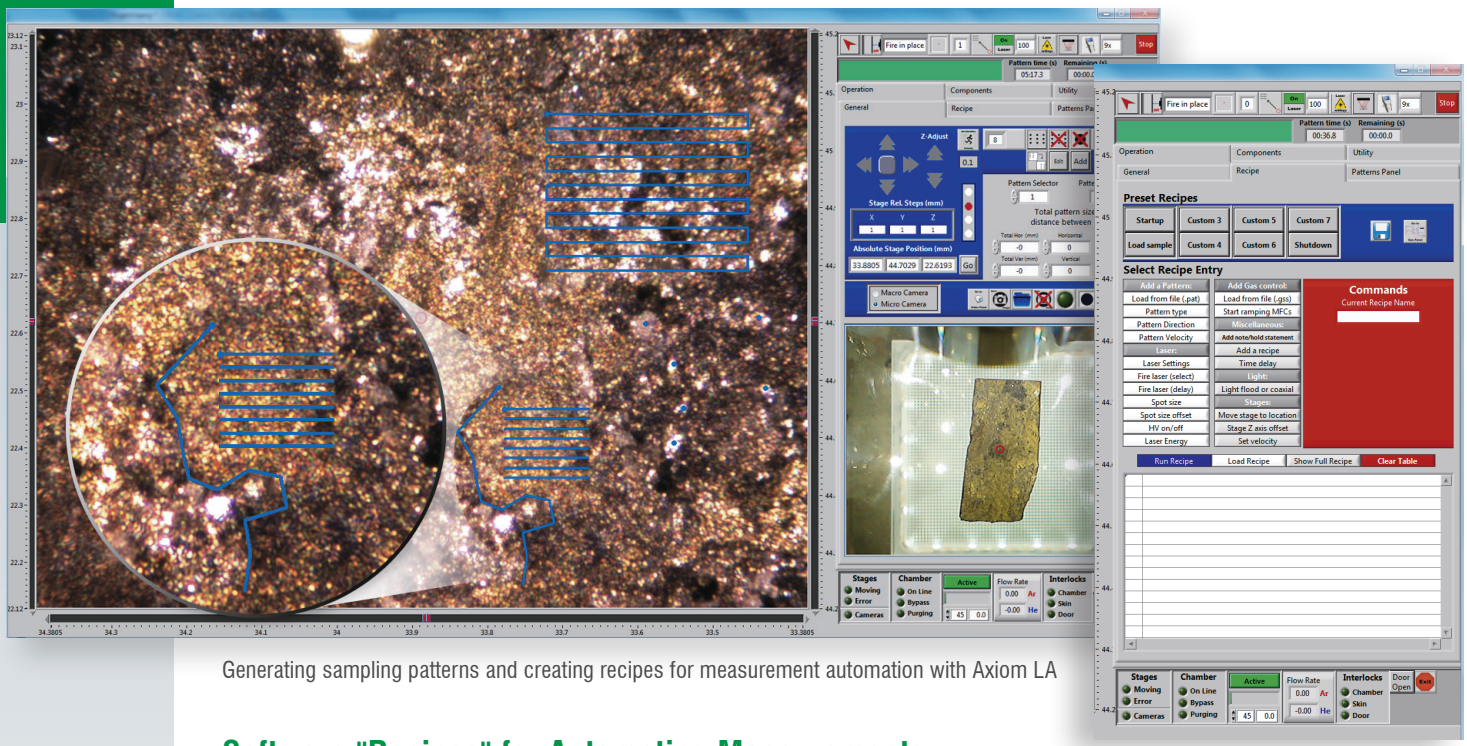
J200 System Software – Axiom LA

You Are in Control with Intuitive GUI and Powerful Data Analytics

Applied Spectra delivers its powerful software package, Axiom LA, with each J200 Tandem LA-LIBS instrument. Axiom LA features a highly intuitive, user-friendly interface to navigate different sample areas and set up flexible laser sampling protocols. Axiom LA also integrates a powerful data analytics module for the efficient analysis of LIBS spectra and time resolved ICP-MS signals. With Axiom LA, it has never been easier to access hardware component controls and automate measurements. Put simply, Axiom LA offers an unprecedented level of integration with your ICP-MS instrument.

Create Sophisticated Laser Sampling Patterns with Ease

Axiom LA features a large window to display crisp, detailed images of the sample. Analysts can program arbitrary laser sampling patterns on the sample image including rastered lines, curves, random points, a grid of arbitrary size and pre-programmed patterns. Even sampling areas with challenging (or complex) shapes can be highlighted with the pattern generation tool and be precisely analyzed for elemental or isotopic content.



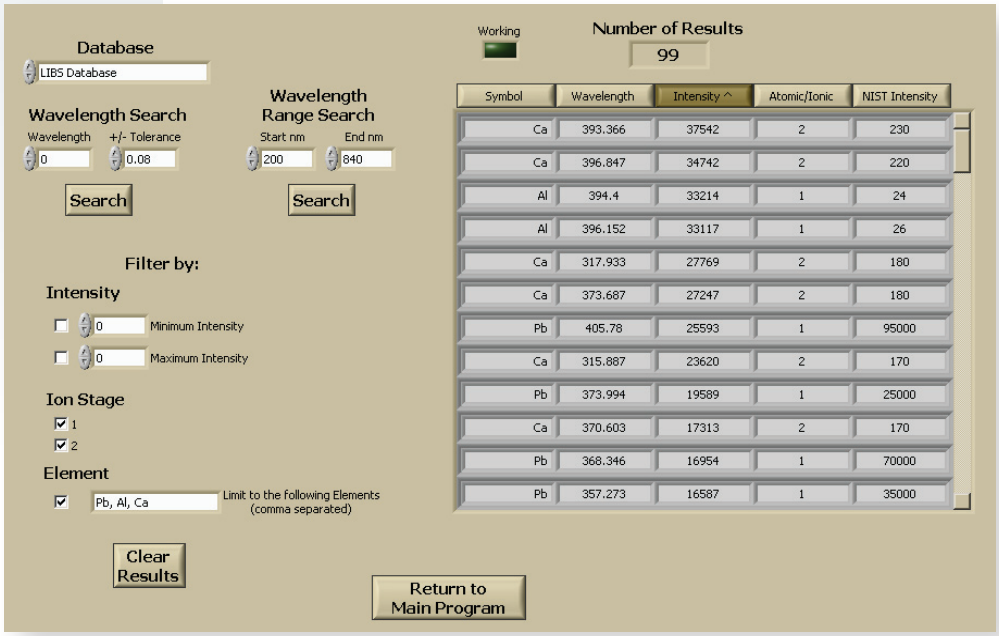
Generating sampling patterns and creating recipes for measurement automation with Axiom LA

Software "Recipes" for Automating Measurements

By grouping together multiple hardware instructions and sequencing them in time, Axiom LA creates a stored “recipe.” Once recipes are created, they can be recalled at later times and grouped together to provide a highly automated measurement experience. Simply “recall” the entire recipe to repeat the experiment, or copy a part of the recipe and combine it with new instructions to address new sampling protocols.

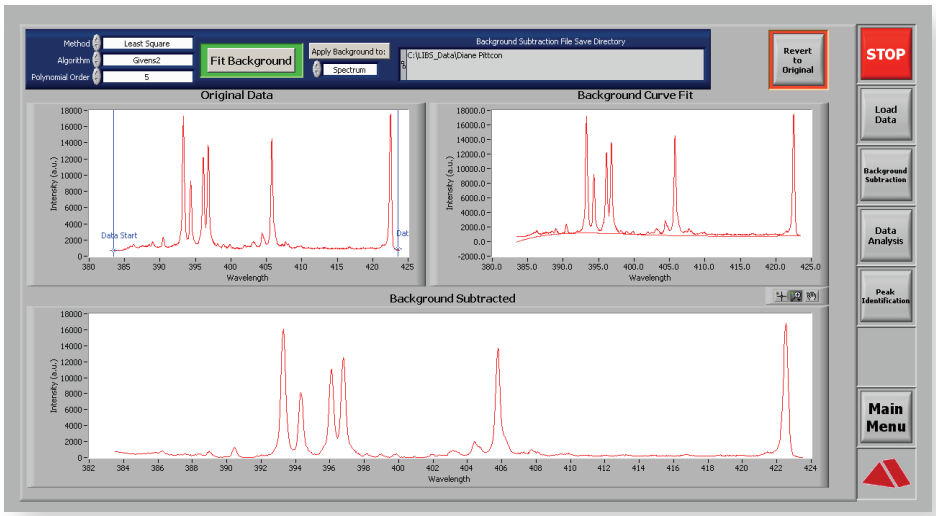
Powerful Data Analysis Tools for Complex LIBS Spectra

Axiom LA integrates powerful LIBS data analytics tools from Applied Spectra’s industry-leading RT100 Series LIBS instruments. TruLIBS™, Applied Spectra’s proprietary research-driven database obtained from real LIBS plasmas, quickly and accurately identifies the complex LIBS emission peaks. Specific search criteria (wavelength ranges, groups of elements, plasma excitation states) can be used to narrow the search in seconds. TruLIBS™ allows users to load experimental LIBS spectra directly from the Axiom LA software to identify and label peaks.



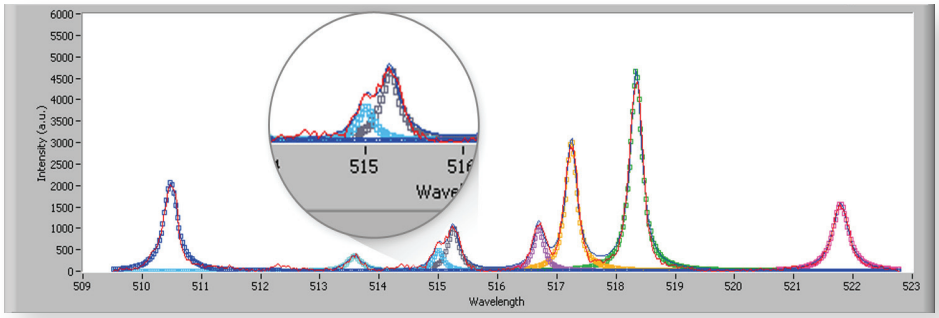
TruLIBS™ database for searching emission lines

Essential spectral analysis tools (such as continuum background subtraction, peak area integration, and curve-fitting of overlapping spectra) help analysts efficiently process LIBS peaks and obtain quantitative answers. Analysts can monitor the statistics of LIBS intensities or their ratios of different analytes during multiple laser pulse sampling. Individual LIBS spectra, entire folders or directories can be processed simultaneously, which greatly shortens data analysis time.



Continuum background subtraction for the entire spectrum

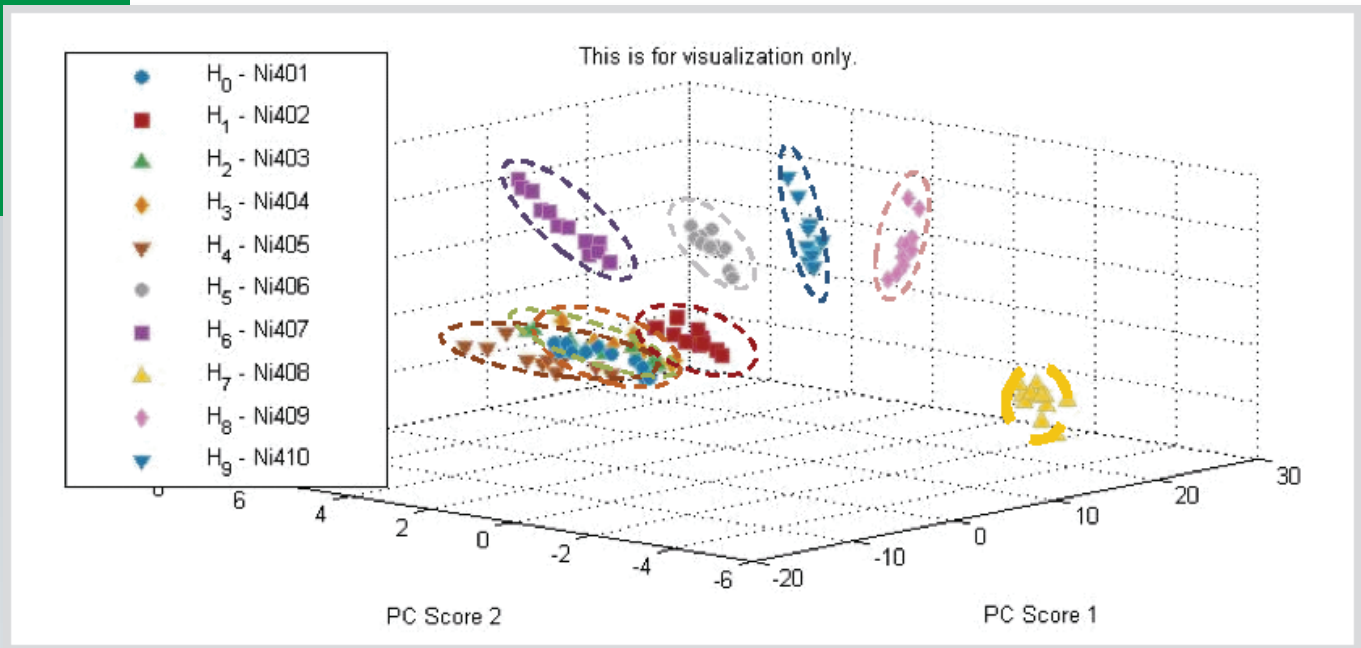
Automatic peak area integration



Curve-fitting of overlapping peaks

Effective Data Visualization and Sample Classification

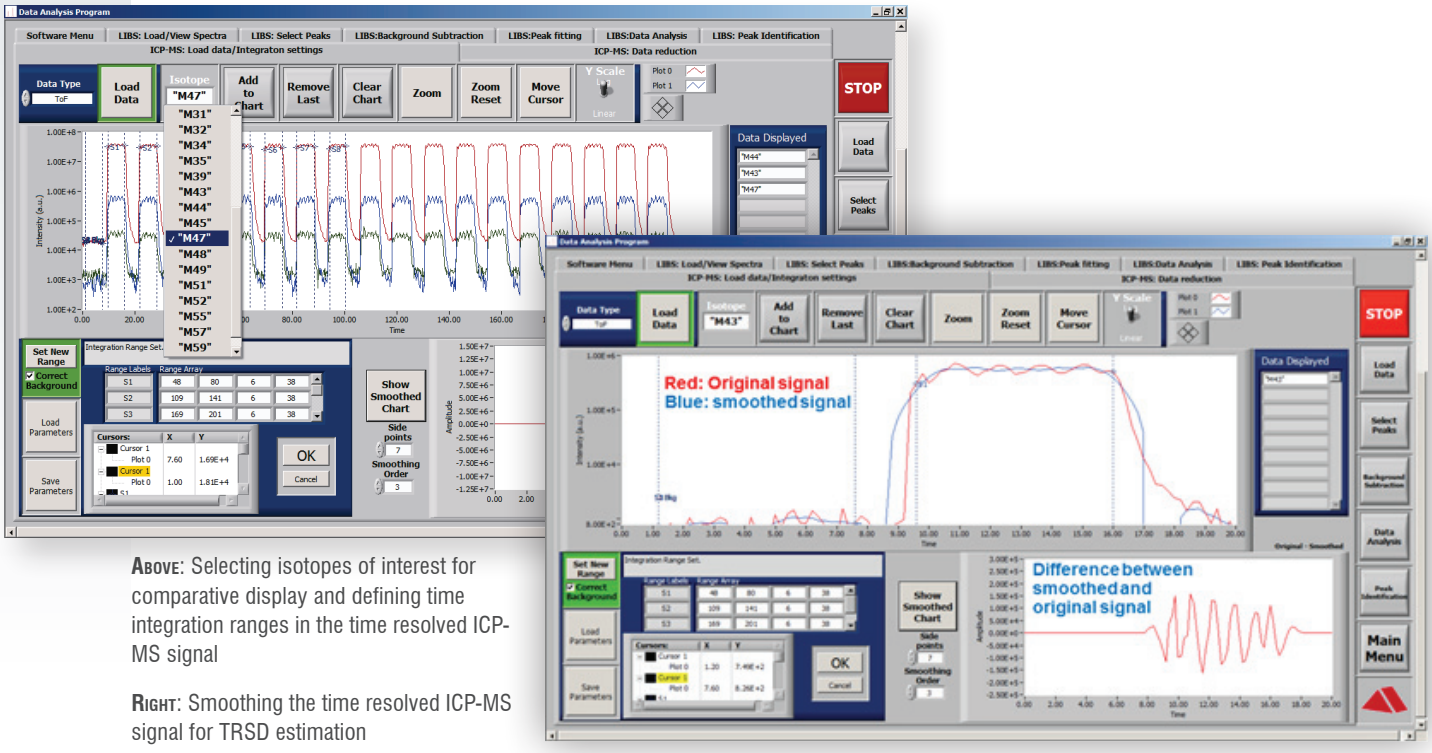
Applied Spectra's LIBS Graphical Development Tool (GDT) chemometric software allows the user to visualize the difference among a set of LIBS spectra. Based on Principal Component Analysis (PCA) and Partial Least Square-Discriminatory Analysis (PLS-DA), the LIBS GDT identifies distinguishing spectral features and classifies tested samples. Measured LIBS data can be saved and stored in the library as characteristic spectra of the sample. Any LIBS spectra of questioned substances can be tested against the library for highly effective sample ID.



PCA visualization of 10 BAS steel CRMs (401 to 410)

From Time Resolved ICP-MS Signals to Full Quantitative Answers

Axiom LA software features ICP-MS data management and analysis tools that are essential for obtaining accurate quantitative answers and precision statistics. With Axiom LA, an analyst can select isotopes of interest and display their time resolved ICP-MS signals for comparative analysis. Defining time integration ranges, saving them, and applying them to all ICP-MS data in a file or in a directory allows for effortless estimates of integrated intensities and RSD values. The time-resolved ICP-MS signals can also be readily smoothed and TRSD (Temporal Relative Standard Deviation) statistics can be obtained with ease.



Above: Selecting isotopes of interest for comparative display and defining time integration ranges in the time resolved ICP-MS signal

Right: Smoothing the time resolved ICP-MS signal for TRSD estimation

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