LSX-213 G2

Laser Ablation System

The LSX-213 G2 is the pinnacle of solid state laser ablation performance and simplicity. Whether performing micron level feature analysis in geological thin sections or rapid process control sampling, the features you need are readily available to get the job done. If you are looking for a high performance 213 nm laser ablation system that works routinely, you need the LSX-213 G2.

UNCOMPLICATED EXCELLENCE

The LSX-213 G2 system features the latest in optical design technology to target areas of interest, while employing the most powerful UV laser in its class to ablate even the most challenging of samples. The intuitive and powerful DigiLaz™ G2 software allows the user to easily create and save methods for all types of analyses. You can set precise targets for single point, multi-point, line scan, area scan, area raster and depth profiling, or simply draw a pattern over the area you want to analyze. All laser parameters are software adjustable, including command of the helium carrier gas flow controller, which is standard on all systems. Spot sizes ranging from 5 microns to > 200 microns are generated using aperture imaging technology, and are easily changed and set using the DigiLaz™ G2 software. From power, spot size and scan speed to control over timing and communication with your spectrometer, CETAC is focused on making your job easier; simply, Target, Ablate, and Analyze.

CLARITY

The major benefit of laser ablation is the direct interaction between analyst and analyte. The LSX-213 G2 incorporates the latest in optical design technology providing the user with optical resolution of better than 2 microns while maintaining a wide field of view for sample navigation. The heart of the viewing optics lies in the high intensity LED arrays above and below the sample cell. When focused on even the smallest details, this unique, highly intense lighting design produces extremely clear images. When using transmitted light for thin sections, the computer controlled rotating polarizers allow you to further resolve details with maximum clarity. Since the laser is always in perfect alignment with the optics, what you see is what you'll analyze.

RELIABLE

Built on the proven thermally and mechanically isolated LSX platform, the liquid cooled laser and completely enclosed optics give the LSX-213 G2 an unparalleled degree of ruggedness and tolerance in any laboratory environment. The easily portable system integrates with all ICP-MS and ICP-AES systems, so you stay focused on your samples, not your tools.

FLEXIBLE

The open architecture design allows for the use of a variety of sample cells without physical cabinet restrictions, and specialized sample cells can be designed to meet the requirements of the widest possible range of samples. Optional large format stages provide even greater flexibility. Whether the sample is large or small, or whether it needs temperature or pressure assistance for effective analysis, the LSX-213 G2 platform has unparalleled flexibility to meet any need.

LSX-213 G2 LASER ABLATION SYSTEM SPECIFICATIONS

LASER CABINET

- Dedicated, frequency quintupled 213 nm Q switched Nd:YAG laser
- > 4.5 mJ/pulse laser energy (high density-homogenized beam)
- Flat-top energy profile
- Laser pulse width: 5 nsec
- Repetition rate: 1 20 Hz
- Optical variable attenuation provided as standard
- Variable output energy, 0-100%
- Sealed, mechanically and thermally isolated laser and viewing optics
- Variable spot sizes, computer controlled aperture sizes standard from 10-200 µm
- Custom aperture available for crater sizes from 5–150 µm. Additional custom apertures available.

COMPUTER HARDWARE AND SOFTWARE

- Integrated laser system control software with ICP or ICP-MS host computer
- WindowsTM XP SP3, Vista, 7 compatible
- On screen display of safety interlocks and laser status
- External trigger to synchronize ablation with host instrument
- Sample mapping function allows full view of the sample area and rapid navigation
- 9 laser ablation methods: single or multiple point, straight and segmented lines, area scan or raster and depth profiling, multi-line area scan and high resolution raster
- Sequence Editor automatically records all method coordinates and parameters
- Sequence/Method file management: save and recall, Excel import and export
- Digital size measurement of surface features
- High resolution image and video capture of ablations using onboard software
- Automated video zoom and sample motion control
- Software controlled Z-stage stepping for precise depth profiling
- Real time control of Z-stage focus, energy attenuation, laser shot frequency, and Helium flow rate for quick and easy LA-ICP-MS optimization

VIEWING OPTICS AND VIDEO SYSTEM

- Computer controlled, continuously adjustable parfocal video microscope
- 12x zoom range
- Wide field of view (6 mm)
- < 2 µm optical resolution
- High intensity LED lighting arrays for excellent sample visibility even at maximum magnification
- Continuously variable reflected and transmitted light illumination 0-100%
- Computer controlled focus and zoom
- High resolution video image and imaging controls on host computer
- Rotating polarized illumination standard
- Mechanically and thermally isolated laser and viewing path for maximum stability

SAMPLING SYSTEM

- Ablation cell with removable quartz window for easy cleaning and maintenance
- 50 mm diameter X 50 mm high sample cell standard, with multiple sample stages
- Specialized sample cells available
- User selectable carrier gas (Helium or Argon) with built in Helium mass flow controller
- High precision XYZ translation stage with 0.25 µm/step resolution across the sample
- Thin-section sample holder for standard size petrographic slides
- Open architecture design for the use of a variety of sample cells without physical cabinet restrictions

SYSTEM

- Laser cabinet dimensions: 73 x 46 x 53 cm (D x W x H)
- Power supply/cooler dimensions: 45 x 13 x 36 cm (D x W x H)
- Weight: approx. 68 kg/150 lbs for laser cabinet with power supply/cooler
- Power requirement: 100-250 VAC
- Class 1 enclosure with safety interlocks
- Independent programmable laser power supply module
- Closed loop distilled water cooling system with integrated DI cartridge in system
- 12 month limited warranty

LSX-213 G2 / LSX-266 LASER ABLATION SYSTEM

OPEN-ARCHITECTURE SAMPLE AREA

The LSX G2 platform incorporates an open architecture sample area that enables the maximum flexibility for a wide range of specialized and custom sample cells. The design also offers a simple and fast method of removing and changing samples, utilizing a drop-down and pull out mechanism to access the sample chamber.

SAMPLE CELLS

The standard cell is a 50 mm diameter x 50 mm high cylindrical design, constructed of Delrin. Despite its simple design, this cell offers washout of 3 orders in an average of 2-3 seconds, independent of the ablation position inside the cell.

A range of alternate, specialized cells, are available for specific sample types, shapes and sizes. See our website for the current range, which includes:

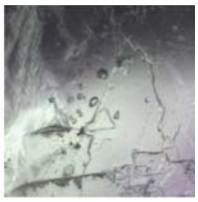
- Large format cell
- Sediment cell
- Document cell
- Cryo cell

Large format cells require the large travel stage option.

VIEWING CLARITY

A new high resolution video camera, improved LED lighting and enhanced video handling combine to produce radically superior sample viewing capability.

Previous LSX Platform



Current LSX G2 Platform

Images are of startling clarity, even at high zoom, offering imageresolution of <2 µm.

SIMPLE INTEGRATION

The LSX G2 platform easily integrates with all commercially available ICP and ICP-MS instruments, with all components for analytical triggering and aerosol transfer/gas connection supplied as standard.

RESPONSIVE CUSTOMER SERVICE

Our global network of engineers is backed by our team of factory-based experts, who are on hand to act quickly when needed.

SYSTEM SPECIFICATIONS

LASER CABINET

- Frequency quintupled 213 nm Q switched Nd:YAG laser
- >4.5 mJ/pulse laser energy
- Laser pulse width: 5 nsec
- Repetition rate: 1 20 Hz
- Optical variable attenuation provided as standard
- Sealed laser head with easily exchanged flashlamp
- Mechanically and thermally isolated laser and viewing path for maximum stability
- Variable spot sizes, computer controlled aperture sizes standard from 10-200 µm. Additional apertures available.

COMPUTER HARDWARE AND SOFTWARE

- Integrated DigiLaz G2 laser system control software
- External trigger to synchronize ablation with ICP or ICP-MS
- Sample mapping function allows full view of the sample area and rapid navigation
- Full range of user-editable ablation methods
- High resolution image and video capture
- Automated video zoom and sample motion control
- Real time control of Z-stage focus, energy attenuation, laser shot frequency, and Helium flow rate for easy optimization

VIEWING OPTICS AND VIDEO SYSTEM

- Computer controlled, continuously adjustable parfocal video microscope
- 12x zoom range
- Wide field of view (6 mm)
- < 2 µm optical resolution
- High intensity LED lighting arrays for excellent visibility
- Continuously variable reflected and transmitted light
- High resolution video image and imaging controls
- Rotating polarized illumination standard

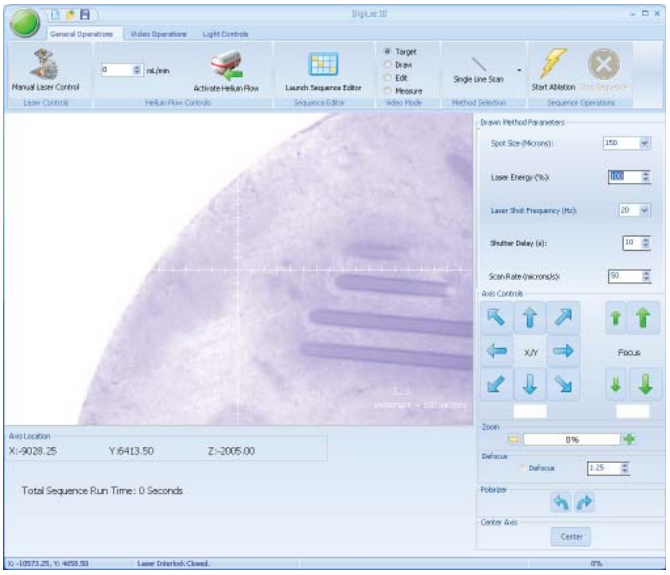
SAMPLING SYSTEM

- 50 mm diameter X 50 mm high sample cell standard, with multiple sample holders. Specialized sample cells available.
- User selectable carrier gas (Helium or Argon) with built in Helium mass flow controller
- XY stages at 50x50 or 100x100mm travel. Stage step resolution of 0.25 µm across the sample surface.
- Open architecture design for the use of various sample cells

SYSTEM

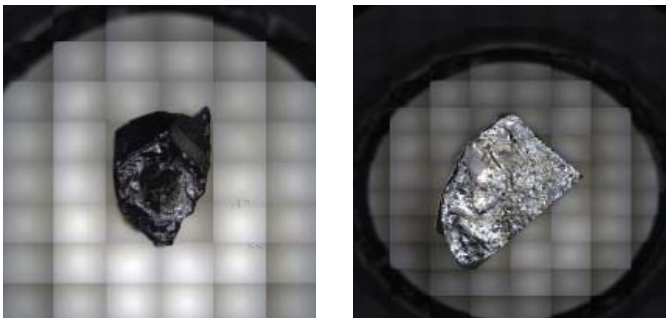
- Laser cabinet dimensions: 73 x 46 x 53 cm (D x W x H)
- Power supply/cooler dimensions: 45 x 13 x 36 cm (D x W x H)
- Weight: approx. 68 kg/150 lbs for laser cabinet with power supply/cooler
- Power requirement: 100-250 VAC
- Class 1 enclosure with safety interlocks
- Independent programmable laser power supply module
- Closed loop distilled water cooling system with integrated DI cartridge

INTUITIVE DIGILAZ G2 SOFTWARE



The DigiLaz™ G2 operating software intuitively gives the user complete control over laser ablation, from navigating the sample and creating methods to performing sample analyses, in an easy-to-follow, tabular format. The latest generation DigiLaz G2 software includes all the capability of prior versions, and has added several new features to enhance the functionality, the flexibility and the user experience of performing laser ablation analyses.

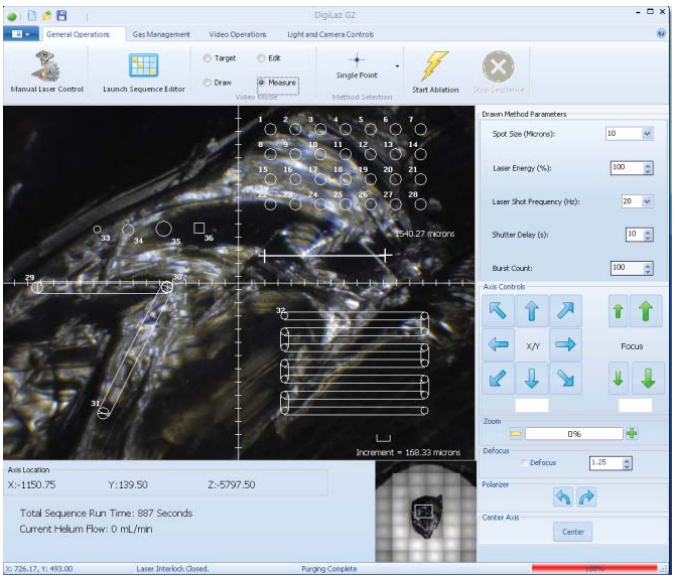
IMPROVED SAMPLE NAVIGATION MAPPING



Sample navigation mosaic maps

New software algorithms for collecting and collating mosaic images for sample navigation dramatically improves the quality of the macro view of the sample cell. The sample navigation mosaic enables a wide field of view for all or part of the sample for rapid, single-click navigation to selected locations of interest. Because of the wide field of view and the sample mapping mosaic capability, a secondary off-axis camera is not required for navigation. Normally it is only necessary to map part of the cell area, which can be done extremely rapidly.

IMPROVED VIEWING FEATURES



Enhanced hardware capabilities such as a high resolution USB camera and high intensity LED light array provide improved viewing and illumination. Software support for high resolution video and automatic lighting compensation with zoom makes sample visualization vastly superior with DigiLaz G2.

IMPROVED SAMPLING FEATURES

DigiLaz G2 provides real time control of laser energy and gas flows to optimize your analysis. A full range of ablation methods is available including a new “high resolution raster” method that can be decomposed to individual spots. This is particularly useful for surface mapping analyses. All methods are fully editable with any combination of rasters, lines and points. A sequence editor allows spreadsheet style storage and editing of sampling co-ordinates as well as import and export of sequence data.

Improved ease-of-use features include automatic stage movement to scroll with cursor movement on-screen, making long line methods easy to handle.

IMAGE & VIDEO CAPTURE

DigiLaz G2 offers full high resolution image and video capture during ablation. This is extremely useful for publications and presentations.