

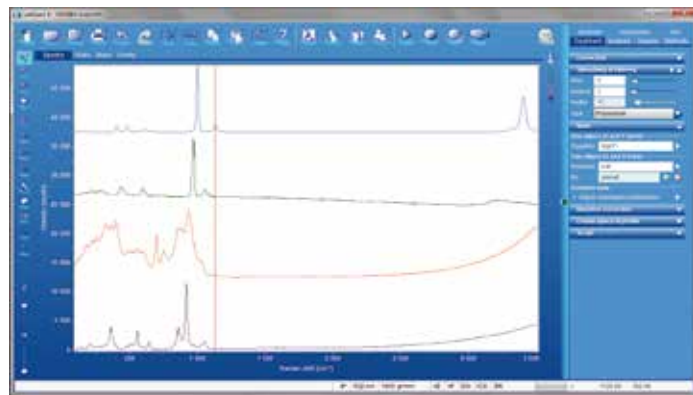


## LabSpec 6 Spectroscopy Software Suite

**HORIBA Scientific's LabSpec 6 software platform builds on the success of its award winning previous versions to deliver a unique environment for complete instrument control and data processing.**

**As the link between users and HORIBA's cutting edge instrumentation LabSpec 6 offers an intuitive interface which enables logical work flow through an experiment, from visualization of the sample and measurement set up, to interpretation of the data, and final reporting of the results.**

LabSpec 6 combines simplicity with powerful analytical functionality. It opens up the full range of experiment protocols, ranging from the basic spectrum acquisition with CCD, EMCCD, iCCD and single channel detectors, through to hyperspectral imaging. In the latter, data can be acquired and visualized in 1D (e.g., Z-depth, line, time, temperature profiles), 2D (e.g., XY surface maps, XZ and YZ optical slices), and 3D (e.g., XYZ volumes).



All data, whether a single spectrum or a hyperspectral map comprising hundreds of thousands of spectra, can be processed with standard spectroscopic functions, including baseline subtraction (incorporating LabSpec's unique robust fluorescence rejection algorithms), smoothing, solvent subtraction, and full mathematical manipulation.

Analysis of data sets can be performed quickly and simply to provide information on peak parameters (e.g., position, width, amplitude, area), component contribution in mixtures using classical least squares (CLS) fitting, and CLS modelling of component distribution in Raman images.

Beyond this basic functionality, optional modules provide further capabilities, allowing LabSpec's functionality to be customized for specific needs. Some of these modules are discussed below:

### Multivariate Analysis

A fully integrated Multivariate module offers a range of analysis techniques, including Principal Components Analysis (PCA), Multivariate Curve Resolution (MCR), Partial Least Squares regression (PLS), Hierarchical Clustering Analysis (HCA), and Dissociative Clustering Analysis (DCA).

These can be used for concentration studies using calibration data sets, automated calculation of component spectra in mixed data sets (such as a Raman image), and clustering (or grouping) of like spectra within large spectral sets.

### Spectral Database Searching

LabSpec 6 is fully compatible with Bio-Rad's KnowItAll® software, which includes integrated Raman spectrum searching, structure drawing, mixture analysis, and Analyzelt® functional group analysis. Data can be transferred from LabSpec 6 to KnowItAll® with a simple one click link.

Available databases include HORIBA's own set, incorporating over 1500 spectra from different fields and Bio-Rad's two databases of monomers/polymers and inorganics (with over 3200 spectra in total).

## Methods

The Methods module allows customized data acquisition, treatment and analysis routines to be saved, edited, and loaded at any time. The currently loaded method can then be run with one click, exploiting the instrument's full hardware and software capability. Creating a method is a simple task – mouse clicks around the software are recorded, and inserted into the method list, which is then open to reorganization and editing. Once the method is complete, recording is stopped, and the method can be saved and/or run, as desired.

Handling such advanced capabilities can sometimes make software complex and difficult to use, particularly in multi-user environments, where users rarely have time to learn the intricacies of a new software platform. LabSpec is different. LabSpec is simply powerful software.

A User Accounts module offers defined user levels and login windows, ensuring that users with different levels of expertise can quickly and easily access the functionality they require. Last used system settings and display functions are stored for each user, providing seamless continuity between user sessions.

Once data has been acquired and processed, LabSpec's Report Server module offers "drag and drop" customized report creation, covering all data types supported by LabSpec (e.g., spectra, maps, video images etc).

Beyond the new Methods module described above, LabSpec 6 provides more in-depth tools for complete system automation, customization and remote control with its Visual Basic Scripting (VBS) and ActiveX modules. The former has been made more accessible by offering pre-loaded script 'building blocks' which can be inserted into a script as required, thus minimizing the amount of coding required from first principles. With ActiveX LabSpec and its associated hardware can be fully controlled from third party software, an invaluable capability for complete lab automation projects, as well as smaller custom multi-instrument experiment rigs.

The importance of software should not be underestimated. At HORIBA we know that it is a tool that must have the power to unlock new realms of science, and yet offer the simplicity to yield maximum results fast. LabSpec 6 does just that.

## Key Functionality

### Acquisition

- Single point
- Automated multi-point
- Multidimensional mapping
  - 1D: line, time, temperature profiles
  - 2D: XY surface, XZ/YZ slices
  - 3D: XYZ volumes
- Optical images
- Ultra-fast Raman mapping\*

### Treatment

- Fluorescence rejection
- DeNoise
- Baseline subtraction
- Data correction
- Smoothing and filtering

### Spectral Databases\*

- Full compatibility with Bio-Rad's KnowItAll® software
- Comprehensive databases covering inorganics, polymers, pigments, forensics, and bio-materials.

### Analysis

- Peak fitting
- Classical Least Squares (CLS) spectrum fitting
- Image analysis
- Map analysis with cursors
- Multivariate analysis\*
  - PCA, MCR, PLS, HCA, DCA

### Reporting

- Customizable report sheets

### Administration

- User Accounts module with Administrator, Expert and Operator levels.

### Automation

- Methods
- Visual Basic Scripting (VBS)
- ActiveX

\* *Optional*