

# KestrelSpec™ ST-135

Real-Time Imaging Spectroscopy Software



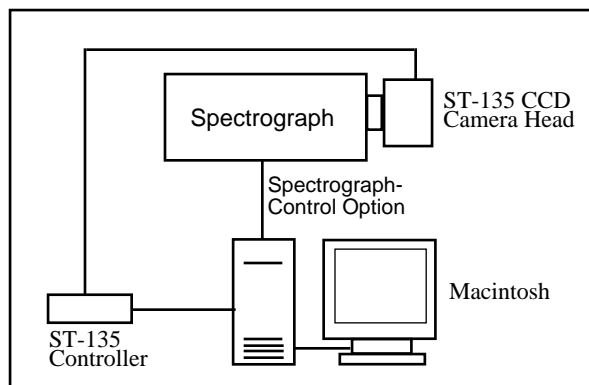
**KestrelSpec™ ST-135** software is designed for data acquisition and analysis in CCD imaging spectroscopy applications with the **ST-135 CCD Camera** (GPIB interface) from Princeton Instruments, Inc., and your Macintosh® computer.

## □ Data Acquisition

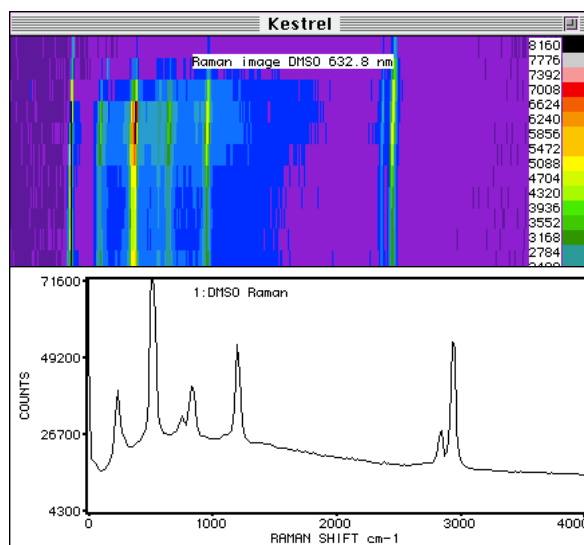
- Real-time-, dark-background- and flat-field- image buffers.
- Up to 30000 curve memories in RAM for spectral plotting and analysis.
- Select arbitrary areas from the CCD for spectral curves.
- Select CCD pixel-grouping (binning) modes.
- Synchronous camera-readout mode for maximum possible speed during multiple-frame acquisitions.
- Scan rate up to 100 frames/s, depending on CCD binning mode, number of image stripes and Macintosh CPU speed.
- Up to 18 bits per pixel image digitizer precision.
- Programmable exposure sequence with adjustable delay intervals. Sum multiple image exposures into curve memories.
- Automatic background subtraction, flat-field correction of images and curves.
- \* Auto-flip image horizontal (for reverse spectral dispersion).
- Conversion of data to log or absorbance scales.
- Auto-save images, curves to disk or RAM disk.
- Auto-scan  $\lambda$ , auto-calibrate spectra in nm, Raman cm-1 shift with fully integrated spectrograph control (optional extra).
- *KestrelScript™* Apple-Event scripting for sophisticated process control. Real-time controllable from National Instruments' LabView® using *DoScript VI*.

## □ Data Display

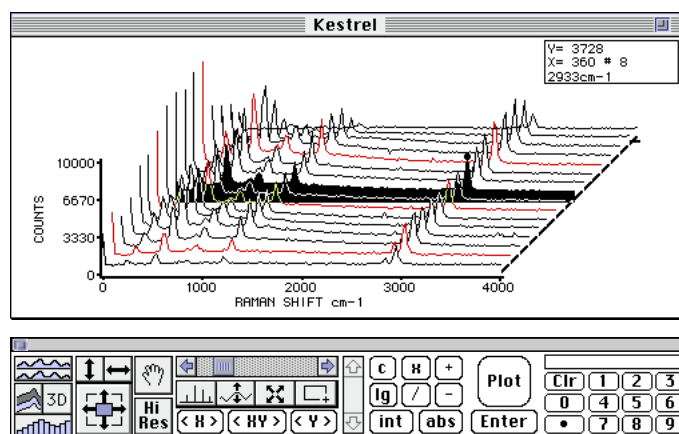
- Image display : 256 grays, 23-level pseudocolor.
- Quantitative color-coded legend for image display.
- 2-D and 3-D overlays, vertically stacked curve plots.
- Channel profile Y(t) plot (Z axis slice).
- Line, bar and scatter plot styles with color fill.
- Drag plot handles to control 3D perspective, size.
- Graphic spectrum directory with "mini-curve" plots.
- Spectral calibration using spline fits, or use "one-point" *KestrelCal™* for grating spectrographs.
- Click on baseline to create *n*th-order polynomial curve.
- "Laser-beam profiler" display.
- "Renormalize X Axis" process linearizes spectra to constant wavelength or Raman cm-1 point resolution.
- Real-time peak finder determines centroid, width.



Add a spectrograph and a Macintosh to complete your Kestrel ST-135 CCD spectroscopy system. (Spectrograph-control option uses RS-232 or GPIB connection.)



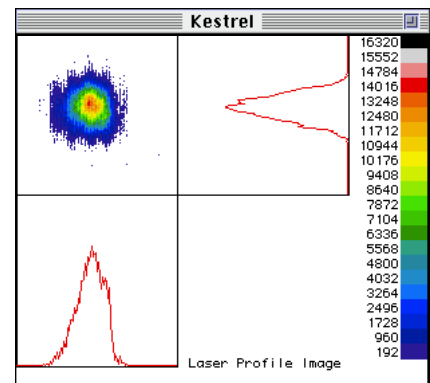
DMSO Raman spectrum image and plot obtained with Kestrel. (Excitation: 4.0 mW 632.8 nm laser. E.T. 120 s.)



KestrelSpec ST-135 has versatile graphing and data-analysis options. Control Palette (bottom) yields quick access to numeric keypad and other tools.

## ❑ Other KestrelSpec ST-135 Features

- Use the mouse to zoom and pan the curve-plot displays in "live action" (even in 3D). Zoom display while scanning the CCD.
- Run curve-movies, live scans as animated 3D waterfall graphs.
- Export curve data as ASCII text or Igor™ text format. Import curves in standard ASCII spreadsheet format. Export images in 16-bit, binary integer or 8-bit PICT® formats. Import images from PICT, or binary integer-data files. "Swap-byte" setting for importing images created by IBM-type (Intel CPU) PCs.
- Print plots and images in grayscale or color on any Mac printer. Copy plots or images to the clipboard for pasting into other documents.

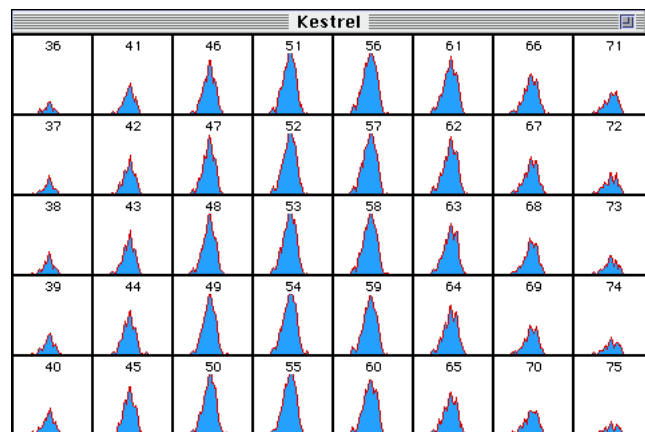


Above: "Laser-beam profiler" display.

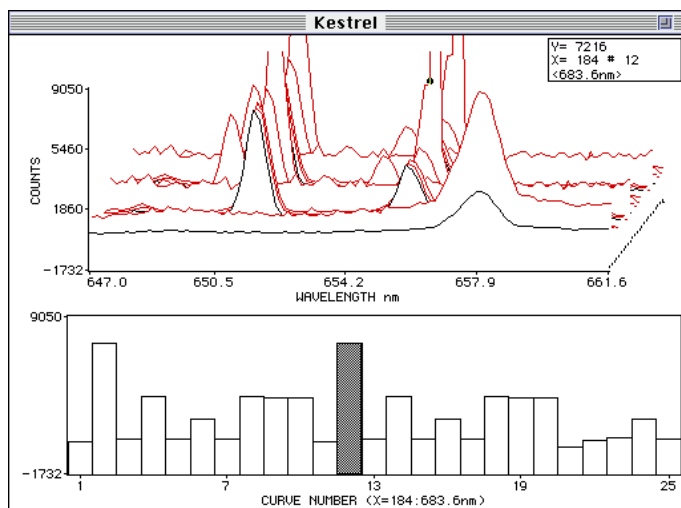
## ❑ Compatibility

- Recommended CPUs for real-time camera control include Mac II series, Quadra®, PowerBook® and Power Macintosh. Color-capable Macintosh required for image display.
- ST-135 camera connects via National Instrument GPIB interface.
- System 6.0.5 or later and minimum 4 MB RAM required. System 7.0 or later and 8 MB RAM recommended.
- Spectrograph-control option available for popular spectrographs. (Contact Rhea Corp. for an up-to-date list of supported spectrograph models.)
- Works with all models of the ST-135 CCD camera system from Princeton Instruments, Inc. All CCD chips and digitizer resolutions supported.

Below: Curve Catalog displays many "curve icons" in one window to give quick overview of spectral curve memories. You can cut and paste icons or drag them to the curve trash can. Double-click on an icon to plot it.



Below: Channel-profile graph (bars) shows a slice at constant wavelength along Z-axis (time) of 3D spectral curve plot.



For a demo disk, or more information on KestrelSpec ST-135 software contact:

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