concentrations
+ Configurable laser and detector choices to suit your applications
+ Detection limits in 10s of ppm for most elements
+ Designed for serviceability and easy maintenance
+ Alignment-free operation
+ TSI global service and support

TSI® | ChemLogix™

SPECIFICATIONS

CHEMREVEAL® LIBS DESKTOP ANALYZER

Performance	
Element Range	Z ≥ 1 (All elements including C, H, O, N, Li, Be, B)
Concentration Range	10 ppm to % levels
Analysis Time	20 seconds typical
Sample Preparation	Solids as-is or pelletized powders
Sample Positioning, Targeting	XYZ translation, sample stage travel is 2" in x, y, and z; micron-scale precision and control
Sample Imaging	Dual cameras for wide-field and magnified views
Minimum Sample Quantity	~100 pg to 10µg - depending on sample
Maximum Sample Size (H x W x D)	5" x 9" x 5"
Analysis Spot Size	Adjustable Minimum: <20 µm (λ dependent) Maximum: 400 µm
Analysis Depth	~1-100 µm - depends on material and laser energy chosen
Laser Energy Metering	0-400 mJ/pulse +/-5%
Calibration	Hg lamp calibration for Echelle spectrometers Standard materials for Broadband spectrometers
Software	ChemReveal® Software + Hardware control (stages, laser, focusing, imaging) + Data acquisition
	ChemLytics™ Software + Automated elemental identification + Univariate Quantification and Calibration + Library building and matching
	Chemometrics Software (Optional) + Model building and data visualization + Multivariate quantification + Multivariate classification
Physical	
Laser	Nd: YAG 1064 nm or 266 nm 50 mJ/pulse or 200 mJ/pulse (1064 only)
Spectrometer Detector	4 Channel Broadband Spectrometer (λ range = 190-950)
	7 Channel Broadband Spectrometer (λ range = 190-950)
	Echelle Spectrometer with iCCD Detector (λ range = 200-900)
Dimensions (H x W x D)	Instrument Housing: 19.7" x 23.8" x 20"
	Laser Power Supply: 14.5" x 5.5" x 19"
	Computer: standard desktop
Total Weight	Instrument: 45 kg
	Laser Power Supply: 14 kg (w/ water)
	Computer: standard desktop
Computer	Windows® 7 with Multi-core processor
Gas Requirements	Ar or He optional - for use with N, O analysis
Power Required	120V AC - 10A

Available Configurations			
Laser / Spectrometer	Standard 1064nm	High Power 1064nm	UV 266nm
4 Channel CCD	+		+
7 Channel CCD		+	+
Echelle ICCD		+	+

Selection Guide	
Lasers	
Standard 1064nm	Excellent value for all routine applications.
High Power 1064nm	High fluence at large spot size for flexible method development.
UV 266nm	Controls sampling depth on transparent samples.
Spectrometers	
4 channel CCD	Excellent value and sensitivity for less complex spectra.
7 channel CCD	High resolution throught range resolves complex spectra.
Echelle/ICCD	Enhnaced time-gating control for research. High Resolution throughout range.
Warranty	
Warranty	1 year

Specifications are subject to change without notice.

ChemReveal LIBS Desktop Analyzers are CE Certified, Class I laser products, protected by US Patent 6,771,368.

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P/N 5001453 Rev J

Printed in U.S.A.