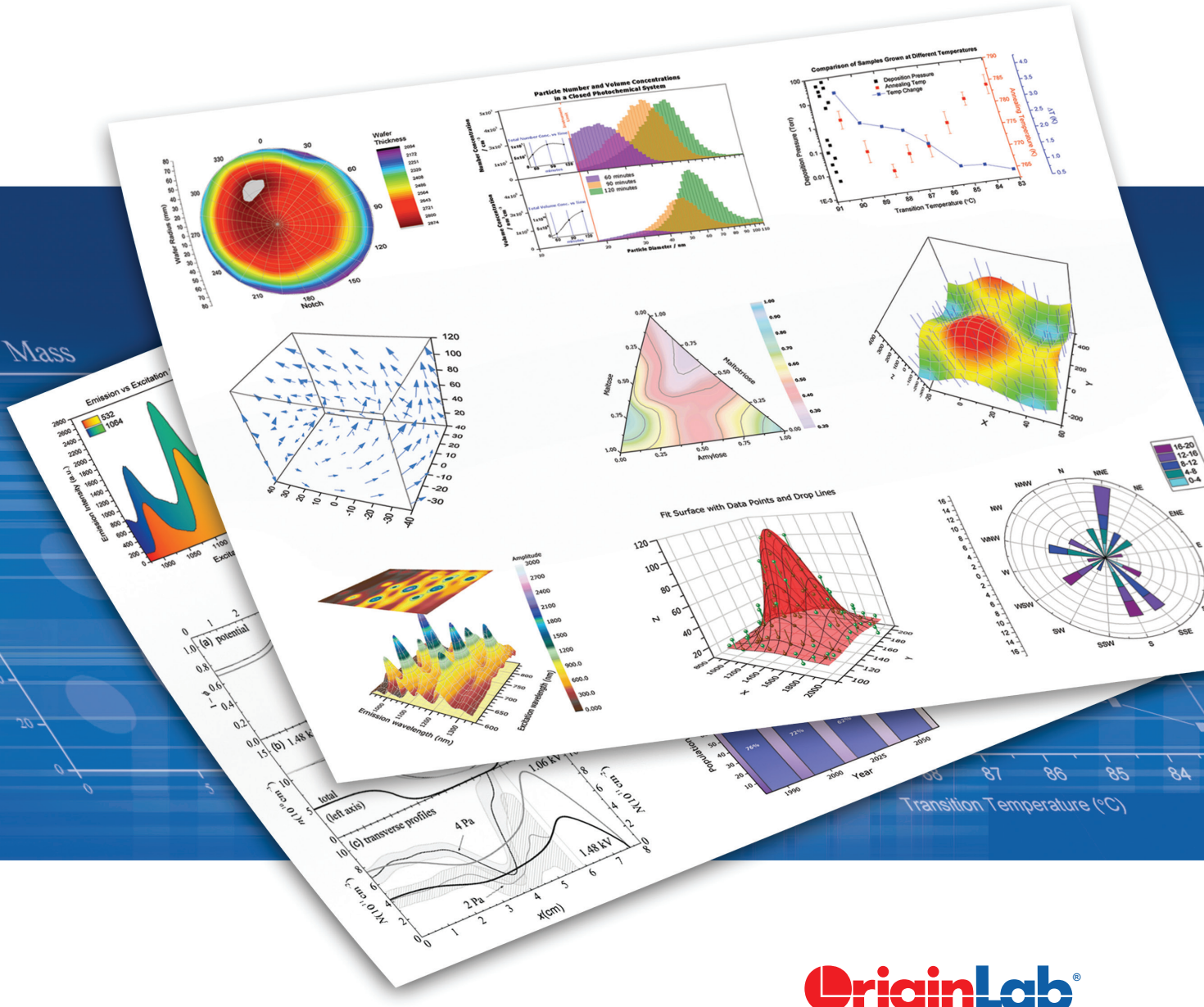
ORIGIN®

Data Analysis and Graphing Software



OriginLab®

www.originlab.com

Contents

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Introduction to Origin & OriginPro

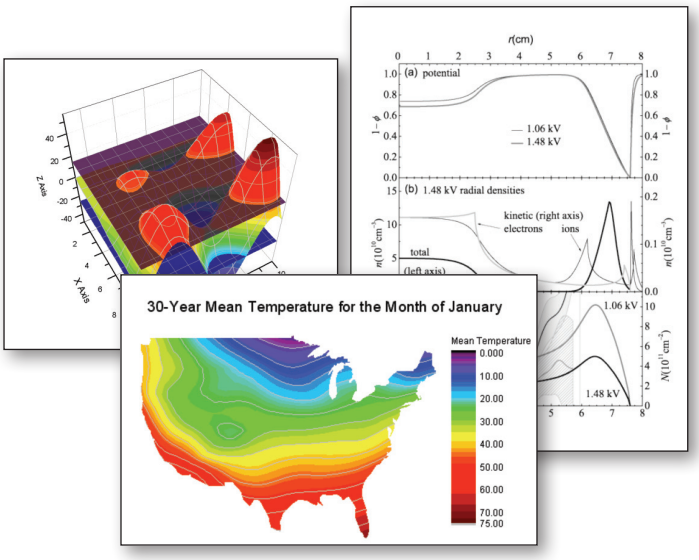
Origin is an easy-to-use software application that provides powerful data analysis and publication-quality graphing capabilities tailored to the needs of scientists and engineers.

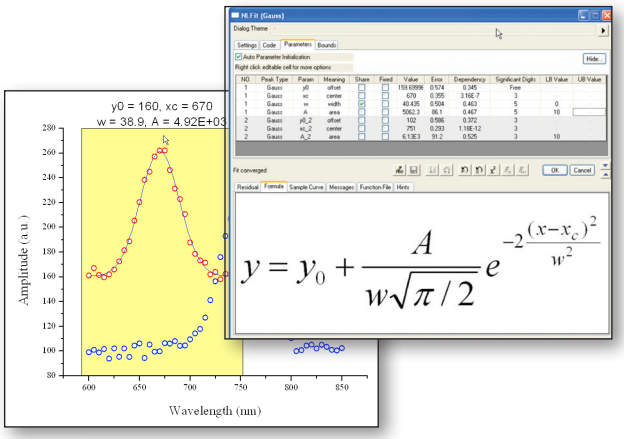
OriginPro offers all of the features of Origin plus extended analysis tools for Peak Fitting, Surface Fitting, Statistics, Signal Processing, and Image Handling. OriginPro is the software of choice for those who want a single data analysis and graphing solution.

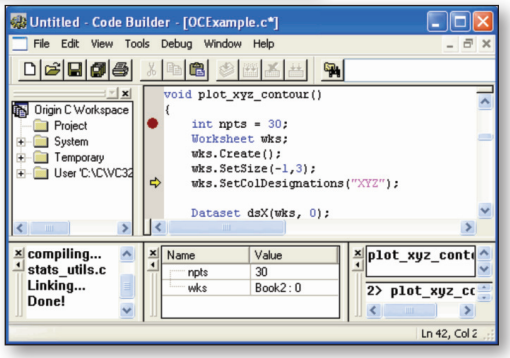
2D, 3D & Contour Graphing

With over 70 graph templates, Origin makes it easy to create and customize publication-quality graphs.

- Create a graph in two easy steps: simply select the data and then click the desired graph icon.
- Origin provides the flexibility to plot multiple datasets in one graph, even when the datasets reside in different workbooks or matrices.
- Origin offers customization options for all elements of your graph.
- Format settings can be saved as a theme and applied to other graphs.
- A customized graph can be saved as a template for creating similar graphs in the future.







Curve Fitting

Origin provides two tools to perform linear and non-linear curve fitting: the Quick Fit Gadget, with a region of interest (ROI) that can be moved and resized, and the full-fledged curve fitter, NLFit. With either tool, fitting proceeds in four easy steps:

(1) Select the data
(2) Open the tool
(3) Choose the function
(4) Fit the data and produce a report

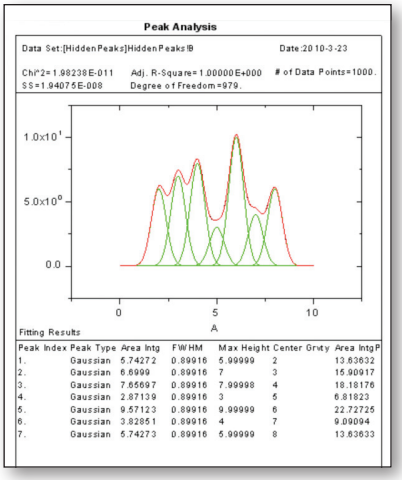
Origin supports over 150 built-in fitting functions and provides a wizard to help you create your own. Place bounds and constraints on your fitting parameters. Fit multiple datasets individually or globally with shared parameters. Fit replicate data with the Concatenate Fit option.

Programming

Origin includes two built-in programming languages: Origin C and a scripting language called LabTalk. Origin is also an Automation Server for users of VB, C++, C# and LabVIEW.

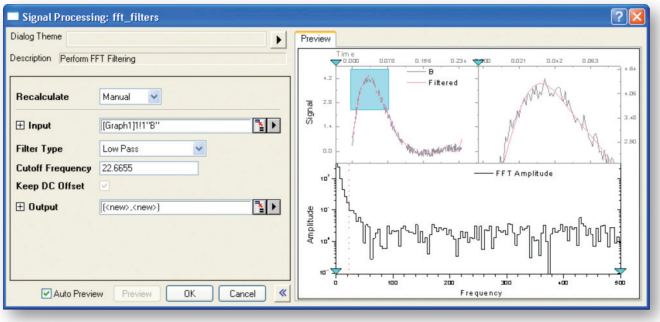
Peak Analysis

Origin provides two tools for analyzing peak data. The Quick Peaks Gadget can perform peak analysis of plotted data within a region of interest. The Peak Analyzer wizard guides you through baseline creation and subtraction, peak finding, and peak integration. OriginPro provides additional baseline and peak fitting capability.



Statistics

Origin provides tools for Descriptive Statistics, Correlation Coefficient*, Discrete Frequency*, Parametric Hypothesis Tests (including Student's t-tests and ANOVA), Repeated Measures ANOVA*, Nonparametric Tests* (including Two Sample Kolmogorov-Smirnov Test and Wilcoxon Signed Rank Test), Power and Sample Size*, Multivariate Analysis*, Survival Analysis*, and ROC Curves*.



Signal Processing

Origin provides a wide array of tools for signal processing, including FFT, convolution, deconvolution, smoothing, decimation*, envelope detection* and wavelet transforms*.

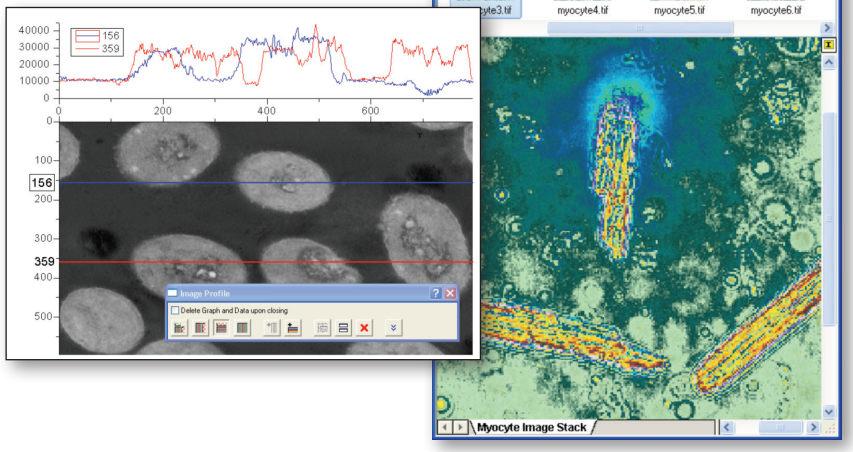
Most tools provide a preview window including options such as zooming into an image, and interactive controls such as moving a vertical line to set cutoff frequencies for filtering.

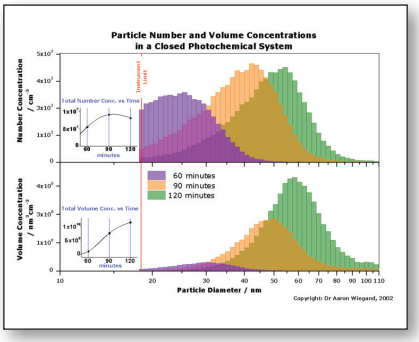
Image Handling

Import multiple images into a matrix window, and quickly view and rearrange images using the thumbnail panel.

Perform arithmetic transforms*, geometric transforms, and image conversion.

The image profile tool allows viewing and comparing multiple horizontal and vertical profiles.





Publication-Quality Results

Add your Origin graphs, worksheets, and reports to technical publications, posters, and lab reports. Create custom reports and slide shows inside of Origin. Batch export your graphs to Microsoft PowerPoint or save them in a wide variety of popular formats including EPS, PNG, JPEG, and PDF.

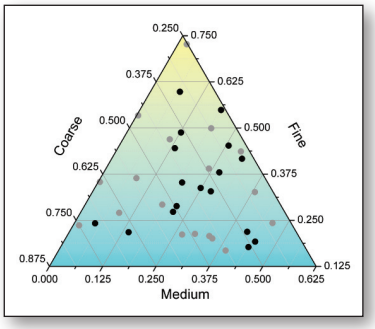
*available only in OriginPro.

2D & 3D Graphing

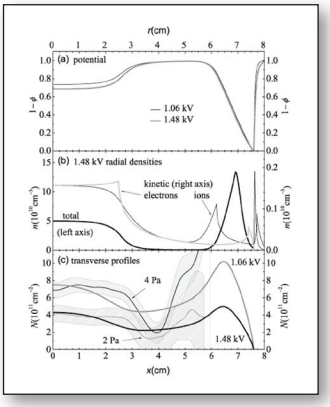
2D Graphs

Origin provides many 2D graph templates including line, symbol, column, bar, pie, stock, statistical, and area. Specialized plot types include ternary, polar, vector, windrose, and waterfall. Origin graphs can contain multiple XY axis pairs (layers) that can be arranged arbitrarily, including support for linking axes across layers. Multiple X and/or Y axes with offsets are supported. All graph elements can be easily and extensively customized, including color transparency and gradients.

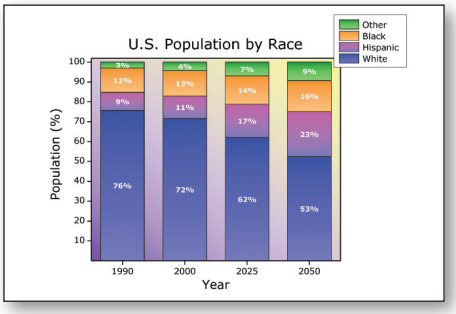
Graph customizations can be saved to a template or as a theme for repeated use.



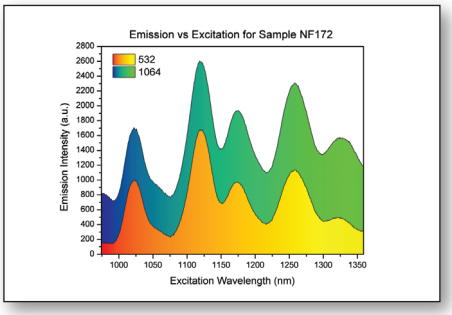
Ternary plot with gradient fill



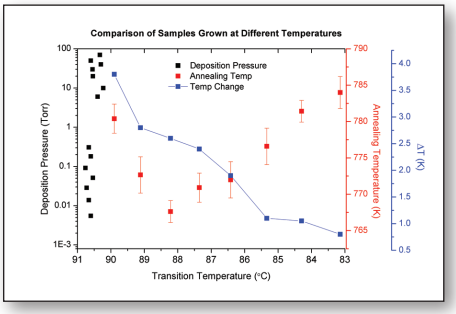
Line plot with linked x-axes



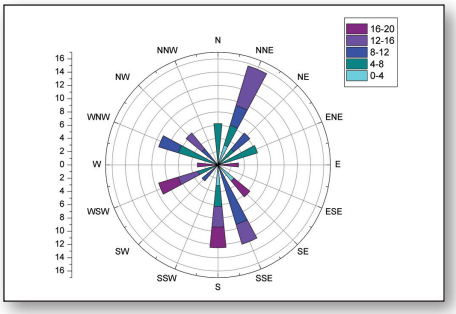
Stacked column plot with gradient color fill



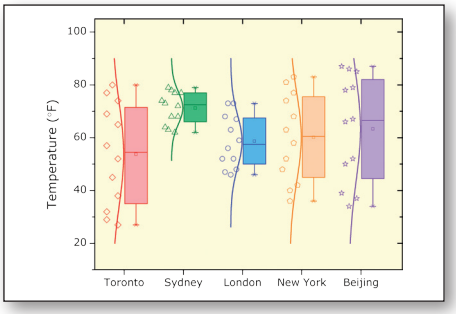
Area plot with gradient color fill



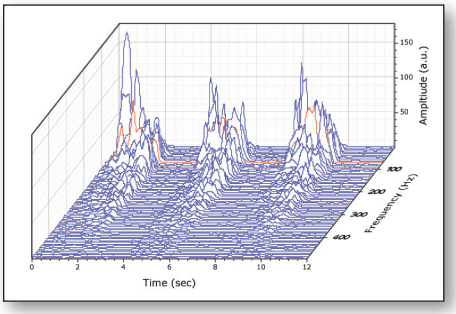
Line and scatter plot with multiple y-axes



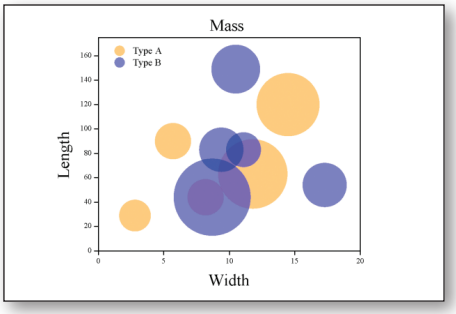
Windrose plot with applied color palette



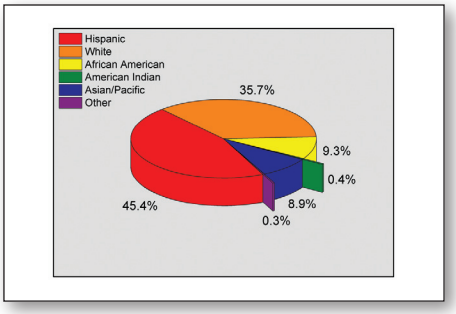
Box chart with data points



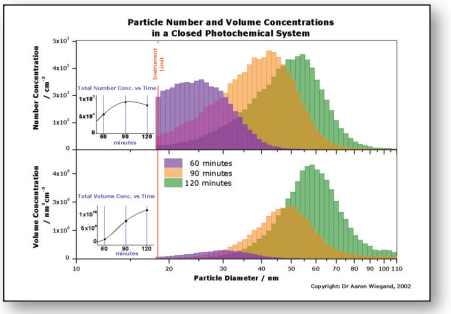
Waterfall plot with highlighted curve



Scatter plot with transparency



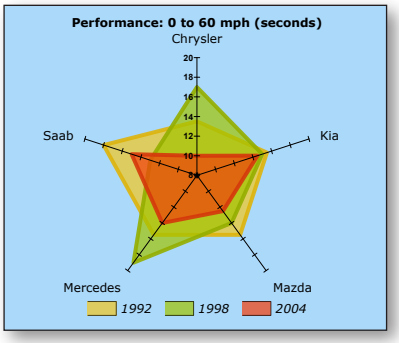
Pie chart with extended wedges



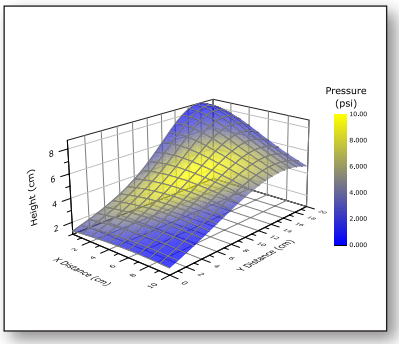
Bar chart with transparency and embedded layers

3D & Contour Graphs

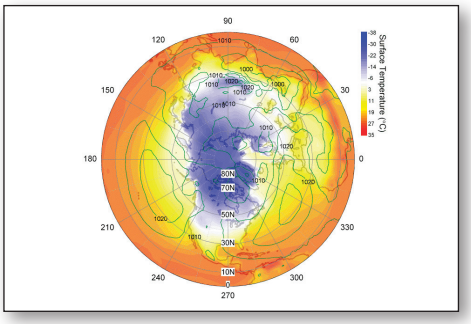
Origin provides rectangular, ternary, and polar contour plots with support for user-specified contour boundaries. Three-dimensional plot types include bar, vector, trajectory, scatter with error bars, color map or color fill surface, and wireframe. Color maps in 3D and contour plots can be extensively customized, including application of color palettes.



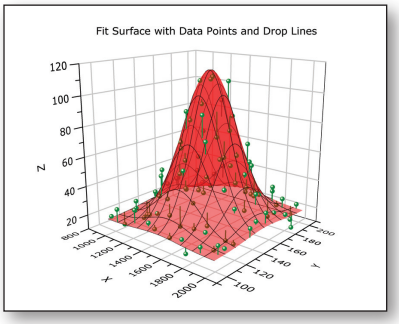
Radar Chart



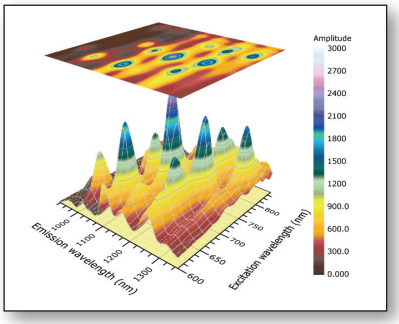
Surface with color map from another matrix



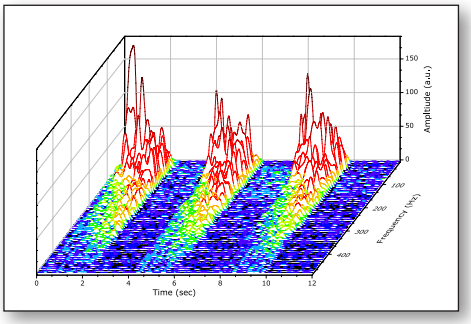
Polar contour plot with overlay



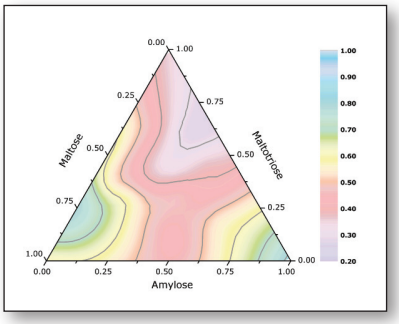
Surface plot with scatter data and droplines



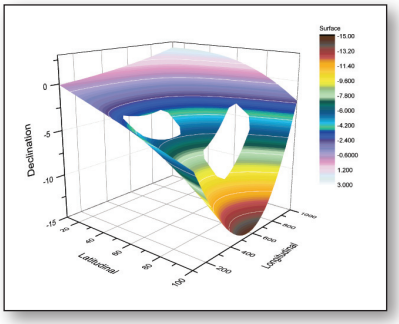
Colormap surface plot with contour projection



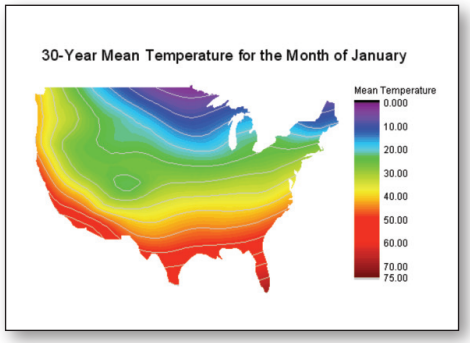
Waterfall plot with y-color mapping



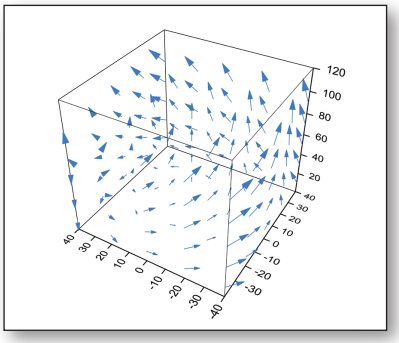
Ternary contour plot



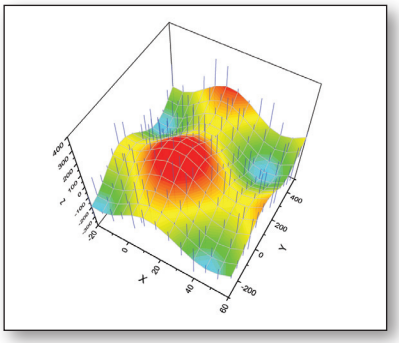
Color surface with missing values



Contour plot with custom boundary



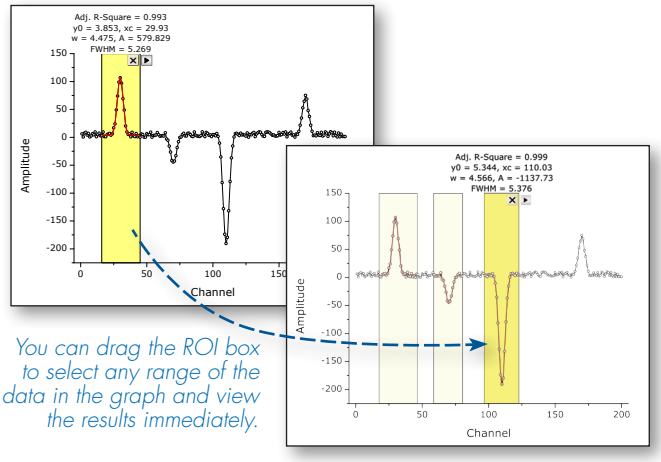
3D vector plot



Color surface with error bars

Gadgets

When your data is plotted in a graph, Origin gadgets provide a quick and easy way to perform exploratory analysis on the graph. Perform the analysis on a specific range of the data plot by appropriately positioning a region-of-interest (ROI) object to select the desired range. The ROI object provides a fly-out menu with various options that are tailored to each specific gadget. All gadgets have a fly-out menu with a Preferences option allowing you to customize desired settings.



You can drag the ROI box to select any range of the data in the graph and view the results immediately.

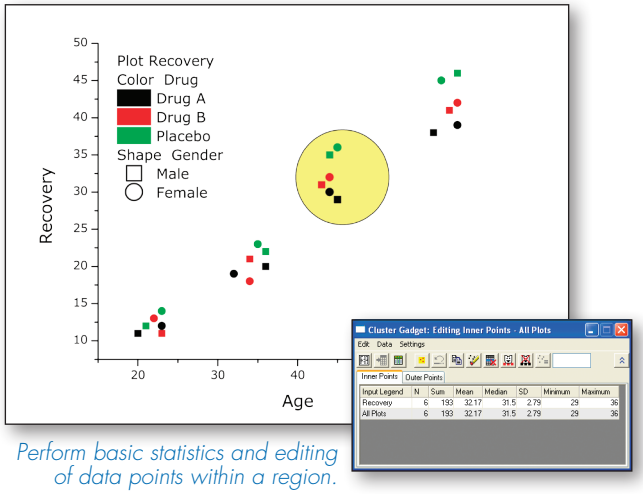
With Origin gadgets you can:

- Select the desired data range for analysis directly from the graph
- Get immediate visual output of results
- View updated results on screen when the ROI is moved or re-sized
- Customize the output, including appending results to a worksheet for each ROI position
- Save settings as a Theme for repeat use

A selection of the gadgets available in Origin and OriginPro are described below. Please see other sections for additional gadgets.

Cluster PRO

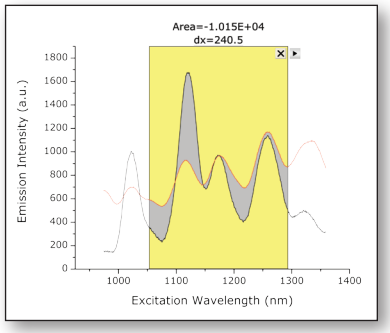
The Cluster Gadget makes it convenient to perform simple statistics on a region of interest (ROI) in a graph. The gadget also allows you to easily edit the data points, such as to clear or mask points. The statistics results are dynamically updated as the ROI object is moved or resized.



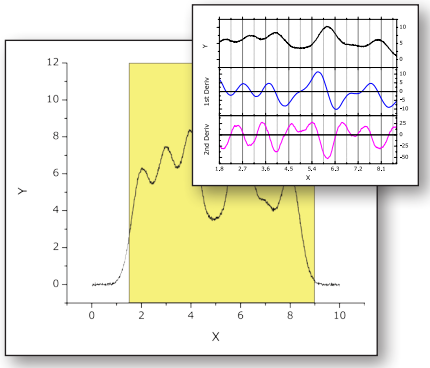
Perform basic statistics and editing of data points within a region.

Integrate, Differentiate, and Interpolate

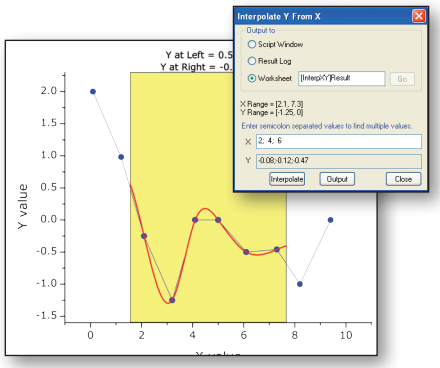
Origin provides three gadgets for the common tasks of integration, differentiation, and interpolation of your data.



Integrate Gadget
Simplifies peak area calculations.



Differentiate Gadget
Lets you specify the desired derivative order and view the result in a separate graph.



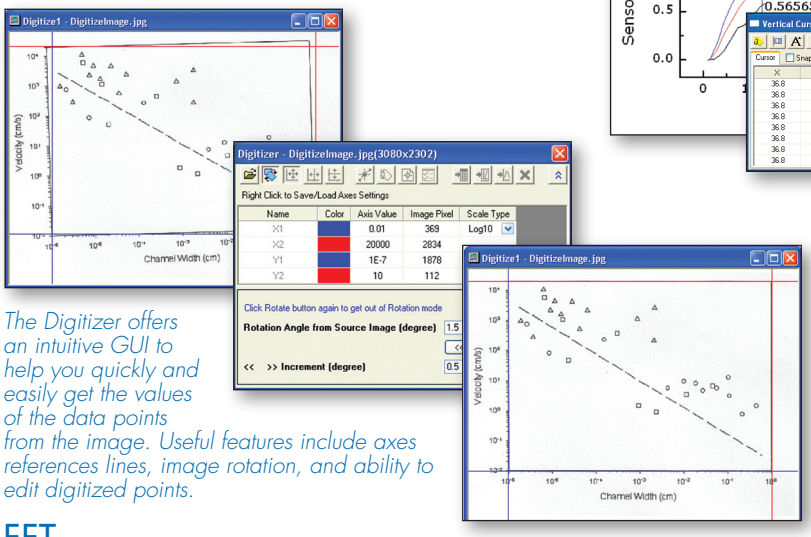
Interpolate Gadget
Allows easy up-or-down sampling of existing data and finding desired X/Y values.

Digitizer

The Digitizer Gadget can easily digitize images of graphs such as photocopied, faxed, or scanned images. Easily define coordinate values for the axes, and digitize multiple data curves to create an Origin worksheet and graph.

With this gadget you can:

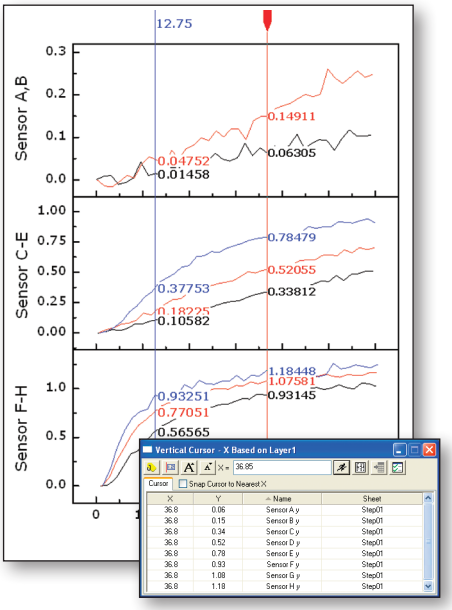
- Digitize an image using an intuitive GUI
- Rotate image
- Define X, Y axes coordinates using movable line
- Use vertical and horizontal reference lines to check accuracy of axes coordinates
- Digitize multiple traces creating multiple data sets
- Add labels for data points



The Digitizer offers an intuitive GUI to help you quickly and easily get the values of the data points from the image. Useful features include axes references lines, image rotation, and ability to edit digitized points.

Vertical Cursor

The Vertical Cursor Gadget provides an intuitive way to read X and Y coordinate values for data points on stacked panel plots.



With this gadget you can:

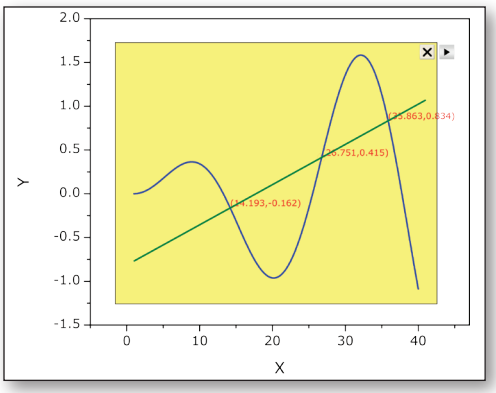
- Drag by the handle, or enter an X value in the dialog, to place on the reference layer.
- Tag crossing points on a graph and output the XY values to a worksheet.
- Add multiple tags on a graph, labeling each with a unique name.
- Select the plots for which to show labels.
- Snap to the nearest data point in the X direction.

Intersection

The Intersection Gadget gives you an intuitive and interactive way to calculate the intersection points of the input curves in the ROI.

With the intersection gadget you can:

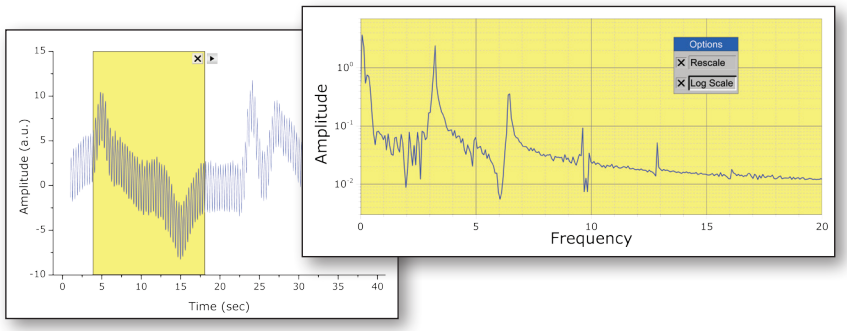
- Find intersection points for more than two curves
- Tag intersection points with symbols and XY values
- Output the XY values of intersection points to a worksheet
- Change input to show intersection points on different curves
- Interpolate the input curves with a specified number of sampling



FFT

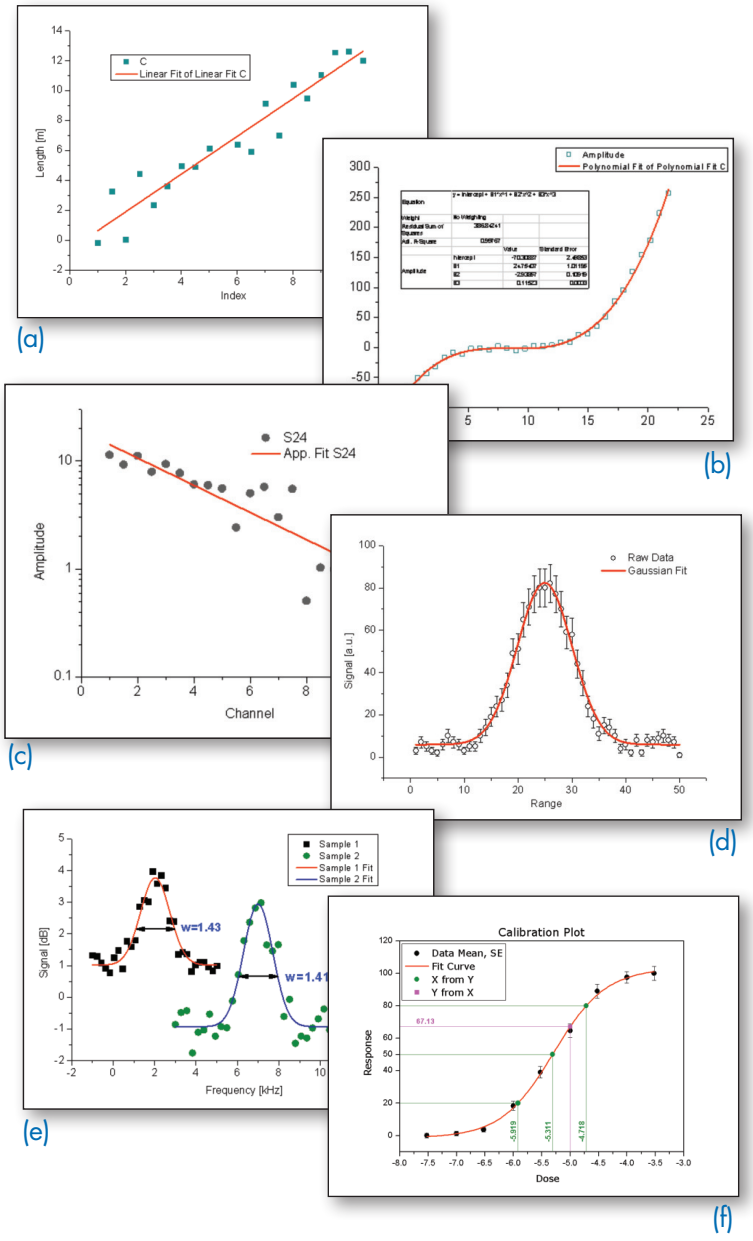
The FFT Gadget provides a simple and quick way to examine the frequency spectrum of data plotted in a graph. The frequency spectrum is displayed in a separate preview graph window, and is dynamically updated as the ROI object is moved or resized.

The Amplitude axis scale of the FFT result graph can be switched between linear and log scales.



Curve Fitting

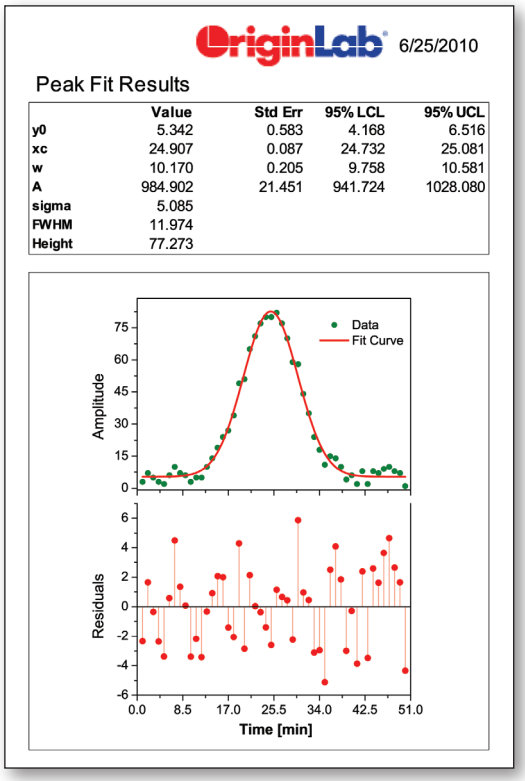
Origin supports linear, polynomial and nonlinear fitting from both worksheets and graphs. Fit only a portion of your data, an entire dataset, or fit multiple datasets simultaneously.



Fit types: (a) Linear, (b) Polynomial, (c) Apparent, (d) Weighted, (e) Global, (f) Concatenate/Replicate

Origin provides full control of the fitting process…

- Flexible data input
- A wizard for defining custom fitting functions
- A consolidated fitting report sheet
- Multi-dataset fitting modes: fit multiple datasets independently, in concatenate fit mode, or use a global fit with shared parameters
- Fit statistics and parameters output to the fit report
- Residuals analysis
- Interpolation on the fit curve to compute new X/Y values at desired locations
- Recalculation of your fitting results automatically when data or parameters are changed
- Analysis Templates to save your settings and desired results for repeat use


OriginLab 6/25/2010

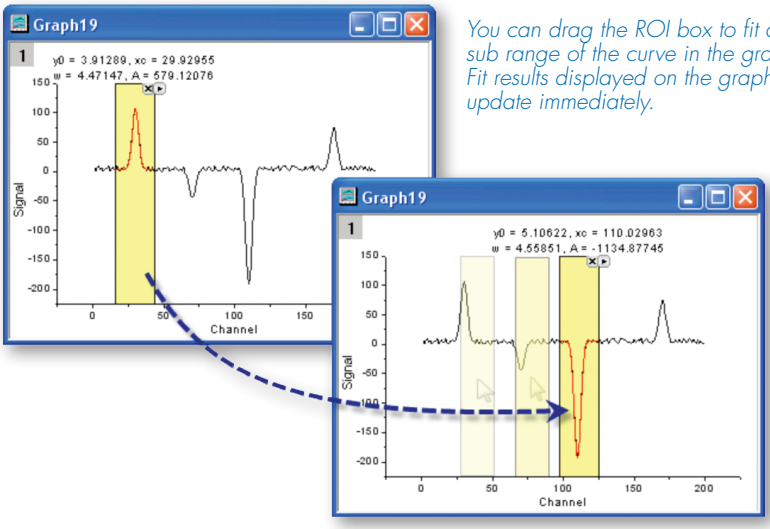
Peak Fit Results

	Value	Std Err	95% LCL	95% UCL
y0	5.342	0.583	4.168	6.516
xc	24.907	0.087	24.732	25.081
w	10.170	0.205	9.758	10.581
A	984.902	21.451	941.724	1028.080
sigma	5.085			
FWHM	11.974			
Height	77.273			

Create a custom fitting report sheet that presents the desired fitting results and related graphs.

Quick Fit Gadget

Origin provides a simple tool to quickly fit data plotted in a graph. Move or resize a region of interest (ROI) object to update results. Interactively perform fit operations on multiple ranges of the same dataset, or on multiple datasets in the graph.



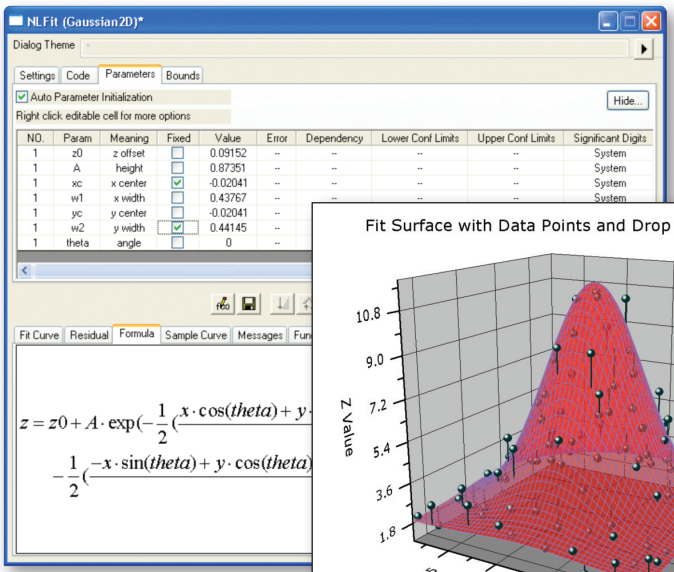
You can drag the ROI box to fit any sub range of the curve in the graph. Fit results displayed on the graph update immediately.

Fit parameters and other key values can be output directly to the graph or to a worksheet.

Qkfit

	A	B	C	D	E(Y)	F(yEr±)	G(Y)	H(yEr±)	I(Y)	J(yEr±)
Long Name	Function	Input	Range	Weighting	y0	y0-Error	xc	xc-Error	w	w-Error
Units										
Comments										
1	Gauss	Signal	[154:181]	No Weighting	4.56663	0.68765	170.00289	0.0641	4.64227	0.14407
2	Gauss	Signal	[141:168]	No Weighting	5.4106	0.58756	169.1392	1.31362	3.82151	1.20206
3	Gauss	Signal	[96:123]	No Weighting	5.40797	0.56778	110.02963	0.01825	4.56804	0.0409
4	Gauss	Signal	[61:88]	No Weighting	4.32127	0.60784	70.15248	0.07754	4.61447	0.17405
5	Gauss	Signal	[16:43]	No Weighting	3.91289	0.71431	29.92955	0.04407	4.47147	0.09838
6	Gauss	Signal	[157:184]	No Weighting	4.49203	0.65383	170.00288	0.06091	4.6491	0.13693
7										

Result



3D Surface Fitting PRO

Origin performs 3D surface fitting on XYZ worksheet data and matrix data using one of 19 built-in models or your own custom formula.

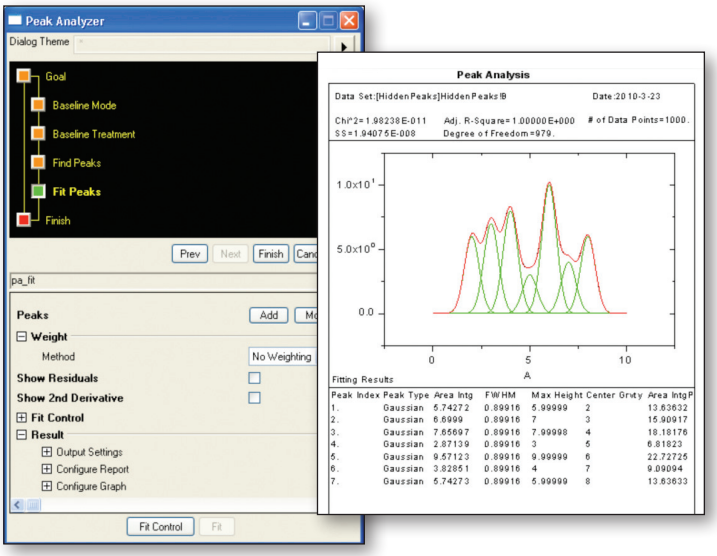
Data points and fit surface are shown together. The fit surface has been made transparent to show more of the data. Drop lines from the data points to the surface have been added.

Peak Analysis

Origin's Peak Analyzer is a powerful and versatile tool for peak and baseline detection and analysis.

- A wizard guides you through the fitting process
- Find and treat the baseline, find and select peaks, integrate peaks
- Generate a detailed report sheet with tables and relevant graphs
- Generate a worksheet with peak properties, including FWHM, centroid, area, peak index, and y-max

The additional features of peak fitting and baseline fitting described below are only available in OriginPro.

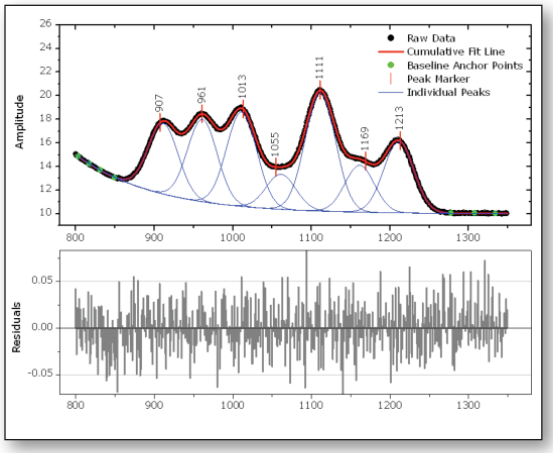


Multi-peak fitting with a detailed report

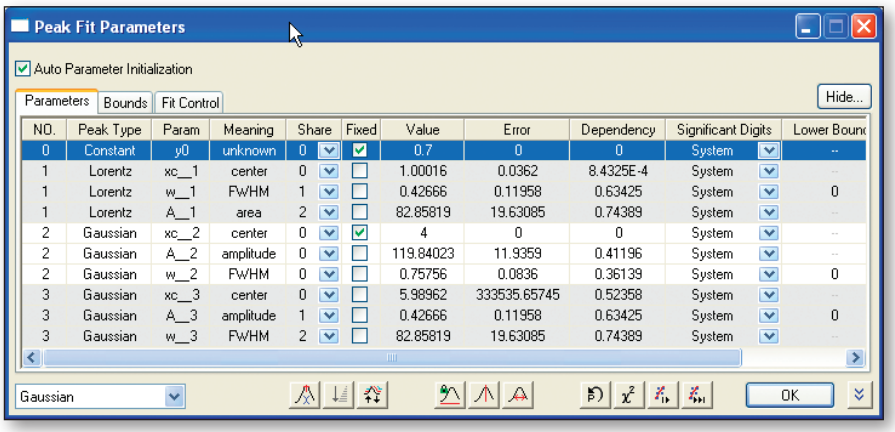
Peak Fit Control PRO

When using the Peak Analyzer to fit peaks, many options are available to customize your analysis.

- Add, delete or adjust the position of peaks directly on the graph
- Assign the same fitting function to all peaks, or use different fitting functions for each peak, or group of peaks
- Fix peak parameters to a constant value
- Share parameters across peaks
- Apply bounds and linear constraints to fitting parameters
- Plot residuals and second derivative of the fit curve
- Use over 20 built-in peak functions—including Gauss, Voight, and Lorentz—or create your own



Control the fitting process directly on the graph



With the Peak Fit Parameters dialog, you have full control of the fitting parameters.

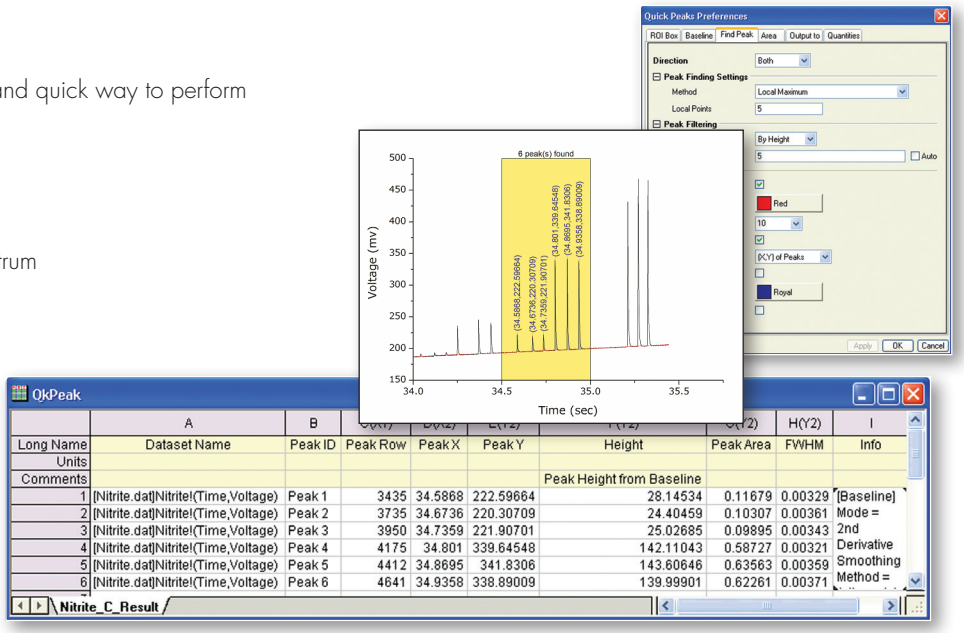
Share a common parameter between peaks, fix the value of any parameter, or apply bounds. Right-click on a parameter value to share it with other peaks in the fitting operation.

Quick Peaks Gadget

The Quick Peaks Gadget provides a simple and quick way to perform peak analysis of plotted data within a ROI.

With this gadget, you can

- Locate positive and negative peaks
- Define baseline and subtract from the spectrum
- Integrate peaks within base markers
- Perform peak fitting with frequently used functions
- Create a report sheet with parameters from each peak

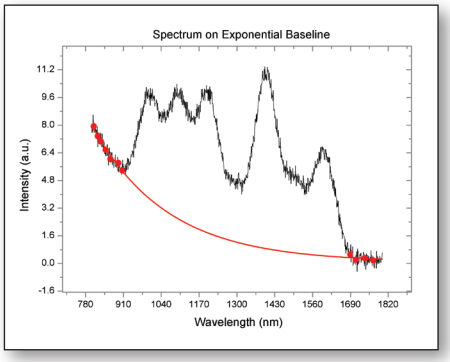


Create baseline, find Peaks, integrate peaks and output results.

Fitting a Baseline PRO

OriginPro not only fits peaks, but can fit a function to your baseline data as well. The following options allow flexibility in fitting your baseline:

- Select baseline anchor points, or have Origin automatically find them.
- Fit baseline anchor points using a pre-defined fitting function, or create your own.
- Fix the baseline anchor points, or allow them to vary with the peak fit.
- Subtract the baseline prior to fitting peaks.



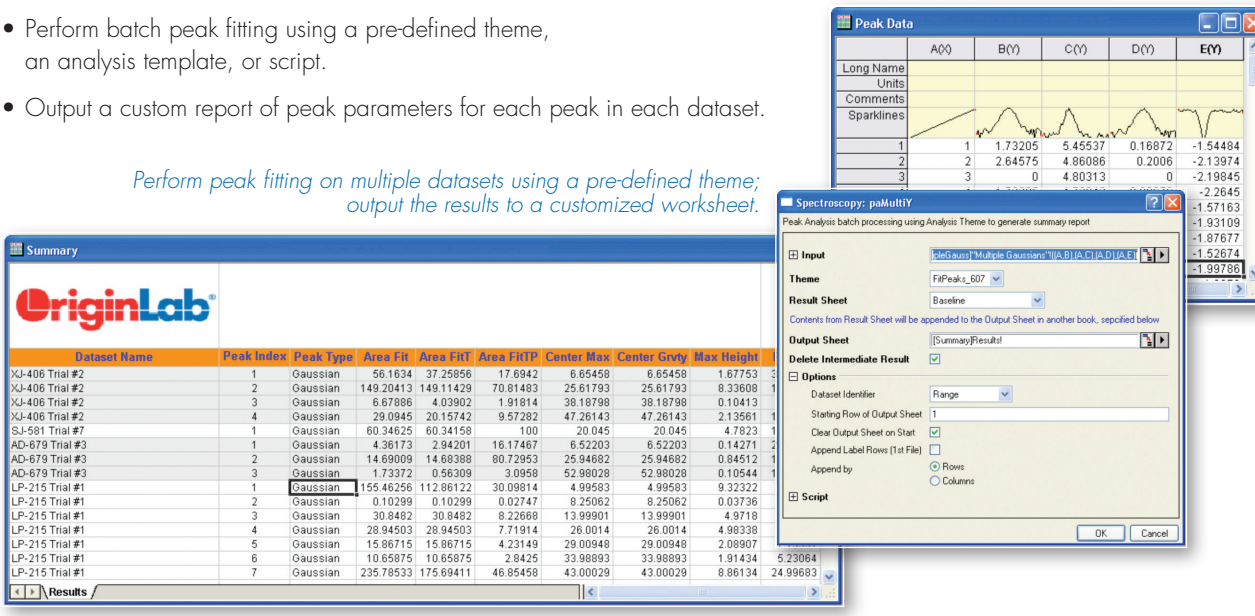
Fit a baseline to an exponential function using anchor points

Batch Peak Fitting PRO

With batch peak fitting, OriginPro can handle many datasets, each containing multiple peaks.

- Perform batch peak fitting using a pre-defined theme, an analysis template, or script.
- Output a custom report of peak parameters for each peak in each dataset.

Perform peak fitting on multiple datasets using a pre-defined theme; output the results to a customized worksheet.



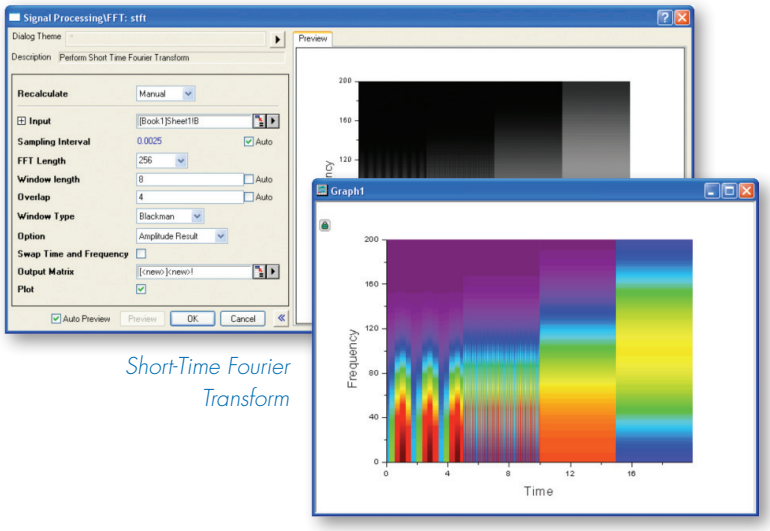
Signal Processing

Origin provides tools for smoothing and filtering, convolution, correlation, and Fast Fourier Transforms (FFT). OriginPro contains many additional routines for advanced signal processing, which are described in this page.

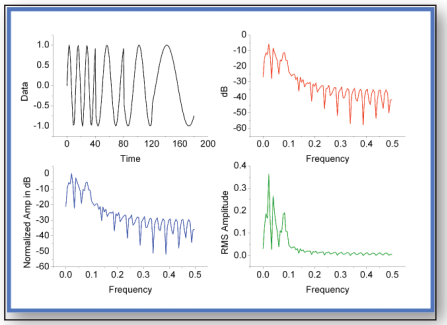
Fourier Transform PRO

Many additional options for FFT-based analysis are available in OriginPro:

- Advanced features for FFT:
  - Power Density Normalization
  - Spectrum Type, One-sided or Two-sided
  - Output dB of Amplitude
  - Output Normalized dB of Amplitude
  - Output RMS Amplitude
  - Output Square Amplitude
  - Output Square Magnitude
- 2D FFT & 2D Inverse FFT
- Short-Time Fourier Transform



Short-Time Fourier Transform

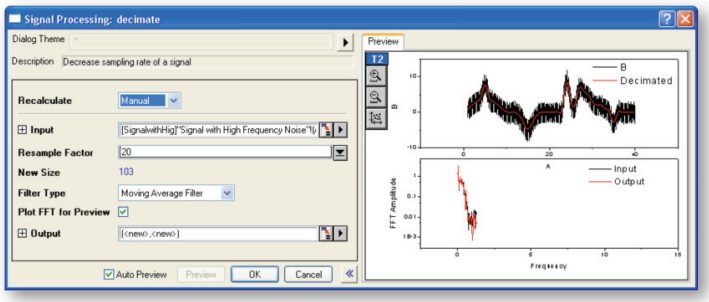


Results of FFT, including original signal and results in frequency domain

Decimation PRO

Decimation is used to reduce the number of elements in an input sequence. Every N samples are merged into one. Two filters are available:

- Moving Average
- Finite Impulse Response (FIR)



Decimation on Signal with High Frequency Noise

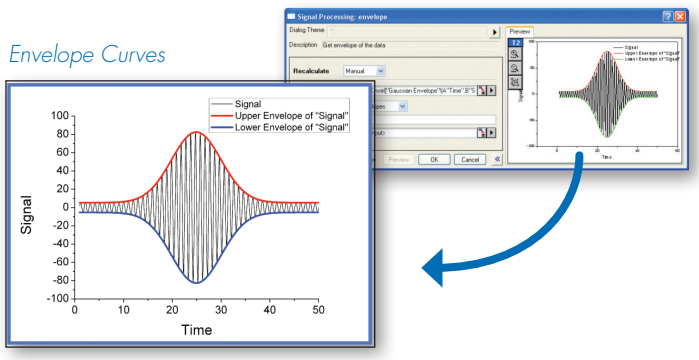
Coherence PRO

Coherence—the degree of linear dependency of two signals—is evaluated by testing whether the signals contain similar frequency components.

Envelope Curves PRO

An envelope curve traces the crests and troughs of a periodic signal.

- Choose upper, lower or both
- Smoothing option during envelope detection



Envelope Curves

2D Correlation PRO

Two methods of 2D correlation are supported:

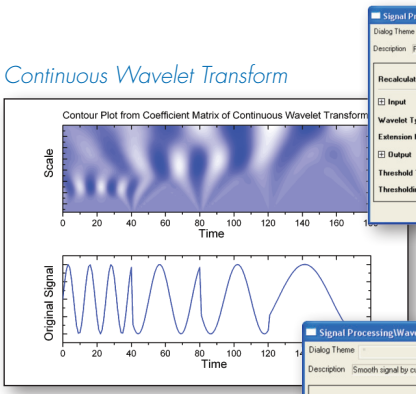
- FFT
- Shift Accumulation

- Linear Correlation
- Circular Correlation

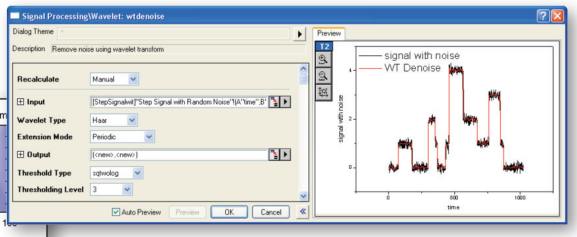
Wavelet Analysis PRO

Wavelet Transforms are used in many applications, including data compression, signal smoothing, noise removal, and image analysis. Wavelet analysis tools include:

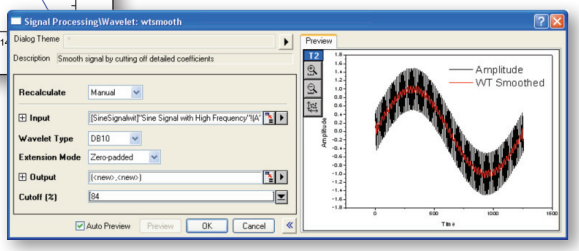
- Continuous Wavelet Transform
- Discrete Wavelet Transform
  - (Decomposition)
- Inverse Discrete Wavelet Transform
  - (Reconstruction)
- Multi-Scale Wavelet Decomposition
- Smoothing
- Noise Removal
- 2D Wavelet Decomposition
- 2D Wavelet Reconstruction



Continuous Wavelet Transform



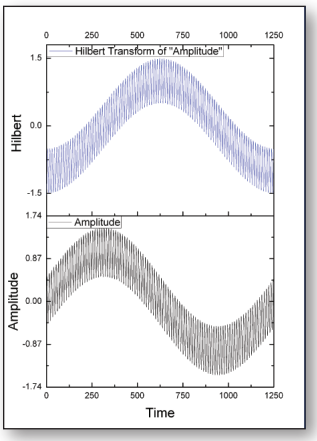
Remove Noise Using Wavelet Transform



Wavelet Smoothing

Hilbert Transform PRO

The Hilbert Transform of a signal results in a +90 degree shift of the signal's negative frequency components, and a -90 degree phase shift of its positive frequency components. The Hilbert Transform tool will calculate both the Hilbert Transform and the analytic representation of the input signal.



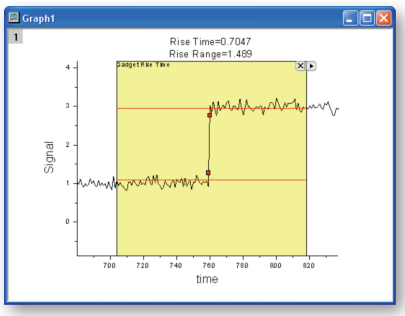
Hilbert Transform

Rise Time Gadget PRO

Three methods of finding the rise/fall time are supported:

- Linear search
- Histogram
- Largest triangle

- Select a specific region of the signal by moving and resizing a region of interest (ROI)
- Easily select desired data plot from the graph layer with multiple plots
- Display low and high levels inside the ROI control
- Display rise/fall time and rise/fall range on top of ROI



Rise Time Gadget

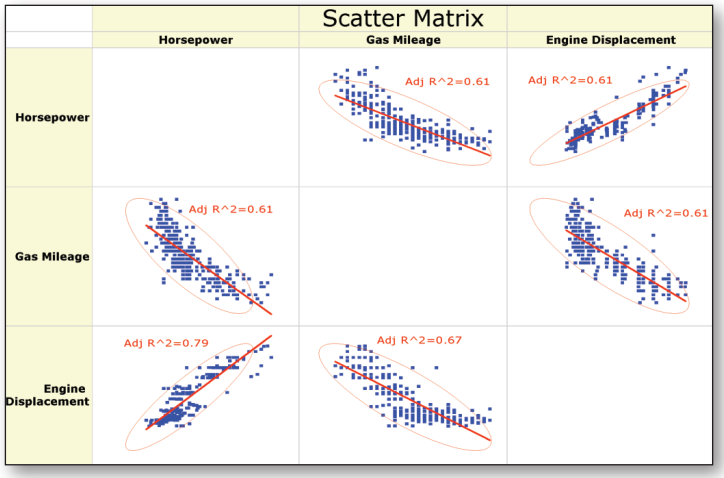
Statistics

Origin provides tools for descriptive statistics, 1D and 2D frequency counting, parametric tests, and one-way and two-way ANOVA. The features presented below are more advanced tools available only in OriginPro.

Correlation Coefficient PRO

Obtain a correlation coefficient, scatter plot and confidence ellipse using the following methods:

- Pearson R
- Spearman R
- Kendall Tau-b



Scatter matrix plot with confidence ellipse for correlation analysis

Discrete Frequency PRO

Count categorical data values in a sample and report the relative and cumulative frequencies.

Parametric Hypothesis Tests PRO

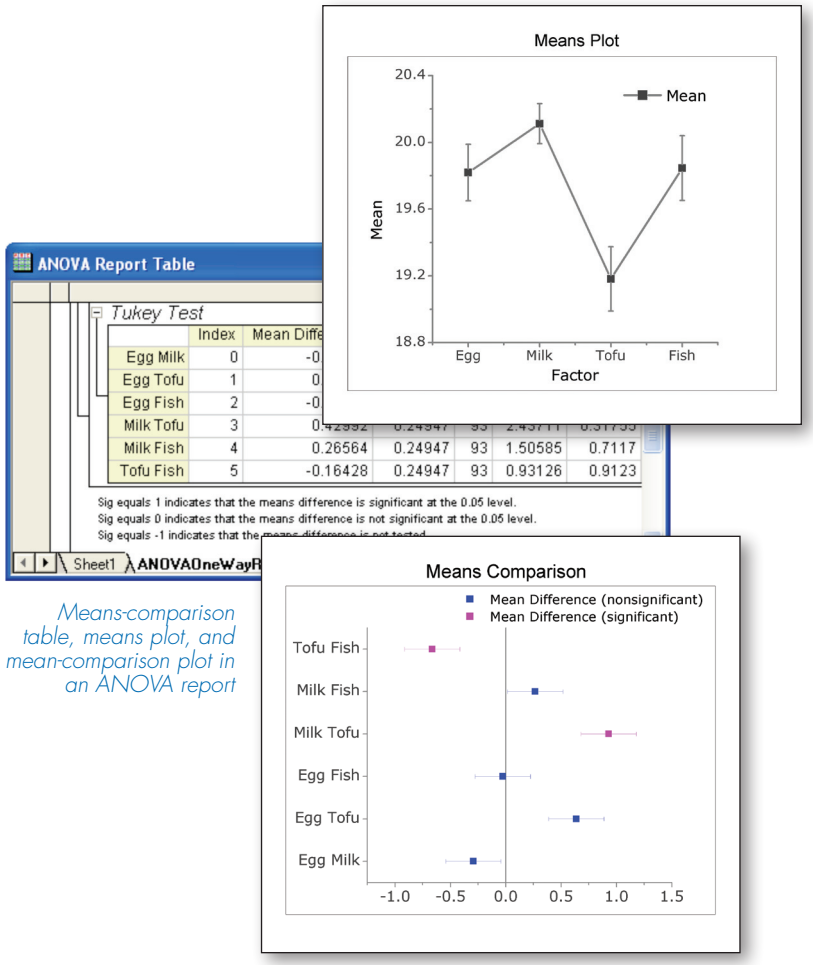
Two additional parametric tests are available:

- One-sample Chi-square test for variance
- Two-sample F-test for variance

Repeated Measures ANOVA PRO

Eight powerful means-comparison tests, both one-way and two-way:

- Tukey
- Bonferroni
- Dunn-Sidak
- Fisher LSD
- Scheffé
- Dunnett
- Holm-Bonferroni
- Holm-Sidak

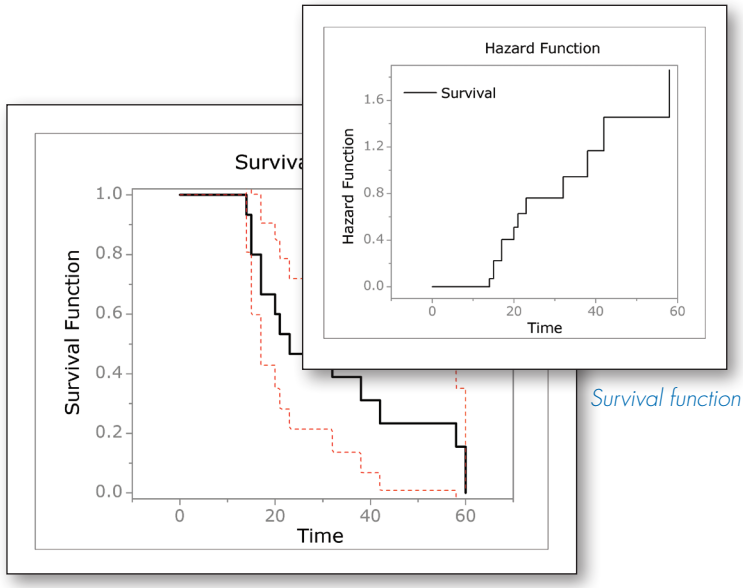


Means-comparison table, means plot, and mean-comparison plot in an ANOVA report

Nonparametric Tests PRO

Several nonparametric tests are available, including:

- One-Sample Wilcoxon Signed Rank
- Paired-Sample Sign
- Paired-Sample Wilcoxon Signed Rank
- Two-Sample Kolmogorov-Smirnov
- Mann-Whitney
- Kruskal-Wallis ANOVA
- Mood's Median
- Friedman ANOVA

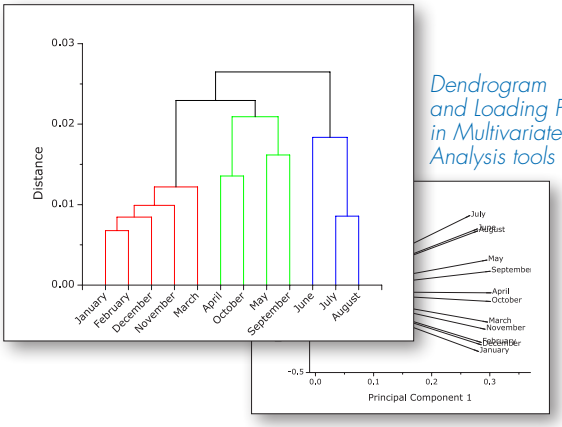


Survival function plots

Multivariate Analysis PRO

Four commonly used multivariate tools are available:

- Principal Component Analysis
- K-Means Cluster
- Hierarchical Cluster
- Discriminant Analysis



Dendrogram and Loading Plot in Multivariate Analysis tools

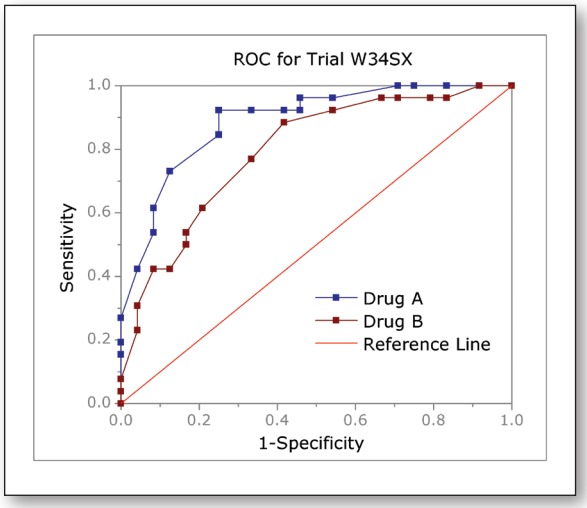
Survival Analysis PRO

Choose from three widely used survival analysis functions:

- Kaplan-Meier product-limit estimator, with three equality test methods
  - Log-rank
  - Breslow
  - Tarone-Ware
- Cox Proportional Hazards Model
- Weibull Fit Model

ROC Curves PRO

Create Receiver Operating Characteristic (ROC) curves, summarizing the trade-off between false-negative and false-positive rates for all possible cutoff values.



ROC curve comparing two samples

Custom Reports

Use Origin to perform repetitive analysis and create custom reports without any programming.

Origin's new multi-sheet workbooks allow you to format the appearance of cell contents, merge cells and apply borders and other formatting changes. Further, you can paste-link result values from any analysis results and graphs contained in the book or project, thus creating a custom report sheet. With the ability of automatic recalculation of analysis results, your custom report sheets can become templates for repeated tasks—simply import new raw data and watch your custom report automatically update. When your report is ready, export it as a PDF file or as an image file by choosing a popular image format such as EPS and JPG.

Laboratory of Biomechanics and Physiology

EVALUATION REPORT
Ergocycle Force/Velocity Test
Asymmetry detection + downstroke-upstroke separation

Embed images

Name:	**Doe**	**First name:**	**John**	Date:	18/02/2008
Age:	25 yrs	Height:	180 cm	Weight (kg):	75
Specialty:	kilometer	Best time (200m):			
Mean Velocity: -- km/h		Mean Pedaling Rate: -- rpm			

Link to meta data associated with the imported data

SEATED POSITION EXERCISE

Merge cells to create wide headings

Anthropometrics Data

4 skin folds method, Durnin and Womersley (1974) - Harpenden Skinfold Caliper

Sum of skin folds (mm) : 30.2
Percentage of body fat (%) : 19.6

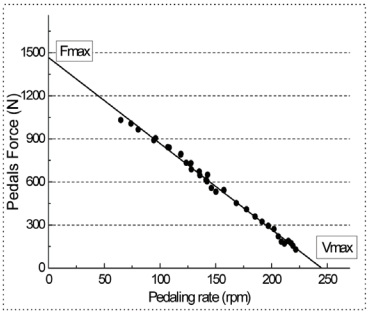
Total leg volume (litre) : 7.9
Maximal thigh circumference (cm) : 49

Sum of leg skin folds (mm) : 63.5
Lean leg volume* (litre) : 5.5
*(without knee)

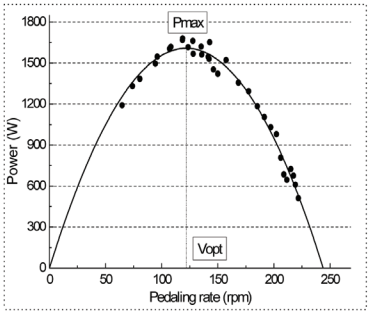
Global Force-Velocity Results

Lode Excalibur ergocycle (strain gauges in cranks). 3 sprints of 5 to 7 s : 2 sprints with high and medium resistance, 1 flying start sprint 70 rpm without resistance

Force-Velocity Relationship



Power-Velocity Relationship



Embed graphs within cells

Individual results

Vmax (rpm)	Fmax (N)	Fmax (N/kg)		Vopt (rpm)	Pmax (W)	Pmax (W/kg)	Pmax Peak (W)
245	**1467**	**19.6**		**122**	**1608**	**21.4**	**1670**
INSEP group mean							
255	1269	16.3		127	1457	18.7	1513

Link to analysis results

Vmax: Maximal theoretical velocity (rpm)
Fmax: Maximal theoretical force (N)
Pmax W/kg: Relative maximal power (W/kg)

Vopt: Optimal velocity (corresponding to Pmax)
Pmax: Maximal theoretical power (W)
Pmax Peak: Mean of the three highest measured powers (W)

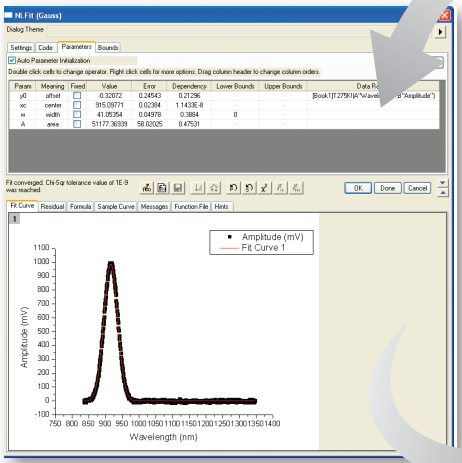
Analysis Templates™

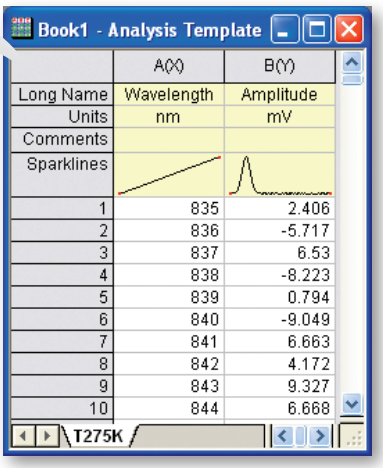
Analysis Templates™

Origin can automatically update most analysis operations whenever your source data or analysis parameters are changed.

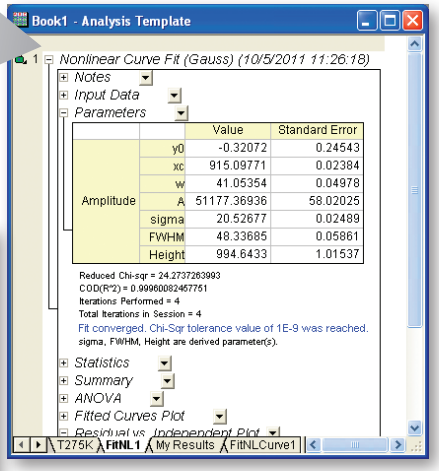
This powerful feature can be used in conjunction with the custom report capability of Origin workbooks, to create Analysis Templates.

Analysis Templates can be a single workbook or an entire Origin project. Import data, perform analysis, and optionally create a custom report sheet combining graphs and results. Save the book or project as an Analysis Template, and then re-use to analyze similar data.





Set up your analysis the way you want. After your initial analysis has completed, just save the workbook as an Analysis Template.



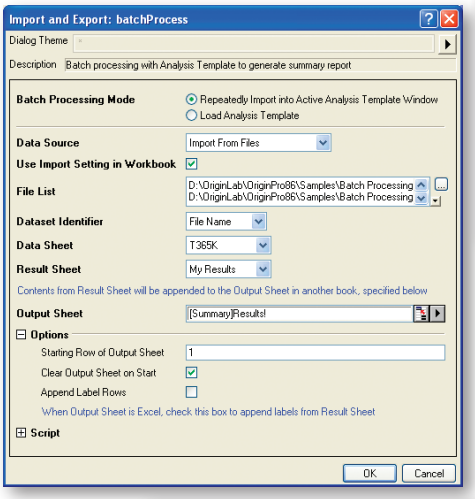
Setting up your Analysis Template

Making an Analysis Template is as easy as saving your workbook…

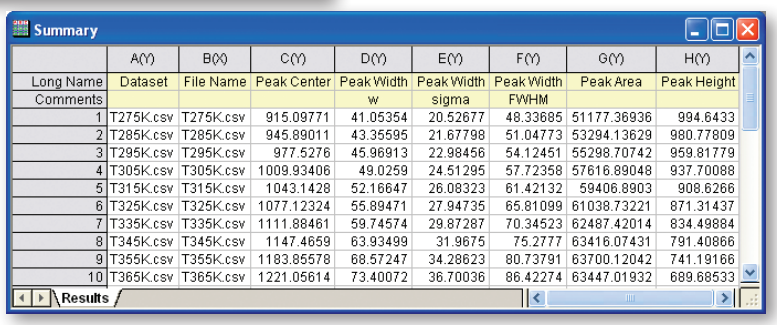
- Import your data.
- Graph and analyze your data with automatic recalculation enabled.
- Save your workbook as an Analysis Template, thereby preserving all of your work for repeat use.

Using your Analysis Templates is easy…

- Easily access your Analysis Templates by using the recent books or recent projects list.
- Import new data (e.g. drag and drop data from Windows Explorer) or use the Re-import feature to update an already loaded data file.
- Use the Batch Processing dialog to perform batch analysis of multiple data files, or multiple datasets contained in your Origin project.
- Origin recalculates your analysis results automatically and updates related graphs. You can then review and export or print the results.
- The Batch Processing dialog can also create a report sheet summarizing desired quantities specified in your template, for each data file or dataset that is processed.



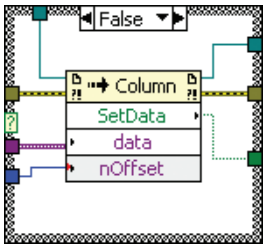
Use your Analysis Template and the Batch Processing dialog to analyze multiple data files or data sets in your project. Create a summary report with data identifier and selected results for each data set.



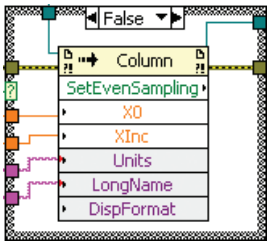
LabVIEW™ Connectivity

Using Origin from LabVIEW™ is Easy

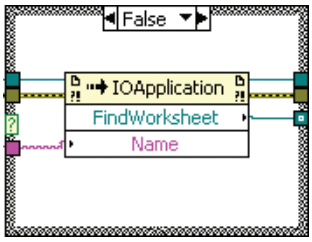
Origin's improved COM support and powerful data analysis and graphing capabilities make it an ideal software for processing data acquired by LabVIEW™. Origin ships with a collection of custom LabVIEW™ sub-VIs. These sub-VIs take advantage of Origin's automation server classes and can be used for operations such as opening and closing communication with Origin, exchanging data back and forth between Origin and LabVIEW™, and sending commands to Origin. The table below displays the kernel of the block diagram for three of the provided sub-VIs.



OA_Col-SetData
This VI employs the SetData method of Origin's Column class to put an array of values into an Origin column object.



OA_Col-SetEvenSampling
This VI sets the sampling interval of the data in an Origin column by using the SetEvenSampling method of the Column class.

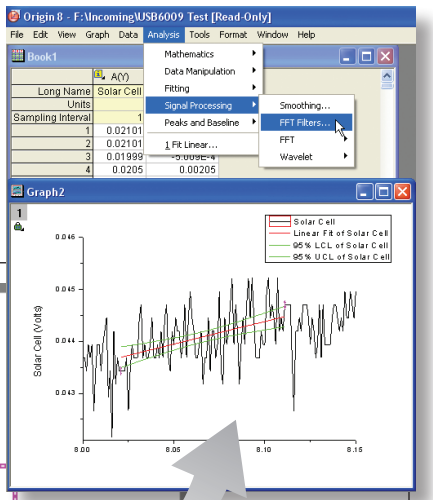


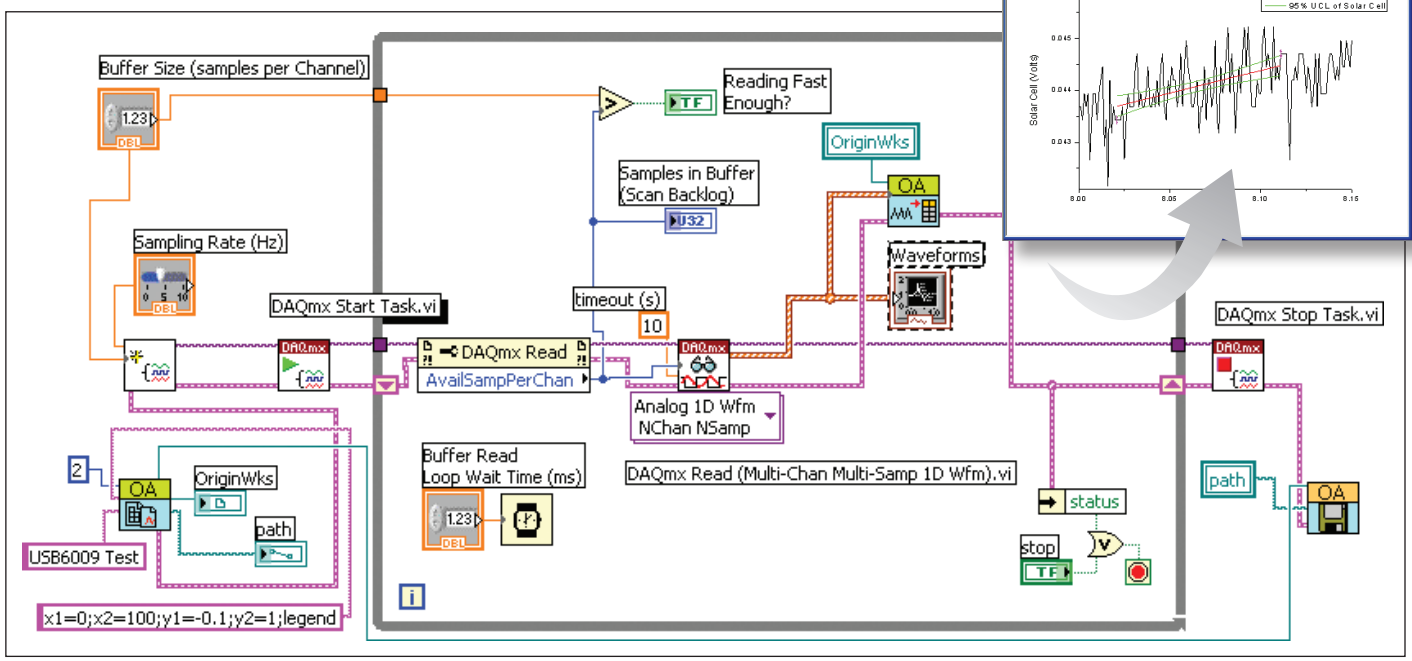
OA_FindWorksheet
This VI utilizes the FindWorksheet method of the IOApplication class to select a specific Origin worksheet by its name.

Use Origin to Complement your DAQ Application

Sending data from LabVIEW to Origin is now very simple. In the simple DAQ VI below, only two Origin-specific sub-VIs are needed. The dynamic data output from any LabVIEW input source can be wired into an Origin sub-VI, just as simple as wiring that data to a LabVIEW graph object.

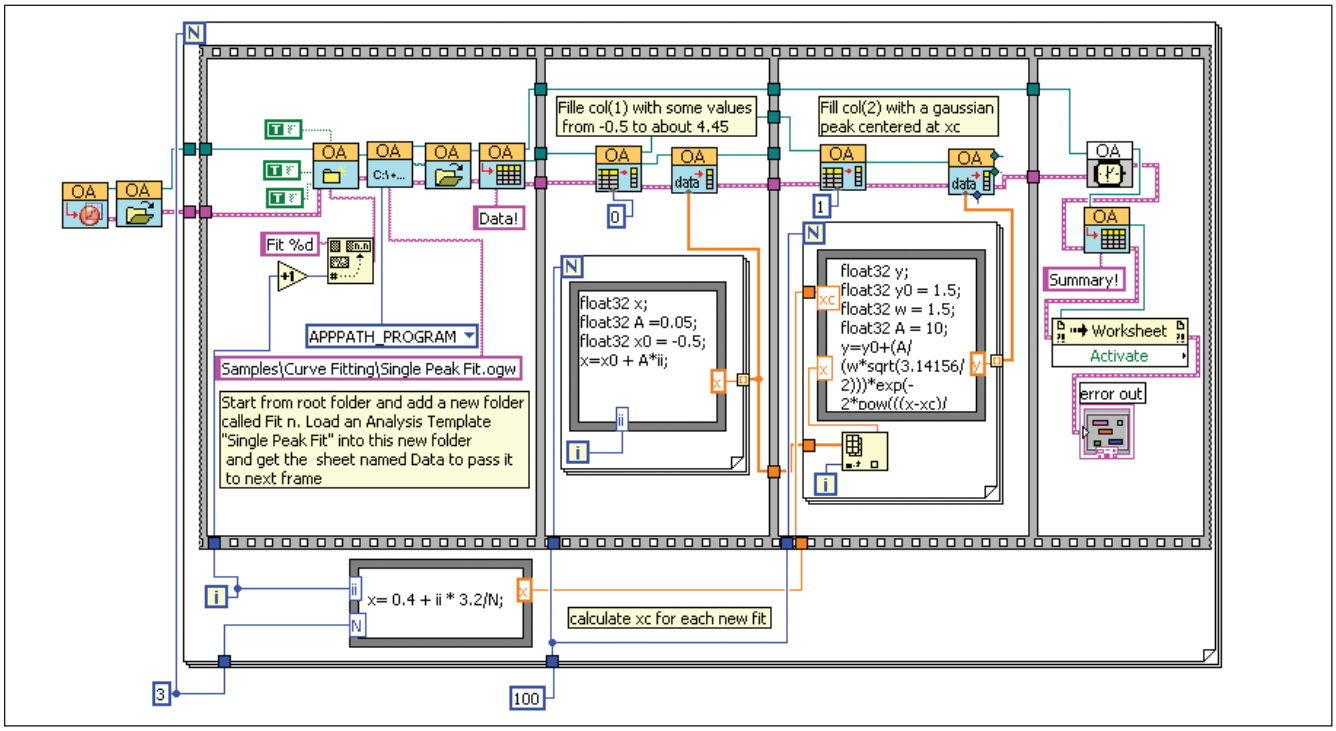
Post-processing data sent to Origin is very convenient. Origin has intuitive and interactive graph manipulation tools, such as zooming in and out of a region of data, selecting a region of data for analysis, not to mention the flexibility and ease of creating many different plots of the data.

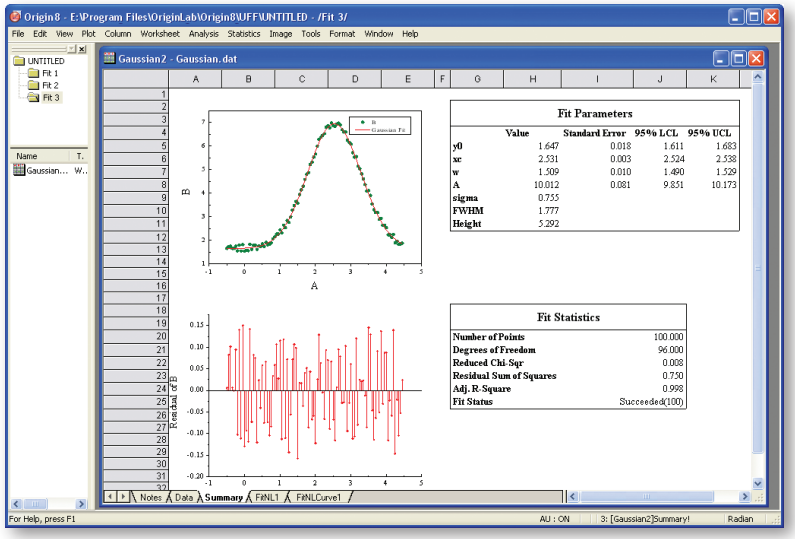




Harness the Power of Origin's Analysis Templates™

To best use the power of Origin, LabVIEW VIs can be created to push the acquired data directly into an Analysis Template in Origin, thus automatically updating analysis results and custom report sheets that are ready for presentation or printing.





The VI diagram above demonstrates an example of how to perform batch analysis of multiple datasets using an Analysis Template in Origin.

In this example, the experimental data has been fitted to a Gaussian curve. The fitted curve, residuals and fit statistics are presented in a user-created report sheet.

Once the VI has executed, the Origin project will have separate subfolders for each dataset. Within each subfolder the Analysis Template will contain the raw data, the analysis results, and the custom report sheet ready for printing or exporting.

Other Sub-VIs Provided with Origin Include:

- OA_ConnectToOrigin: Initialize Origin connection.
- OA_PE_mkdir: Create new folder in the Origin workspace.
- OA_GetColumn: Get specific column in worksheet by column index.
- OA_Load: Load an Origin .opj file or .ogw file.
- OA_Col-GetData (numeric): Get a numeric array from a column.
- OA_Col-GetData (string): Get text array from a column
- OA_PlotWksCols: Plot a range of worksheet.

What Our Customers Are Saying

"I have used Origin for many years. It gives me the ability to control every aspect of the graph I am creating. This flexibility combined with its statistical tools have made Origin an indispensable part of my daily work."
— Scott Jackson, Ph.D., Principal Scientist, North American Regulatory Strategy and Stewardship BASF Corporation

"Origin has become the de facto standard for archiving and analysis of experimental data in the field of condensed matter physics."
—Dr. C.M. Roland, U.S. Naval Research Laboratory

Note: These opinions are personal opinions and do not imply any statement or endorsement by the United States Naval Research Laboratory.

"The work of a scientist heavily depends on graphic presentation and statistical analysis of data. For the past 10 years, I have used exclusively Origin to prepare figures for over 40 manuscripts that have been published in scientific journals with strict academic requirements."
—Detcho A. Stoyanovsky, Ph.D., University of Pittsburgh

"If I had to pick three software packages to take to a desert island, Origin would be at the top of the list. Not only does Origin handle the most demanding curve fitting and data analysis tasks with ease, and makes superior publication quality graphs; it also has a built in C compiler that allows me to customize complex functions - a feature that has been crucial to my research. To top it off, OriginLab has a knowledgeable and responsive technical support staff, second to none. I wholeheartedly recommend Origin."
—Mark Kuzyk, Ph.D., Regents Professor of Physics and Astronomy, Washington State University

"I began using Origin because of its versatility in the varied experimental work that we do, from electro-physiology to clinical studies. I have stayed with Origin because of the high level of statistical expertise and customer service that we get from technical support staff."
—Dr. Pamela Flood, University of California, San Francisco, Department of Anesthesia and Perioperative Care

"Origin is an extremely powerful software package and their technical support has been very responsive. As a new Origin user it has reduced my learning curve tremendously. Between the online videos and rapid replies to my e-mails I have been extremely pleased."
—Nigel Clark - NOVA Chemicals

Note: These opinions are personal opinions and do not imply any statement or endorsement by NOVA Chemicals.

"I have been extremely happy with Origin. I found it easy to get started with. Although I am still probably only using a fraction of its abilities, the tech support and forum have been great at helping me to learn and use more features and to solve occasional problems."
—John W. Rudnicki, Ph.D., Northwestern University

Licensing

OriginLab offers many licensing options to suit your needs, including:

- Node Locked (Perpetual, locked to computer)
- Dongle (Perpetual, USB dongle provided)
- Concurrent Network (Perpetual, managed by license server)
- Company-wide Licenses including Multiple Site Locations
- Academic Department-wide and University-wide
- Student (Time-limited, locked to computer)
- Research Lab (Time-limited, locked to computer or dongle)
- OEM
- OriginLab also offers special Academic and Government (GSA) pricing.

Product Support

Standard support is available to all registered customers with active maintenance, and to customers evaluating our products. First year of maintenance is included at the time of purchase.

Support is available by phone, e-mail, and online chat from 8:30 AM to 6:00 PM EST. Extended support hours from 7:30 PM to 4:00 AM EST are available for online chat and e-mail.

Support resources are also available from the OriginLab website, including video tutorials, FAQs, and a product forum. Our forum contains more than 20,000 posts and questions are answered daily by OriginLab staff and other users.

About OriginLab Corporation

OriginLab is a leading developer of scientific graphing and analysis software. Since 1992, we have sold over 150,000 copies of Origin around the world. Our customer base includes over 130 Fortune Global 500 companies, over 75 government research laboratories and agencies in the US and Canada, and more than 800 universities and colleges worldwide.

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