LabSpec 6

Spectroscopy Suite

Simply Powerful Software

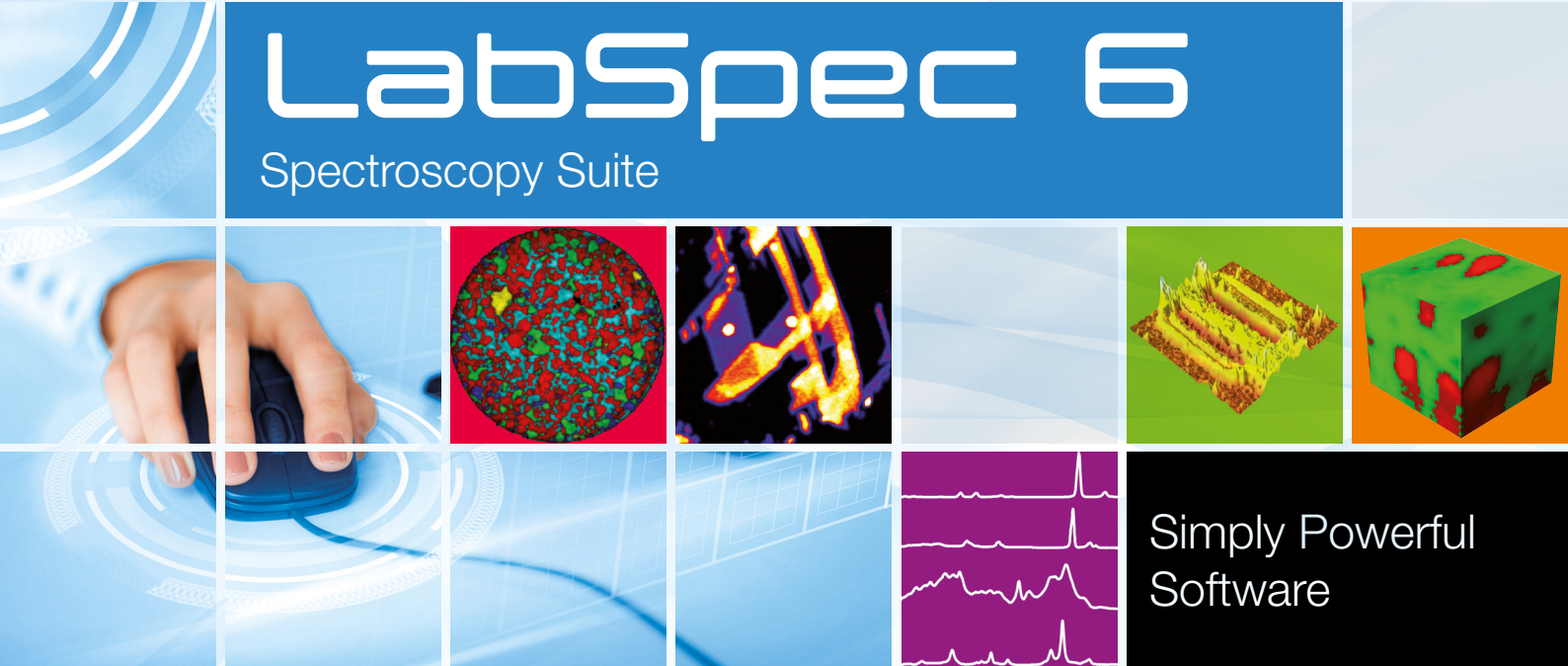# LabSpec 6
Spectroscopy suite

The LabSpec 6 spectroscopy suite offers an intuitive platform for Raman, photoluminescence (PL) and cathodoluminescence (CL) spectroscopy and imaging.

The sixth generation of spectroscopy software from HORIBA Scientific builds on previous award winning platforms to present a unique experience in instrument control and data processing.

Within a single interface, LabSpec adapts to the needs of different users in multi-user lab environments, allows users to automate measurements / analysis and customize the user interface, and offers unrivalled functions to provide results fast.

LabSpec 6 software offers great modularity with exclusive LabStore Apps.

› Simplicity

An intuitive interface enables logical workflow through an experiment, from visualization of the sample and measurement set-up, to interpretation of the data, and final reporting of the results.

› Power

LabSpec is a powerful tool for the complete experiment, from instrument set-up and data acquisition, through to sophisticated routines for spectrum and image processing and display.

› Quality and Compliance

LabSpec 6 is validated software that contains all the tools for users to meet regulatory compliance including GxP and the FDA's 21 CFR part 11.

Instrument Control

LabSpec 6 is compatible with the full range of HORIBA Scientific's Raman spectrometers, including, analytical research LabRAM Soleil™, XploRA PLUS and the versatile research LabRAM HR Evolution microscopes. Their unique performance capabilities are made easily accessible via LabSpec's intuitive user interface.
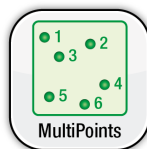
- Full range, seamlessly glued spectra acquired from CCD, EMCCD, InGaAs and single channel (PMT, lock-in amplifier) detectors
- Automated laser wavelength switching with just a single mouse click [1,2,3]
- Auto-alignment: automatically check and readjust the alignment within a few seconds to compensate for changing environmental conditions [1]
- Optical microscope imaging with single field of view, and large area montaging
- *SmartID™*: remove the risk of using the wrong objective or inappropriate acquisition parameters [1]
- Confocal DuoScan™ [3] / QScan™ [1] technology for adjustable laser spot size and high resolution sample mapping from deep UV to near infra-red
- Hyperspectral surface and 3D volume mapping using flexible point-by-point and ultra-fast SWIFT™ modes
- Automated multi-spectra experiment acquisition including kinetic, polarization and heating/cooling studies
- AFM-Server for combined AFM-Raman and TERS (Tip Enhanced Raman Spectroscopy) experiments
- *EasyNav™* Topographic and reflection imaging of the surface of tough samples

Workflows

LabSpec 6 software offers an intuitive interface which enables a logical workflow through an experiment, from visualization of the sample and measurement setup, to interpretation of the data, and final reporting of the results.

EasyImage [4] enables quick and easy acquisition of meaningful chemical images of your samples without needing a high level of Raman expertise

MultiPoints [4] provides automated Raman spectra acquisition. Create your own recipe by selecting multiple random positions on the sample

MultiWell [4] offers an easy interface for high throughput screening using traditional well plates, microtiter plates and other regularly arrayed sampling devices

ParticleFinder [4] offers a user-friendly tool for automated location, characterization and Raman analysis of particles. It is fully compatible with the latest market regulations

EasyNav™ Technology

With the groundbreaking EasyNav™ package, it is fast and easy to navigate in-focus, in real-time, to identify the region of interest and obtain sharp, clear Raman chemical images. HORIBA NavMap™ + NavSharp™ + ViewSharp™ apps can be used together or separately to deliver a powerful user experience for all Raman users.

SmartID automatically recognizes the microscope objective in use

NavMap helps to navigate around your large samples

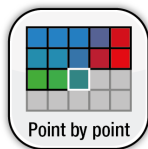**NavSharp** [4] provides real time focusing while navigating around samples

ViewSharp [4] constructs 3D sample topography and fully focused images

Mosaic enables fast imaging of large sample areas by video stitching

Spectral Acquisition

LabSpec 6 can acquire multi-dimensional datasets, full spectral range or custom ranges, including 1D profiles (such as line X, Y, depth Z, time, kinetic, temperature studies), 2D images (such as XY surface maps) and 3D cubes (i.e., confocal XYZ maps).

Point-by-point mapping provides ultimate sensitivity for imaging, ideal for low scattering materials

SWIFT mapping provides ultra-fast images with acquisition times below 500ms/point. Ideal for high scattering materials
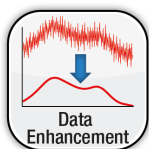
SmartSampling [4] allows super large and super high resolution image acquisition up to 100 times faster, even for low scattering materials
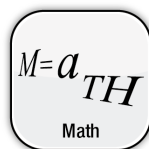
Data Processing

Processing is a crucial step in spectroscopy. The preprocessing of raw spectral data helps to eliminate noise (and undesired signals,) along with the enhancement of discriminating spectral features. LabSpec 6 software includes a large palette of processing tools that can be applied in real time during acquisition or post-acquisition for enhanced qualitative and quantitative analysis!

FLAT enables Real-time on-the-fly fluorescence backgrounds removal from spectra

Data enhancement provides custom baseline, smoothing, normalization, thresholding and more

Math allows mathematical operations to be applied for spectral and image data manipulation
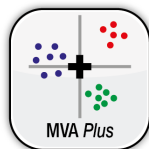
$$M = a_{TH}$$

Analysis

Enhance the wealth of information by performing a complete Analysis of your spectral data!

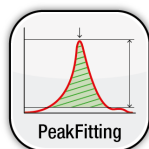LabSpec 6 guides you to Convert map data into chemical images!

χ**STaiN** [4] is an innovative and intelligent application for fully automated processing and analysis of 2D Raman images

MVA*Plus* [4] combines unsupervised multivariate algorithms (PCA, MCR, HCA and K-means, CLS) for a quantitative and qualitative image generation

KnowItAll [4] offers an integrated environment for complete and automated spectral identification, mixture analysis and data mining

PeakFitting [4] analysis tool provides quantitative investigations of materials strain, interactions with the environment and crystallinity

Multimodalities

LabSpec 6 software is a flexible platform offering compatibility with multiple modalities.
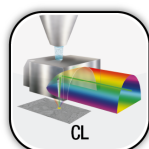
AFM combines Raman and AFM systems, for push-button TERS and colocalized experiments

Epifluo provides compatibility with high performance, cooled fluorescence imaging cameras

PhotoCurrent [4] allows the acquisition and display of photocurrent or photovoltage images

CL efficiently drives your SEM to achieve optimal colocalized cathodoluminescence analysis

App Packages

Save time and money by using a dedicated LabSpec Software application! An application package will combine all the processing and analysis tools that you need for a given application, thus automatically, in one click, you will get the answer to your question!

SI Stress [4] is a dedicated application for analysis of Silicon and photovoltaic cell samples
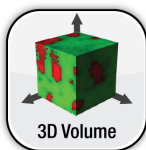
DLC [4] is a dedicated application for analysis of Diamond Like Carbon samples

Image Display

LabSpec 6 contains a wide variety of tools for working with hyperspectral Raman images and optical images. These include many advanced image processing tools and display functions for a perfect report!

DataOverlay combines all your multimodal sample images for hybrid sample analysis and viewing

3D Volume integrated topographic surface and 3D confocal volume display with rotation and lighting controls

Image Enhancement offers a large palette of image processing tools for the enhancement of Raman and optical images

Reporting

Be ready to easily create optimized and customized measurement and analysis reports!

CustomReport customizes multi-data and multipage templates for fast reporting of results

Animation provides GIF animations of Raman and optical images for your presentation

Automation & Customization

Automate your own daily routines with LabSpec 6!

BatchProcess enables efficient fast batch data processing of multiple data files

OneClick allows fast, automated and easy Raman spectra acquisition

Custom GUI customizes your LabSpec 6 display to show just the tools you need in a multi-level user interface

Methods records routines allowing multiple measurements, processing and analysis steps to be fully and easily automated

Script & ActiveX allows in-app or external programming for instrument control and data processing

Compliance, Validation & Security

LabSpec 6 is a validated software designed to maximize ease of use, functionality and stability. It provides and ensure security and data integrity to enable compliant use of HORIBA Raman microscopes within regulated laboratory environments.

LabSpec 6 is a **validated software**, offering tested and documented functionality and performance

OneCheck ensure that your instrument is always perfectly aligned and calibrated

UserAccounts provides user access control and interface adaptation within multi-user environments

ProtectionPlus [4] allows working in compliance with 21CFR Part 11 of the FDA's Code, with regard to electronic records and electronic signatures
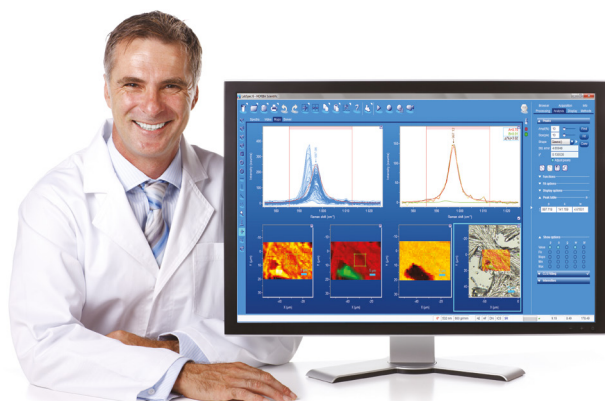
Upgrades

Commercial LabSpec6 licenses include a free update plan to the latest version, through international service support.

There are many benefits to keep your software up to date, including:

- Optimized user interface with clear, logical distribution of functions and controls; combined with the User accounts module it ensures even less-experienced users in large multi-user lab environments can utilize LabSpec's powerful functionality with ease.

- Access to the latest Apps such as MVA*Plus*™ for multivariate analysis, ParticleFinder™ for particle analysis, χSTaiN™ for instant Raman analysis, EasyNav™ for optimal sample navigation and much more.

- New and improved capabilities across the wide range of data acquisition, processing and analysis functions available in the LabSpec platforms.

- Create stunning images with a new selection of palettes and image display tools.

- Faster data processing and display, utilizing LabSpec's multi-processing and multi-threaded core

Please contact your HORIBA Scientific service representative to enquire about upgrade requirements and costs for your system.

System Requirements	Recommended
CPU	Intel® Core™ i7
RAM	16 Gb or greater
Storage	SSD 100 Gb of free space
Monitor	1920 x 1080 or greater
Operating System	Windows® 10

Training and Support

Our experienced Raman scientists based in well-equipped laboratories across the world are available to provide customized training both on-site and at HORIBA facilities.

Such training ensures confident and knowledgeable users who will be able to harness the full power of LabSpec 6 to obtain results with minimum effort.

- New user training
- Refresher courses
- Introduction to Raman
- "How-to" instruction
- Data interpretation
- Advanced techniques

Please contact your HORIBA Scientific representative for further information about available training.

Find out more at www.horiba.com/labspec6

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