Integrated Software Solutions

Leica Application Suite (LAS) integrates Leica automated Microscopes, Macroscopes, digital Cameras, and Software into one common Environment to provide an easy-to-use, and consistent Imaging Solution with unrivalled Performance.

Leica

MICROSYSTEMS

Integrated Software Solutions

English

You're In Focus!

Totally Integrated Solution

Leica Application Suite (LAS) integrates Leica automated microscopes, macroscopes, digital cameras, and software into one common environment to provide an easy-to-use and consistent imaging solution with unrivalled performance. The versatility of Leica Application Suite makes it suitable for a diverse range of life science and industrial applications such as materials quality control, life science research, pharmaceutical testing, and many more. LAS accelerates the visualization, enhancement, measurement, documentation and archiving of digital images through the richness of its image processing functions. This powerful software solution can control all functions of the Leica DM range of upright and inverted compound microscopes and motorized stereomicroscopes and macroscopes. By providing all the necessary tools for the installed applications to communicate with each other as well as with peripheral devices connected to the computer, LAS offers an intuitive solution that simplifies routine and research analysis[*1].

Demanding Microscopy

The common core functionality of Leica Application Suite is supplied with each Leica microscope[*2] and digital camera as part of an integrated system solution to which additional modules can be added.

The core of LAS includes the following:

· Microscope[*2] and digital camera configuration and control in a fully integrated manner.
· Basic annotation tools allow image and calibration data to be added to images.
· Auto and manual exposure adjustments allow fully optimized imaging conditions.
· A thumbnail gallery of acquired images, which can be reviewed quickly and easily.
· Calibrations calculated from magnification data read from Leica microscopes[*2] and cameras; a scalebar indicates image size.

*1 In additon to the control of all Leica automated microscopes, this powerful software also integrates data from the manual Leica microscopes.
*2 Automated and coded microscopes system components.

Core Features at a Glance!

The common core functionality of Leica Application Suite creates an intelligent micro-imaging environment which includes the following benefits:

- The unique user interface is designed for ultimate operator convenience for all imaging applications.
- LAS increases productivity by integrating microscopes, digital cameras, and application software to co-ordinate imaging tasks with intelligent control.
- Automates digital photomicrography through the electronic features of Leica microscopes.
- Stores images together with and associated data for easy location and retrieval.
- Provides a single application for acquiring, storing, annotating and displaying high quality images with a thumbnail gallery.
- High modularity allows routine and cutting edge research applications.

*   The accuracy of the measurements and the compliance of the entire system to these standards strongly depends on a) the optical, electronic, and mechanical components used, b) the working conditions and sample preparation process, and c) the individual and specific interpretation of the results produced. These are the responsibility of the user of the equipment and Leica Microsystems disclaims any liability in that context.
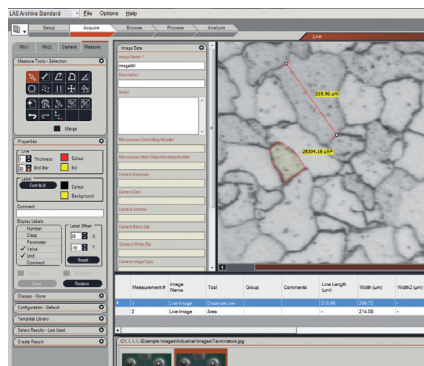
- LAS, using a Windows PC, provides a cost-effective and uniform environment, compatible across the Leica range of microscopes and digital FireWire and USB cameras.

The Ultimate Imaging Environment

LAS is operated by an intuitive workflow concept with the following steps:

Setup

The Setup provides a straightforward method of configuring the Leica microscope and camera to be used during image acquisition. All configurations such as objective types and filter descriptions can be readily saved and recalled to ensure that imaging conditions are correctly reproduced. The optional Archiving modules are configured from this task bar and allows the creation of multiple level databases customised with user data fields.

Acquire

LAS enables the easy acquisition of images, which can later be added to a Gallery and stored in a specified location in a folder or database. With LAS, all camera controls can be set to individual requirements from exposure, gain and gamma, to histogram black and white levels. Images can be acquired in a variety of sizes, color depths and file formats to provide even more flexibility. By setting the sharp image option and shading reference from the processing toolbar, images can be acquired at the highest detail necessary to

minimize further processing. LAS also allows a region to be defined on a live image so that significant areas can be easily and quickly identified and focused. All parameters and configurations can be saved and recalled at a later date. LAS includes High Dynamic Range and Image Averaging acquisition modes as standard in LAS core. Addition options allow for the capture of extended focus images and increased field of view directly from the live image.

Browse

The Browse function provides access to all associated information for each stored image such as the time of acquisition, the bit depth, and the calibration. Images and data can be located quickly and easily through a simple folder navigation system. The integrated gallery stores each image as a thumbnail to speed up the process of locating and retrieving image files. A selection of overlapping iamge tiles can be stitched to create an extended field of view image in LAS core.

Process

By using the Process workflow tab, images can be enhanced and refined. From brightness and saturation levels to contrast and hue, each image can be adjusted to user requirements. Additionally, a file name, time of acquisition, and brief description can be superimposed via the basic annotation tools. Even scale bars and lines can be added and customized. Annotations can either be saved with the image or merged with it so that the data is still visible when exported. To further enhance this functionality, LAS Extended Annotation can be added to the system.

Analysis

The professional functions of the Analysis workflow allows you to get the most out of your data. From statistical reports to histograms and pie charts, LAS measurement options provide you with all the tools you need to drill down in to your data. Result data can also be output to a Microsoft Excel template so that customised reports can be created and further calculations derived.
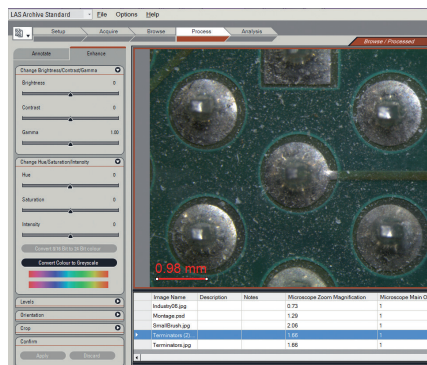
The underlying capabilities of LAS can be enhanced with a range of advanced modules and applications to form a powerful microscopy imaging environment. Each LAS module provides the flexibility to tailor a system solution to fulfill individual needs with upgrade options available for future requirements.

Expand Your Horizons!

LAS Live Image Builder XY ⓘ

LAS Live Image Builder is developed for users of manual microscopes, enabling them to rapidly create high-quality images that are much larger and reveal more detail than a single field of view. The software automatically detects sample movement and smoothly extends the image without the need to click buttons to capture the image. The resulting image view dynamically grows giving instant feedback, saving time.

LAS Live Image Builder Z ⓘ

Often a microscopist is faced with an image having shallow depth of field, which means that only part of the image is focused. Now with LAS Live Image Builder, a single, in-focus image, is created in the time it takes to manually focus. The immediacy of capturing a focused widefield image is a great time saver.

By combining these two modules it is now possible to capture a wide field image combined with extended depth of focus in a single image.

Further benefits:
- Creates high resolution images up to 12k x 12 k pixels
- Images can be calibrated and the full processing and analysis capabilities of LAS applied
- Works with any microscope – all you need is a manual XY stage and focus control
- Dynamic results – the image builds up immediately on the screen providing instant feed back

ⓘ optional module

Store and Recall!

LAS Store and Recall ⓘ

LAS Store and Recall allows you to benefit from a fully integrated solution with a Leica camera and microscope. All results are completely reproducible due to the sophisticated store and recall functions. Everything from light-settings, to contrasting methods, magnification and exposure time can be saved and easily retrieved for exact duplication. Even details such as bias of DIC, exact position of the Excitation Manager in fluorescence and binning mode of the camera are completely reproducible.

With LAS Store and Recall, it is simple to store settings together with the acquired image and later recall them. The microscope and digital camera can also be automatically reset to the stored status whenever you want to. This means that different specimens can be viewed under exactly the same conditions so results can be compared and analysed to highlight similarities and contrasts.
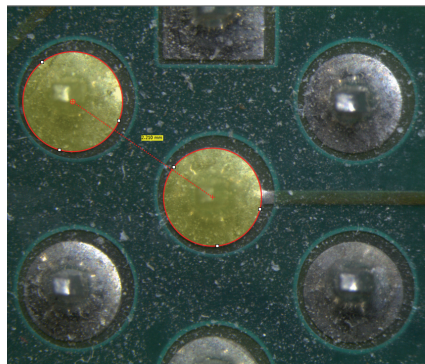
Further benefits:
- Store all settings of the camera and microscope together with the current image
- Save and recall settings and configurations to exactly recreate the same conditions at a later date
- Ideal for use with the Leica DM and DMI microscopes and with all Leica Digital Cameras

ⓘ optional module

Efficient Digital Data!

LAS Archive

LAS Archive is a powerful application designed to give rapid and convenient access to digital images. Fully integrated with all Leica microscopes and digital cameras this versatile data management solution vastly improves the acquisition, processing, measurement and reporting of images. LAS Archive can be used to combine images with text, numeric data, microscope information and camera parameters in individual records of a database. The content of a record can be easily defined by use of the Archive Design tool on the Setup workflow bar. With a focus on simplicity, the Archive Designer allows you to define hierarchical 'levels' by which data is grouped (e.g. Lab Name, Procedure, Customer Name, Experiment, Specimen Number, Result etc.). There is virtually no limit to the number of different fields you can specify or the volume of information you can store.
LAS Archive is available in a number of Editions that build on each other to exactly match your needs. These include:

LAS Core – predefined data structure, image acquisition, analysis and archiving for a single user-workstation using the familiar Windows folders.
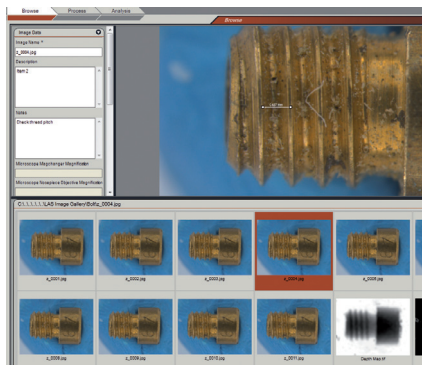
LAS Archive Basic ⓘ – Microscope and camera data can be stored with the image and combined with user defined text fields for display on a data form. This data is freely searchable and additional files and audio recordings can be attached to the image.
**LAS Archive Standard** ⓘ – archive design tool to create a database with multiple levels. Add multiple named data fields (including text, numeric, date and keywords) and create reports.

ⓘ optional module

Prepare To Share!

LAS Web Share Module ⓘ

LAS Web Module conveniently enables live images to be shared and viewed simultaneously by one or more remote users by simply accessing a web browser. Gone are the days of having to be present in an office or laboratory to view important microscope images. LAS Web Module lets you share specimen images by simply connecting to your network. LAS works with all Leica microscope cameras to provide simple and convenient operation. Remote users can view the images by using an internet browser which is extremely convenient and also increases the speed at which important information is shared across several sites. Feedback from off-site experts is therefore virtually immediate. All live images are completely secure and under the control of the master system operator.
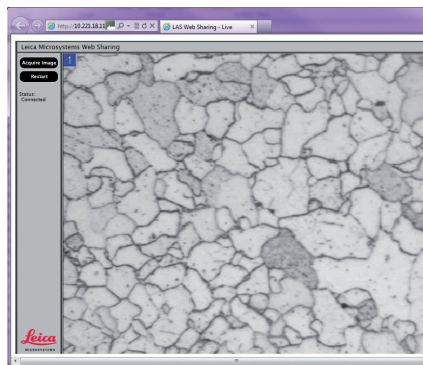
Further benefits:
- Real time viewing and consultation across several locations for immediate feedback
- Image streaming on to a local network
- Simultaneous live image sharing via a standard internet browser
- Rapid image capture which can be downloaded and saved to disk for a permanent record
- Screen pointer and scale bar to clarify the discussion topic
- The ability to determine live image size depending on individual requirements

ⓘ optional module

Brilliant Depth of Focus!

LAS Multifocus ⓘ

LAS MultiFocus is designed to acquire extended depth of field images from Leica motorised microscopes. Exposure, gain, shading and all other camera parameters can be individually set to optimise the quality of image acquisition. LAS MultiFocus provides simplified operations by automatically adjusting step size, aperture and the camera resolution. It also provides automatic Z-Stack image capture for routine operation.

Once digital images have been collected at different Z-positions they are intelligently combined into one sharp composite image that massively extends the depth of focus. A gallery of the Z-Stack is available from which individual images can be immediately selected and displayed in the main window whilst the annotation facilities make LAS Multifocus a perfect solution for creating data rich presentations and reports.

Further benefits:
- Simplified operations by automatically adjusting step size and the number of images match to the microscope magnification, aperture and camera resolution
- Select a small region of interest to identify an area of significance and view it in detail
- Zoom and pan facilities so that you can view images in detail
- Store different configurations for later recall
- Add annotations such as calibration markers, image name and description

ⓘ optional module

Image Montage!

LAS Montage Module ⓘ

LAS Montage is based on LAS MultiFocus but extends the capabilities to offer more advanced and comprehensive tools to account for a wider range of imaging conditions. Tuneable Montage methods can be adapted to meets variang sample types and allow for the removal of unfocussed and semi-focussed background. A corresponding Montage (Depthmap) and Confidence Image is produced. Anaglyph, Stereo-pair and Colour Relief images can be created. Depthmap editing or 'cloning' may be used used to manually modify small defects in Montage image. The calibrated and relative height measured from the Depthmap is shown. The profile along line drawn on the Depthmap, shows surface distance along the profile.

LAS 3-D Viewer ⓘ

With an optional LAS 3-D Viewer module, you can further extend the visible detail of a montage image. The LAS 3-D Viewer option allows a montage image to be placed over the depthmap and color coded so that regions of similar height can be easily identified. The 3-D image can then be zoomed, manouvered or rotated to provide a comprehensive view of specific features.
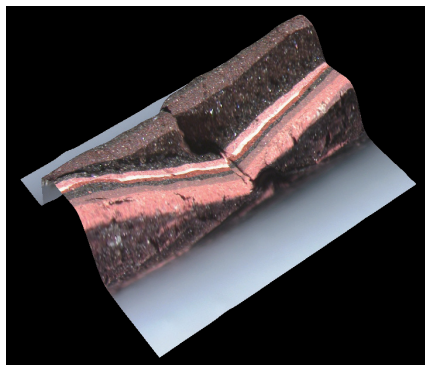
Further benefits:
• Depth map and confidence images are produced to increase the accuracy of the extended focus image
• Create Stereo Pair, Anaglyph and Color Relief images to further enhance visualisation and increase understanding

ⓘ optional module

MultiStep Imaging!

LAS MultiStep ⓘ

LAS MultiStep is used with a Leica microscope, motorised scanning stage and digital camera to automatically acquire images at XY positions defined by a rectangular pattern. The camera can acquire images as soon as the stage has reached a specified position. The images are stored to the hard drive in tiff, bmp or jpeg format and can be recalled individually for further analysis or stitched together to create an assembled overview mosaic image. Furthermore, the defined sequence and parameters that have been used during image capture can be saved and retrieved.

LAS MultiStep provides users with the opportunity to define scanning patterns specific to individual needs which can be stored and retrieved. This includes the ability to enter the dimensions of a pattern and set the magnification of the image, which in turn determines the number of fields acquired. As many real world samples are not flat the scan can be paused to adjust the focus or a series of pre-determined focal positions can be set and the system will automatically refocus during the scan.
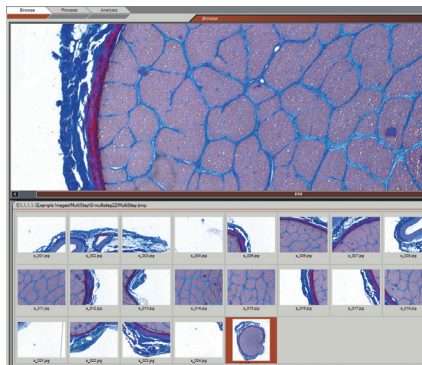
Further benefits:
- Intuitive view of scan images through a gallery
- Live images can be annotated with calibration markers to provide an easy guide to image size
- Scanning sequences and microscope settings can be saved and recalled to increase efficiency whilst saving valuable time

ⓘ optional module

Get the Big Picture!

LAS Power Mosaic ⓘ

LAS Power Mosaic[1] provides the ultimate in high-resolution specimen visualisation. Scan the entire specimen or select a specific region of interest and it's scanned at high speed and then combined to form a seamless mosaic image which can be rapidly viewed at any zoom level. Once the scan is complete you can relocate effortlessly to areas of interest with a single mouse click and can view the live microscope image that corresponds to a chosen location. Furthermore, you can zoom and pan around the entire digitised mosaic image using easy and intuitive "browsing" tools.

In addition to LAS Power Mosaic there is LAS Power Mosaic Plus. This includes all the features of Power Mosaic but adds the ability to do Z-Stacking to create an extended focus 3-D mosaic image which is ideally suited to specimens with a wide focal range.

*1   Requires motorised stage, fast camera and Oasis Drive-Board
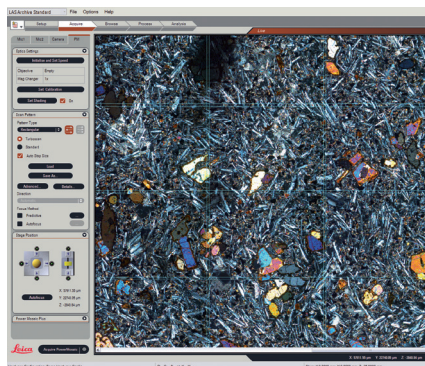
Further benefits:
• Scanning and acquisition at camera frame rates to ensure high speed and rapid throughput
• Tile edge Blending provides highest possible image quality
• No restrictions on contrast or imaging method
• Fast and accurate relocation with easy and intuitive review tools
• One click calibration for easy camera alignment
• Optional advanced functions, including powerful 3-D Z-Stack mosaic acquisition

ⓘ optional module

Features at a Glance!

Power Mosaic Scanning
- Uses triggered image capture for fast continuous scan and acquire
- Standard scan available using step and acquire for low light applications
- Image streaming for mosaic sizes only limited by disk space
- Additional scans can be easily added to extend an initial scan

Scan Patterns
- Rectangle, Circular, Annular, Cross (+ and x), or Random
- Overlap of tiles allows joins to be merged seemlessly
- Camera rotation is automatically corrected
- Create a scan pattern interactively or by entering the exact details
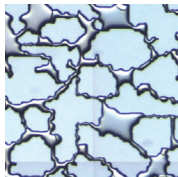
Microscope Automation
- An Oasis XY stage and Z focus control drive board is used
- A software joystick or Leica Smart Move can be used for stage and focus movement
- Fully compatible with Leica Microsystems LAS configured microscopes handling focus, turret, condenser and lamp controls

Leica Microscope Camera
- Exposure, saturation, gain and gamma control from LAS controls
- Triggered acquisition from progressive scan and DFC FX cameras for fastest scans
- Automatic and manual white balance
- Color or monochrome acquisition (8 or 16-bit)
- Shading correction for smooth mosaic results

ⓘ optional module
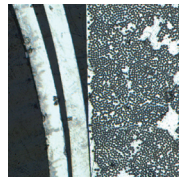
Timeless Imaging!

LAS Multi-Time ⓘ

The LAS MultiTime module is a highly effective solution for the automatic acquisition of time-lapse images at intervals from seconds to minutes and hours. Captured images are stored to the hard drive at specified times and can be recalled quickly and easily as a sequence allowing them to be replayed over a short period. The system is highly versatile and performs these tasks in a simple and routine manner to save valuable time whilst including manual intervention and pause facilities, if settings need to be adjusted. Additionally includes the LAS Movie moodule to create movies directly from your Leica digital camera.

The time-lapse images are stored sequentially in a sophisticated gallery from which individual images can be selected for closer inspection. Images can be annotated with calibration markers to provide a quick and easy guide to image size. Further annotations can be added such as name, date of acquisition and a description.
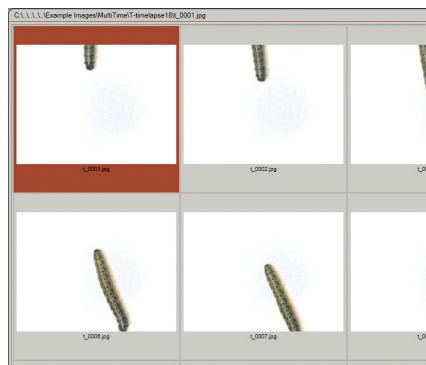
Further benefits:
- Zoom and pan so that images can be viewed in detail
- An image display which automatically adapts to the resolution of the acquired image
- The time-lapse sequence can be replayed as an automatic slideshow with the effect of speeding up time

Simply Brilliant!

LAS Image Overlay ⓘ

Precise control of microscope functions is essential for high quality fluorescence imaging. By displaying a live image with exposure adapted to the selected filter, it is easy to compose the image in the field of view. The camera's sensitivity, which is further improved by binning modes, makes it suitable even when light levels are very low. Individual exposure and gain can be set for each filter position to ensure that the optimum imaging conditions are automatically applied. Additionally, a small region of interest can be selected from the whole image so that areas of significance can be viewed in detail.

Once the images are captured from different filters and contrast methods, they can be combined to create a single composite image so details for the different channels can be easily compared.
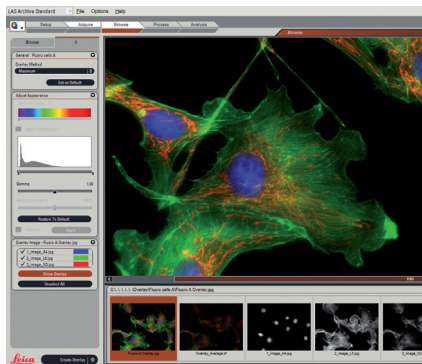
Further benefits:
- Image capture sequences can be automated for routine operation
- Comprehensive overview of images through the sophisticated gallery
- Apply image enhancements including contrast, brightness and gamma to optimise image display
- Add image annotations including calibration markers, image name, date of acquisition and descriptions which can be merged in to the image for permanent record.

ⓘ optional module

Attention to Detail!

LAS Extended Annotation ⓘ

LAS Extended Annotation module allows text and graphics to be added directly to an image. The sophisticated annotation tools include lines, arrows, shapes, image times and text which can be drawn as a separate layer upon an image so that the original file remains intact. By adding comments to each annotation and displaying this as an adjacent label, you can be sure that significant areas are emphasised. Additionally, the scale bar tool provides a visable indication of an image size calculated directly from the known microscope optical conditions derived from the spatial calibration and can be placed horizontally or vertically. All annotations can be subsequently recalled or edited if necessary.

The editing facilities allow annotations to be adjusted including size, color and fonts, so that they can be fully customised to individual needs. You also have complete control of the line thickness whilst the annotation color can be chosen to easily contrast with the underlying image to ensure that all relevant detail is displayed clearly.

Further benefits:
- Annotations can be copied as a group from one image to another and re-used effectively as a template
- All annotations retain a relative size and position even when the original image is altered through zooming and scrolling
- Automatic save function
- Image Comparison

ⓘ optional module

Live Measurement!

LAS Live Measurement ⓘ

LAS Live Measurement brings all of the flexibility and precision to the live image through its efficient measuring tools to eliminate much of the hard work involved in the manual process. Measurements and analysis can be readily customised and accurately recreated for exact data comparisons to further enhance the convenience.

The workflow nature of the User Interface means that using LAS Live Measurement couldn't be easier. Simply trace the object of interest directly on to the live camera image to immediately derive calibrated parameters such as length, area, perimeter, diameter and angle. Traced objects can then be grouped and allocated to different classes along with customised descriptions, colors, captions and statistical data so that all measurement data are easily accessible.
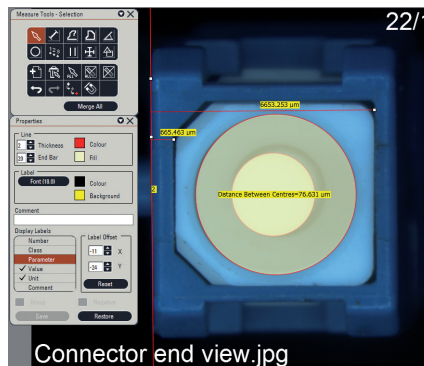

Further benefits:
- Constant live image display with measurement data available on top of the image for time saving purposes
- Measurement templates provide a convenient means of comparing current and previous images
- Populations of objects can be counted and allocated to different classes for instant visibility and easy comparison
- Multiple measurement types

ⓘ optional module

Measuring Up with LAS!

LAS Interactive Measurement ⓘ

LAS Interactive Measurement is designed to simplify the manual tasks involved when deriving calibrated measurement parameters such as length, area, perimeter, diameter and angles. Measurement types include depicting the vector distance between points, determining angle, width and height and calculating areas and mean intensity. By tracing around the object of interest, it is easy to identify areas of significance and perform sophisticated measurements upon them. The color and line thickness of measurement tracings can even be adjusted to contrast fully with the underlying image or merged in to it to create a permanent record. Furthermore, each measurement can be labelled with a sequence number, a parameter name, a value and a written comment.

Connector end view.jpg

Further benefits:
- Measurements can be applied to individual images or accumulated over multiple images so that statistical trends can be determined
- Object tracings can be stored and recalled in overlay format so that they can be reviewed effortlessly
- A workflow approach to defining the parameters through to actual measurement and subsequent analysis

Detailed Analysis!

LAS Image Analysis ⓘ

LAS Image Analysis is a sophisticated software module that automatically performs feature detection, measurement and the evaluation of multiple image features which can be used in a diverse range of imaging fields. With it's Sequence Panel, LAS Image Analysis guides you through the set up process to simplify the procedure of acquiring meaningful data and once established, these settings can be used repetitively for future analyses.

With LAS Image Analysis you can process images to enhance the edges of features so that they are accurately measured. By simply using the thresholding functions you can specify the minimum and maximum gray scale values or the hue saturation and intensity levels of a color image to identify the required image detail, prior to measurement. Once the binary image has been produced, the features in this image can be measured to give a variety of morphological information such as size, shape and position.
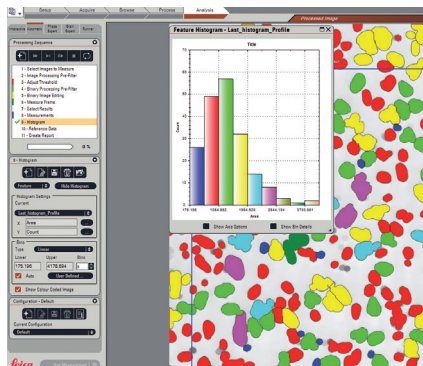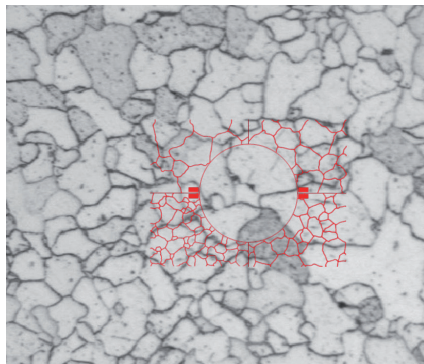

Further benefits:
- An easy to use sequence control that guides you through the whole set up process for acquisition, detection and measurement.
- Sophisticated measurements on individual features including size, shape, position, orientation and intensity
- Create meaningful results with a range of analysis tools including statistics, histograms and pie charts

ⓘ optional module

Reticules Resolved!

LAS Reticule ⓘ

The LAS Reticule application provides electronic means of viewing live images and overlaying reticule styles to provide visual feedback as to the approximate scale of the field of view. The electronic reticule is not only more cost-effective than the traditional graticule method but also provides a more pleasurable working environment where the live microscope image is displayed on screen and an unlimited range of reticule styles can be overlayed. Additionally, reticules can be designed and applied quickly and easily, so the set can be extended as and when it's necessary.

Reticule information can be saved either by producing it in overlay format or by burning it into the image for permanent record. If the reticule is saved as an overlay, the information can be removed or altered. A copy of the reticule file will be made and stored with the image so that if the master reticule is subsequently altered the stored image and reticule remain unchanged.

Further benefits:
- Reticules can be fixed or scaleable for additional flexibility
- Standard user and power modes allow varying responsibilities
- An unlimited number of different reticules can be used
- Additional reticules can be applied on a stored image

ⓘ optional module

Count and measure the Grain!

Leica Grain Expert ⓘ

Leica Grain Expert offers a comprehensive selection of grain size analysis techniques for materials research and metallurgy. Users can be confident that the analysis process conforms to individual laboratory requirements. Leica LAS Grain Expert incorporates industry standards including ASTM E112, JIS G 0551/0552, and ISO 643:2003.

For each standard, the grain counting method can be selected from a variety of technique: Planimetric, Vertical Lines, Horizontal Lines, 3 Circle, and Intercept – Heyn.

State-of-the-art image processing automatically enhances and accurately detects grain boundaries, and the operator can always modify and confirm the findings. Results from the analysis may be used to qualify material to the specifications determined between purchaser and manufacturer, identify variations in manufacturing processes, and provide data for research about the structure and property of materials.
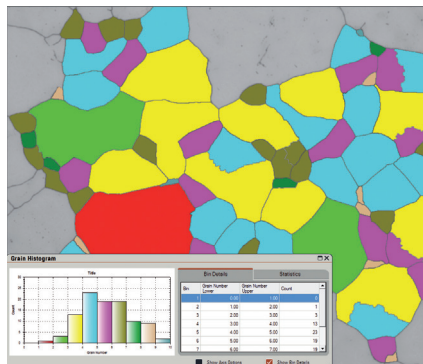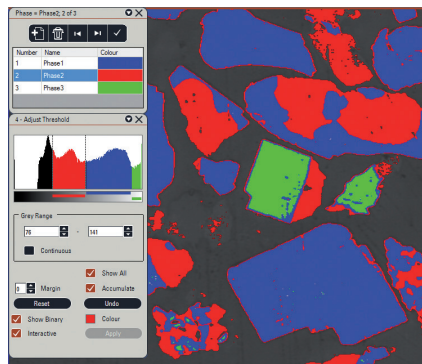

Further benefits:
- Configurable workflow that can be tailored to your laboratory requirements
- Measurements to Industry standards
- Integrated report generation facility, including standard templates that can be easily customisable

ⓘ optional module

Measure the Phases!

Leica Phase Expert ⓘ

Leica Phase Expert automatically and precisely measures the area percentage of multiple phases within a sample or specimen. Phases are identified by grey level contrast or by regions of homogeneous color that can be defined by the user. Up to 10 phases can be differentiated by colored overlays and can be simultaneously displayed for the same field of view. Identification and measurement of multiple phases of an image can be performed within seconds. Results can be accumulated over multiple fields of view to allow statistically accurate characterization of the specimen.

Further benefits:
- Automated measurement ensures repeatability
- Integrated report generation facility, including standard templates that can be easily customisable
- Easy and efficient workflow saving time and effort

ⓘ optional module

Quality Assurance Expert!

Leica Steel Expert ⓘ

Leica Steel Expert is a specialized software application for automatic and semi-automatic steel inclusion rating running in the established Leica Application Suite environment. Steel manufacturers increasingly have to certify the quality of their steels to be competitive in the international market.

Leica Steel Expert allows the verification of the different types of non-metallic inclusions in steel alloys and provides full compatibility with most established industrial standards including ASTM E45 A, D and E, ISO 4967 A and B, DIN 50 602 with K and M methods, JIS G0555 and now also with the new EN 10247. The comprehensive nature of Leica Steel Expert means that all standard results can be displayed at the same time for easy comparison. Furthermore, these comparable results can now be generated in different laboratories all over the world.
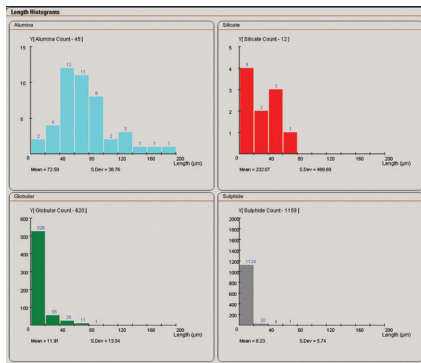
Further benefits:
- Classifies and grades inclusions by color as well as shape and arrangement
- Data accessible in raw, processed and histogram format
- Full implementation of the recent EN 10247 standard
- Measurement results can be viewed independently from magnificaton and viewed simultaneously for easy comparison

ⓘ optional module

How clean is your process?

Leica Cleanliness Expert ⓘ

Leica Cleanliness Expert is designed to measure the contamination of cleaning fluids for micro mechanic and engine components. It can be used in all applications where particle classification and characterisation on circular shaped substrates is undertaken. During the measurement process an overview image of the whole filter is built up and the length of the largest detected feature is displayed. The user can zoom in on the overview image whilst it is being built to get an early indication of the filter preparation, imaging quality and the presence of very large fibres and particles.

Further benefits:
- Creates high resolution images up to 12 k x 12 k pixels
- Easy to use and quick to perform measurements on circular filters for rapid results
- Automatic differentiation between reflective and non-reflective features
- Fully compliant with the latest standards
- User management to avoid unauthorised alterations of settings.

ⓘ optional module

Adapts to many sample types

LAS Layer Thickness Expert ⓘ

Leica LAS Layer Thickness Expert offers the user a comprehensive solution for the microscope analysis of layers and coatings of many different materials such as paint, chrome plating, plastic coatings. The user can be confident that the analysis process conforms to their individual particular laboratory requirements. Leica Layer Thickness Expert incorporates industry standards including ASTM B487 and ISO 1463 for Metallic and Oxide coatings.

The analysis identifies the layer and measures its thickness at multiple points from which the average thickness is derived. As layers appear with a wide variety of contrasts, a selection of technique are used that can range from fully automatic to entirely manual.
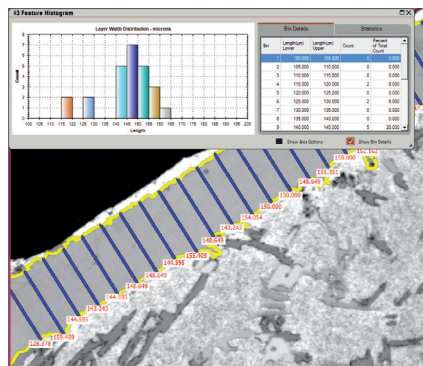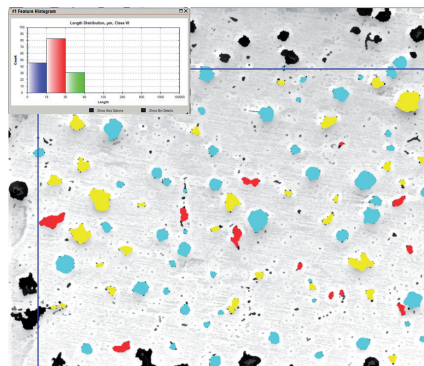

Further benefits:
- Industry standards including ASTM B487 and ISO 1463 for Metallic and Oxide coatings
- Customisable reporting templates
- Automated image processing and analysis to identify the layers

ⓘ optional module

Rapid nodule classification

LAS Cast Iron Expert ⓘ

Leica LAS Cast Iron Expert offers the user a comprehensive solution for the microscopic analysis of Cast Iron. The user can be confident that the analysis process conforms to their individual particular laboratory requirements. Leica Cast Iron Expert is used for ductile irons and incorporates industry standards including ASTM E247, ISO 945-2 and JIS5502.

The analysis identifies graphite nodules and places these into shape and size classes. Additionally the Ferrite and Pearlite content of the sample may be optionally assessed. The results from these separate analyses can be combined to provide Ferrite and Pearlite results adjusted for the graphite content.
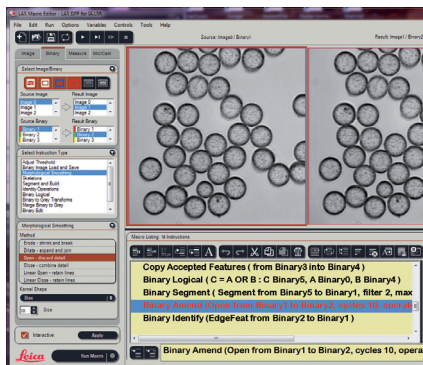

Further benefits:
- Automatic identification of Graphite and Ferrite
- Step by step operation ensuring repeatability
- Supports the widest range of international standards - ISO, ASTM, JIS
- Support of automated microscopes for high reproducibility
- Classify Graphite types
- Polishing artefacts can be removed with manual editing

Complete Analysis Automation

LAS Macro Editor and Runner ⓘ

LAS Macros automate the whole imaging process. From the image capture with full control of the microscope* and camera to image processing, analysis, measurements and report generation. The richness of image processing functions in LAS can be adapted to a wide range of demanding imaging tasks. LAS Macro allows repetitive tasks to be customised for the needs of particular applications, optimising imaging solutions in a wide range of fields. This versatile module captures, processes and analyses images obtained by Leica digital microscope cameras and Leica digital microscopes using the power of LAS.

Further benefits:
- Create macros interactively – no need to type line of software code
- Automate routine and repetitive imaging tasks
- Fully supports Leica cameras and automated microscopes

* For automated microscopes   ⓘ optional module

LAS Imaging Modules Overview

LAS Live Image Builder
Fast, efficient and cost effective extended wide field and depth of focus modules ideal for manual microscopes and stages.

LAS Store and Recall
Get completely reproducible results including light settings, contrast method, magnification, exposure time and much more.

LAS Archive
Gain rapid and convenient access to all digital image data through the sophisticated database structure.

LAS Web Share
Share live images which can be simultaneously viewed by one or more remote users.

LAS Multifocus
Create extended depth of field images from a series of partially focused images.

LAS Montage
Create and visualize extended focus images and with the depthmap see this in revealing detail.

LAS MultiStep
Automatically acquire images at XY positions defined by a rectangular pattern.

LAS Power Mosaic
High resolution seamless mosaic images from entire specimens for zooming, pan around and saving with intuitive tools.

LAS Multi-Time
Additionally create movies directly from your Leica digital camera.

LAS Image Overlay
High quality fluorescence imaging from visualization through to enhancements and the documentation of images.

LAS Extended Annotation
Add content and graphics directly to an image, including lines, arrows, shapes, times and text.

LAS Live Measurement
Trace an object of interest directly in to the live camera image to immediately derive calibrated parameters.

LAS Interactive Measurement
Perform sophisticated measurements on areas of interest and count and classify objects individually.

LAS Image Analysis
Automatically perform feature detection, measurements and the evaluation of multiple image features.

LAS Reticule
View live images and overlay reticule styles electronically to get visual feedback as to the approximate scale of the fields of view.

Leica Grain Expert
Fast and efficient software for grain size analysis.

Leica Phase Expert
Smart software for analysis of multi-phase microstructures.

Leica Steel Expert
Get fast, accurate and reproducible results for steel inclusion ratings of stainless steel alloys.

Leica Cleanliness Expert
The new analysis software for measurement and classification of particles on filters.

Leica Layer Thickness Expert
Easily and automatically analyze and measure the thickness of layers and coatings such as paint, chrome plating and plastic coatings.

Leica Cast Iron Expert
A comprehensive solution for the microscopic analysis of ductile irons, including the identification and assessment of graphite nodules and Ferrite and Perlite content.

LAS Macro Editor

LAS Macros can be used to automate the image capture, processing, analysis and measurements process for quantitative microscopy.

New Modules

Keep up to date with new features and exciting new LAS modules by visiting the Leica website – www.leica-microsystems.com.