

AUTO-MONTAGE

3D IMAGING WORKSTATION

It is the policy of Syncroscopy to provide imaging systems with components that have been carefully selected and tailored to ensure the highest quality image production.

Image capture device

The selection of the right camera is a vital aspect of the system. Syncroscopy cameras are rigorously tested to ensure optimum performance for your application.

The following characteristics are a typical standard for the **Auto-Montage** camera:

- 3 chip color for the most accurate image rendition
- High resolution ensures optimum detection of in-focus regions
- Live, full resolution, color preview for fast sample and focus positioning
- Versatile remote software control for easy camera adjustment
- Integration facilities for low light and fluorescence applications

Sub-micron precision z-focus control

Auto-Montage's z-stepper attaches to most models of compound microscope. It accurately drives the fine focus knob while attaching to the coarse focus knob.

For some microscopes a direct drive unit can be fitted to overcome physical restrictions and specific characteristics of the microscope drive mechanism.

Microscopes with no fine focus knob or where the focus mechanism is too stiff to drive mechanically, can be assisted by a free-standing, z-motorized precision stage which can be provided. The z-stepper table can also be mounted onto a Syncroscopy macrostand for use with large samples imaged with a macro-lens system.

High performance processor

A high specification PC is used to power the software and real-time processing hardware. The computer is fitted with:

- **Auto-Montage's** camera interface and processor board
- Specially selected, high performance graphics board
- Large amount of fast RAM for image caching
- High capacity hard drive
- Windows operating system
- Latest Microsoft Office Software

Image printer

Photographic quality, high speed printing is ensured with the carefully selected digital color printer supplied with every **Auto-Montage** system. Prints of up to A4/letter size can be produced with the option of an A2 printer for poster size prints.

Built-in system flexibility

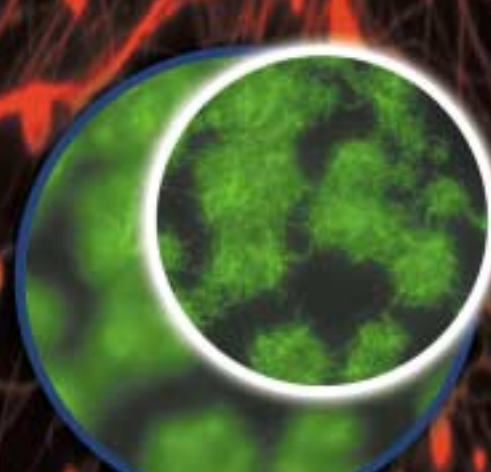
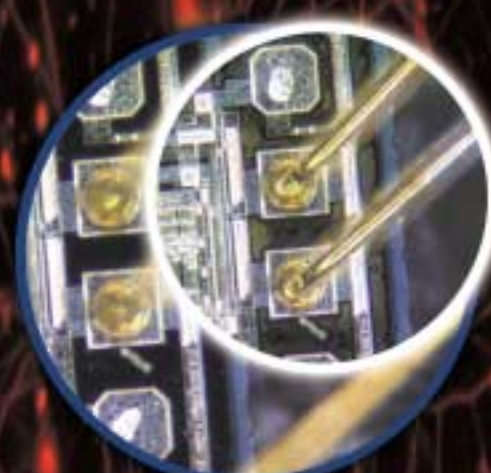
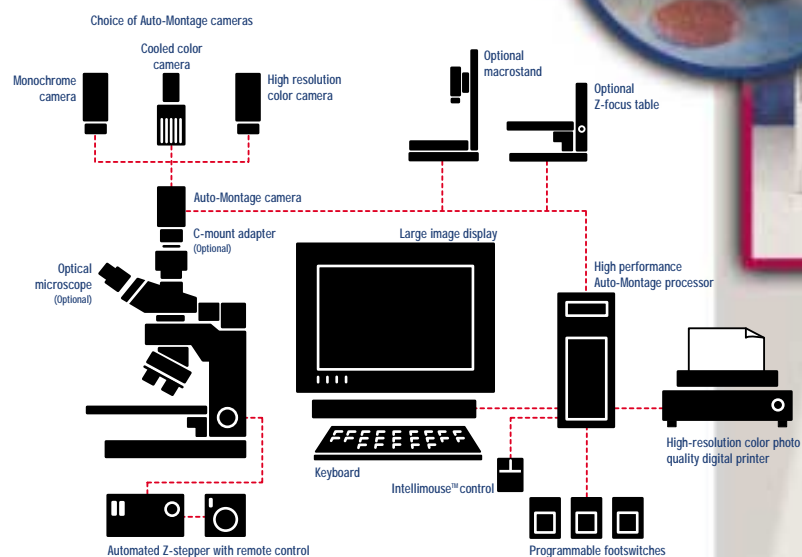
Every **Auto-Montage** system is supplied with a range of powerful imaging tools in addition to the **Auto-Montage** application including:

AcQuis - a highly productive image capture, processing, camera control and annotation tool. AcQuis has an abundance of features to help you capture great images from your microscope.

Treasury - an integrated image database package, ideal for the storage and retrieval of images, data and associated files such as Excel image analysis results.

Prysm TWAIN driver - a useful facility providing a live image from the **Auto-Montage** camera in other imaging software.

Auto-Montage System Configuration



EXAMPLE APPLICATION AREAS: Life Sciences: Entomology • Histology • Cytology • Plant pathology • Microbiology • Embryology • Mycology • Parasitology • Neurology • Fluorescence microscopy • Materials Sciences: Fracture surface inspection • Crack assessment • Weld inspection • Metallurgy • Polymer topography • Particle sizing • Concrete analysis • Electronics & Semiconductors: Component inspection • Production QA Other: Palaeontology • Archaeology • Environmental sciences • Textile examination • Soil science • Geology

SYSTEM SPECIFICATIONS

Auto-Montage functionality:

- Automatic source image series capture, creation, labeling and storage
- 256 source images/z sections
- Multiple mounting methods for different sample types
- Patch size adjustment for structure matching
- Filter adjustment for low contrast compensation
- Image and 3D visualization outputs:
 - Montage perfectly focused image
 - Depth maps
 - Integer and floating point depths
 - Color relief maps
 - Selectable color map
 - Adjustable ratio of color vs image
 - Anaglyph images
 - Selectable color pairs
 - Colorize feature
 - Adjustable 3D effect
 - Stereo pair image
 - Adjustable 3D effect
 - 3D surface model*
 - Tilt and rotate controls
 - Wireframe, color contour, Montage image rendering
 - Brightness control
 - Zoom control
 - Detail control
 - Z-sectioning and depth profiling
- Multiple file format support
- No limit on image size
- Color and monochrome images supported
- Source image reviewing
- Full Z-stepper control*
 - Super-fast z series capture
 - Calibrated z-axis heights
- Automatic image caching for fast display
- Height readout as images are traversed with mouse
- Simultaneous viewing of different source images
- Super-fast simultaneous zooming of all images
- Camera control facilities*
 - Precise facilities provided are dependent on camera model, typically:
 - Integration period for low light
 - Color balance
 - White balance
 - Gamma
 - Gain
 - Contours
 - Shutter speed
 - Image capture board control
- Automatic image storage
- Image editing facilities:
 - Choice of brushes
 - Interactive region drawing
 - Interactive region editing
- 2D and 3D measurements*
 - XY length
 - Contour following XYZ length
 - XY angle, Z angles of slopes
 - Height difference
 - Area, perimeter
 - Surface area and volume
 - Depth profile
 - Results output to text file and Excel
- Experiment templates
- Stores all system configurations for re-use
- Dataset properties
- Includes facilities for source image re-ordering and omission

Auto-Montage camera interface and processor board*

- Software controlled capture
- Captures high resolution images instantly
- A range of video and digital cameras supported
- Color or monochrome
- Live windows display
- PCI bus
- Remote control facilities including triggering

Camera

- A choice of cameras is offered dependent on the application
- All color cameras have the following characteristics:
 - 3 chip color
 - High resolution
 - Live, full resolution, color preview
 - Remote software control
 - Integration facilities for low light applications

Z-stepper*

- Software controlled
- Drives the fine focus knob of the microscope
- Attaches to Coarse Focus Knob
- Automatic source image series capture (256 images)
- Requires Auto-Montage camera interface and processor board
- Up to 2500 steps per full turn of focus knob (1000 factory set) equivalent to less than 0.05 um per step on a 100 micron knob
- Remote control unit
- RS232 controlled device
- Optional independent, free standing z-motorized stage for microscopes with no, easily turnable fine focus**

Auto-Montage system processor

- A powerful PC is used to power the software and real-time processing hardware. The computer is fitted with:
 - Auto-Montage's camera interface and processor board pre-installed
 - Specially selected, high performance 32 Mb (min) graphics board
 - Large amount of fast RAM (384 Mb min) for image caching
 - High capacity hard drive (30 Gb Min)
 - Latest Windows operating system
 - Latest Microsoft Office Software
 - 19" high definition monitor (or larger)
 - CD writer/reader or equivalent

Printer

- A4/letter photo quality image and document printer

Application software included in system*

- AcQuis image capture, processing, camera control and annotation software
- Treasury image database management software
- TWAIN driver for image capture hardware

Please note:

*options on some systems **extra cost

Due to our policy of continuous development this specification may change without prior notice.

All trademarks acknowledged

SYNCROSCOPY
A DIVISION OF SYNOPTICS LTD

Syncroscopy is a division of Synoptics specializing in the supply of advanced digital imaging products for microscopy

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SYNCROSCOPY
A DIVISION OF SYNOPTICS LTD

As a microscope user, you can benefit from Syncroscopy's extensive experience of providing unique solutions that vastly extend the capabilities of optical microscopes. Our goal is to provide state-of-the-art digital microscopy systems to scientists and engineers around the world. Using patented technology, our products overcome the most significant limitations of using a light microscope including limited depth of field and field of view. All Syncroscopy products are turnkey systems that are easy to use and provide the most advanced and innovative features available today.

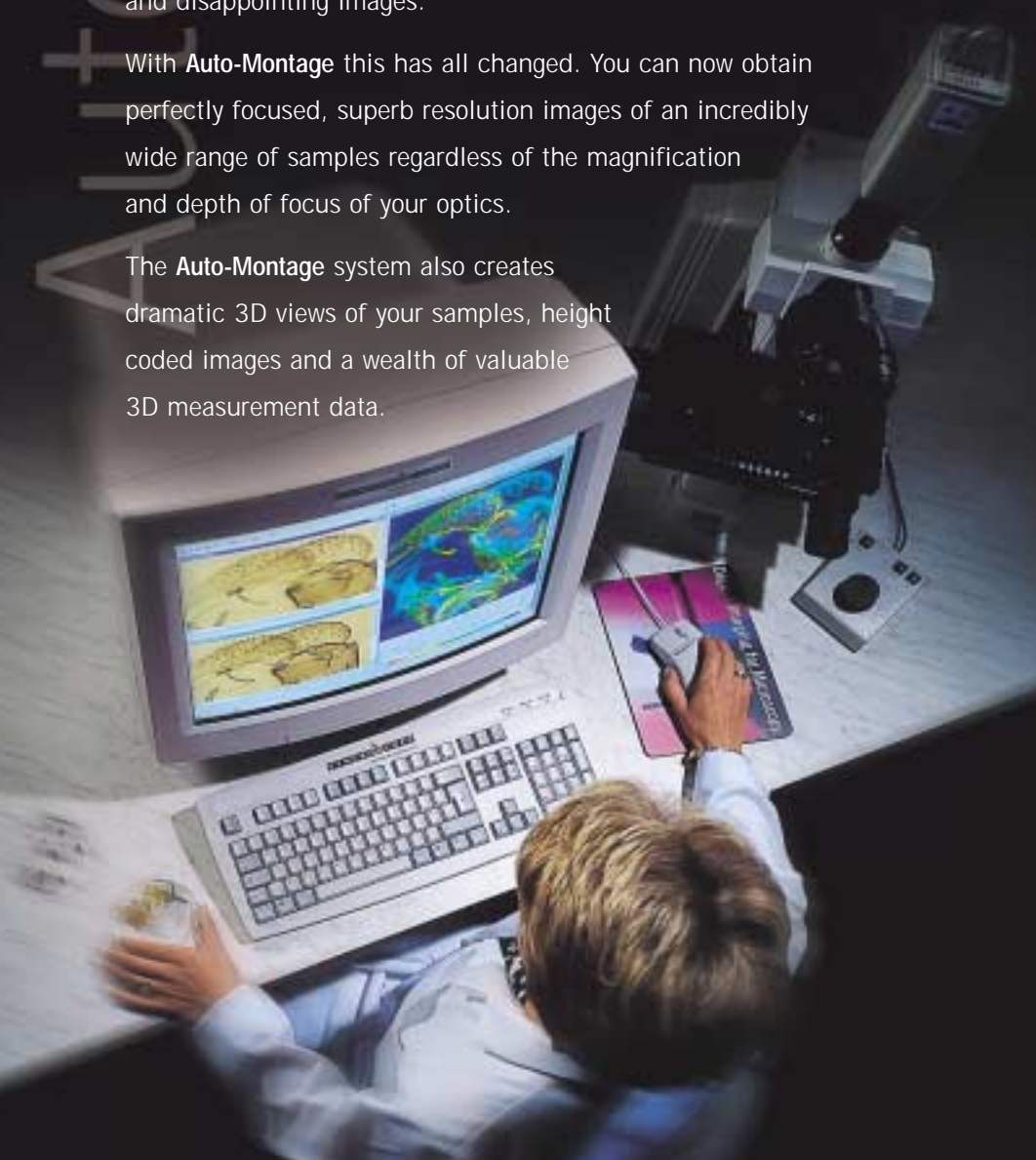
AUTO-MONTAGE

DIGITAL 3D IMAGING

Producing perfectly focused, high resolution, digital images of your samples from your optical microscope is frequently impossible for many applications. This is due to the fundamental limitation of the depth of focus of the optics, resulting in partially focused and disappointing images.

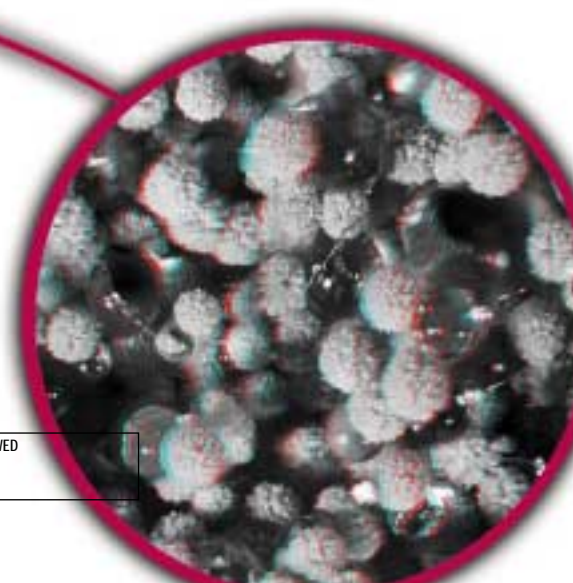
With **Auto-Montage** this has all changed. You can now obtain perfectly focused, superb resolution images of an incredibly wide range of samples regardless of the magnification and depth of focus of your optics.

The **Auto-Montage** system also creates dramatic 3D views of your samples, height coded images and a wealth of valuable 3D measurement data.



AUTO-MONTAGE

UNIQUE 3D IMAGING



ANAGLYPH 3D IMAGE VIEWED WITH SPECIAL GLASSES

See instant height data with the depth map

A 'depth map' showing the height location of detail in every part of your sample is immediately calculated by **Auto-Montage**. As you traverse the mouse over the map (and montage image) the height and position can be displayed in real time.

See heights as color contours

The popular 'color relief map' allows you to view the depth information coded into colors overlaid on top of the montage image. This flexible tool provides a wide choice of color ranges and the useful ability to adjust the transparency of the color.

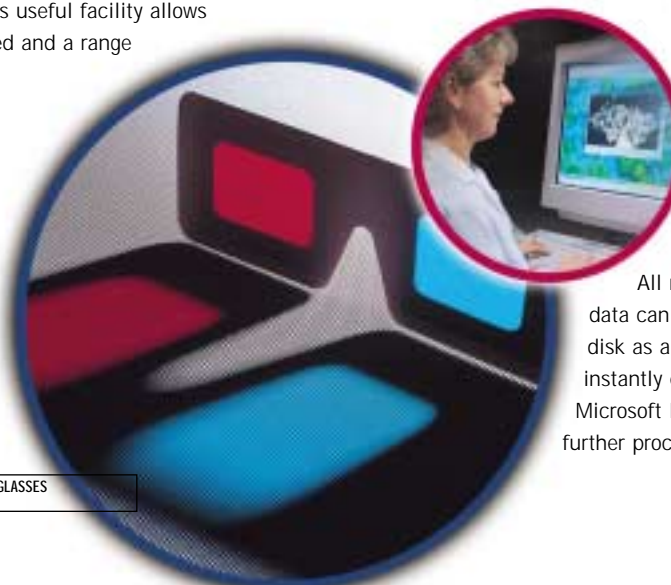
Visualize your samples in 3D

Auto-Montage is provided with one of the best 3D visualization tools available which produces stereo anaglyph images viewable through special glasses. The height data captured in the montaging process permits the perfect production of anaglyphs. The result is absolutely stunning 3D representations of your samples. This useful facility allows the perception of depth to be adjusted and a range of colored anaglyphs to be produced.

Stereo pairs

Many users of electron and special optical microscopes will be familiar with stereo pair images, which **Auto-Montage** creates quickly and easily. These are viewed either by merging the pair visually or with the aid of special viewing devices to produce 3D images of the sample in full color.

ANAGLYPH VIEWING GLASSES



'Interpretation of what we are seeing is made so much easier'

3D graphical modelling

Combining height data with montage or color relief images to create superb 3D surface models of your samples is probably the most popular 3D visualization tool in **Auto-Montage**.

The interface is easy to use allowing full control over tilt, rotation, zoom, z-axis scaling, detail and brightness.

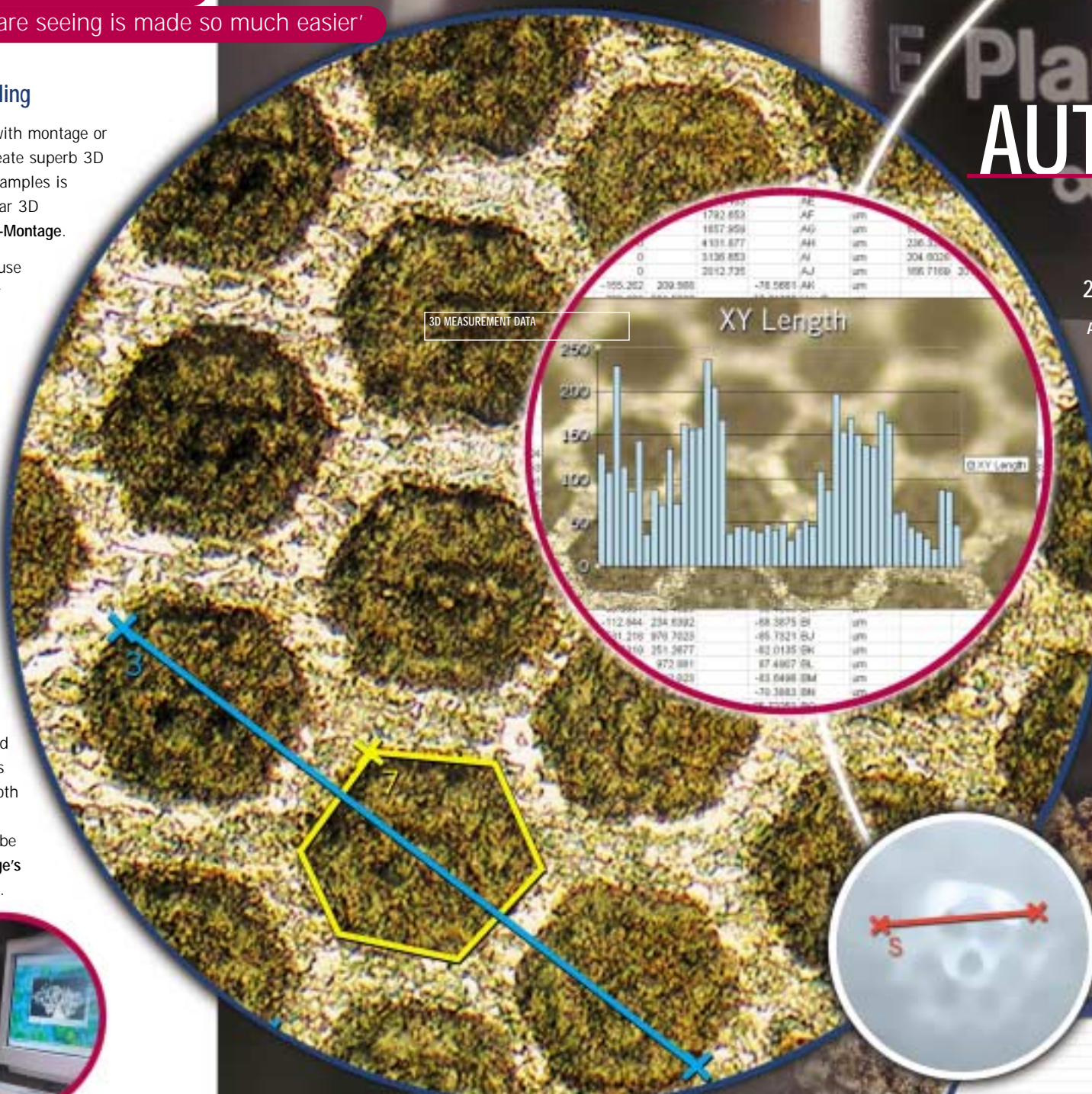
The models are calculated quickly and have been developed using the latest, high resolution modelling tools.

Image and data reporting

Auto-Montage creates a wide range of images, graphical models and measurement data.

All images can be printed and stored as image files in a variety of formats both locally or anywhere on a network. They can also be organized in **Auto-Montage's** Treasury image database.

All measurement data can be stored to disk as a text file or instantly exported to Microsoft Excel for further processing.



Z-FOCUS CONTROL



AUTO-MONTAGE

3D MEASUREMENT

2D and 3D measurements

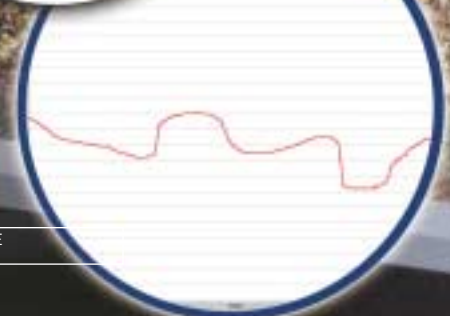
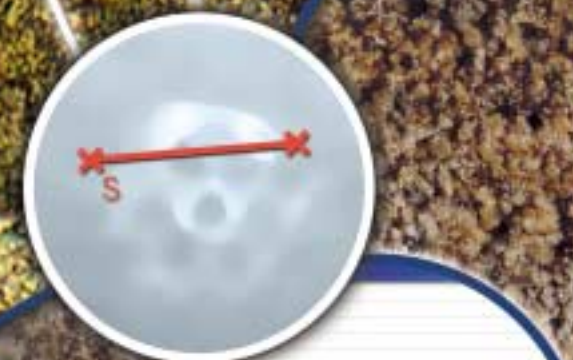
Auto-Montage is supplied with a wealth of 2D and 3D measurement tools designed to provide objective analysis of surface details. The measurement facilities are widely used in industry and research applications and often provide the only way to obtain this type of data from samples.

Measurements include XY lengths, contour following XYZ lengths, surface areas, volumes, XY angles, Z angles and height differences.

Z-sectioning and depth profiling

A line drawn anywhere on the montage image can be used to create a z-section through the stack of source images and to view the height profile of a surface.

The z-sectioning is particularly valuable in multi-layered samples such as in the study of biofilms and cell culture.



DEPTH PROFILE