



Step Beyond Infinity >>

**The new Leica M165 C and M205 C are a step
into a new dimension of stereomicroscopy.**

Leica

MICROSYSTEMS



A Step Towards Infinity

Ever since their introduction by Horatio S. Greenough, stereomicroscopes have worked according to the optical principles based primarily on Ernst Abbe's research. For over a century, ingenious optics designers and engineers have worked to push magnification, resolution and image fidelity to the limit permitted by optics. In doing so, they have always been constrained by the interrelation between three factors: the higher a microscope's resolution, the lower the available working distance. If one increases the distance and resolution using larger objectives and lenses, the three-dimensional image seen by the observer becomes distorted – A cube becomes a tower, a flat surface curves toward the observer.

Limits are made to be broken.

The Leica M205 C is the world's first stereomicroscope with a zoom range of 20.5 \times *. This accomplishment, however, was not enough for Leica's engineers. With the new FusionOptics™, they have succeeded in going yet another step beyond previous limits. In addition to the increase in magnification, the resolution, too, has been increased to up to 1050 lp/mm, which corresponds to a resolved structure size of 472 nm. Of course, this performance increase benefits your everyday work. Set up your specimens on the microscope with comfortable freedom of movement and discover details in stereomicroscopy that you could never see before.





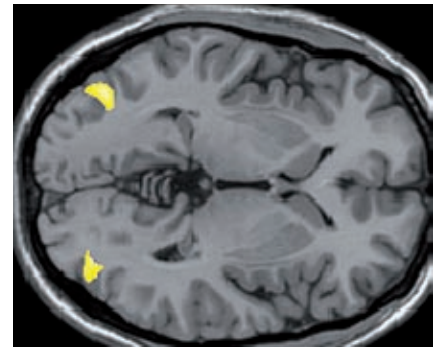
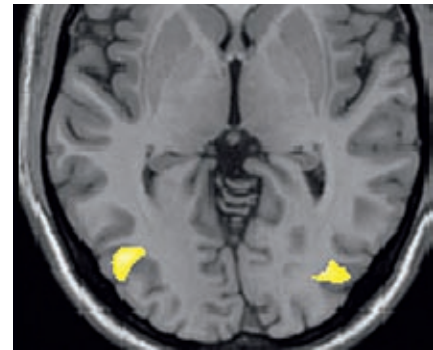
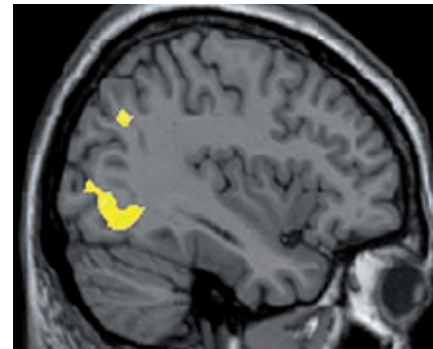


Juggling Increases Brain Size

Previous studies have assumed that humans build up brain mass during childhood, develop neurological networking through training during youth, can at best maintain this complexity during midlife, and will inevitably experience diminished mental performance as they continue to age.

Now, a study conducted by Dr. Arne May* of the University of Regensburg in Germany has shown that certain regions of the adult brain have the ability to build up brain matter through training. In a group of laypersons, who practiced juggling over a three-month period, structural changes in the cerebral cortex were identified after the training period. Astonishingly enough, the new brain matter formed primarily in the two areas responsible for vision and touch. Obviously, the difficulty in juggling lies in visually capturing and analyzing the balls' movements.

The Leica FusionOptics™ takes advantage of the flexibility of our brains and, as an added benefit, trains your mental performance capacity.



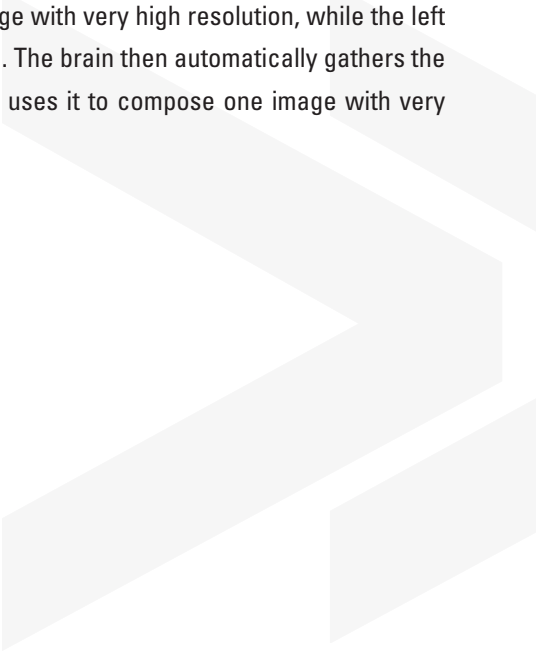
The areas marked in yellow are the regions in which new brain matter was shown to have been created. Courtesy of Dr. Arne May (University Clinic Hamburg)

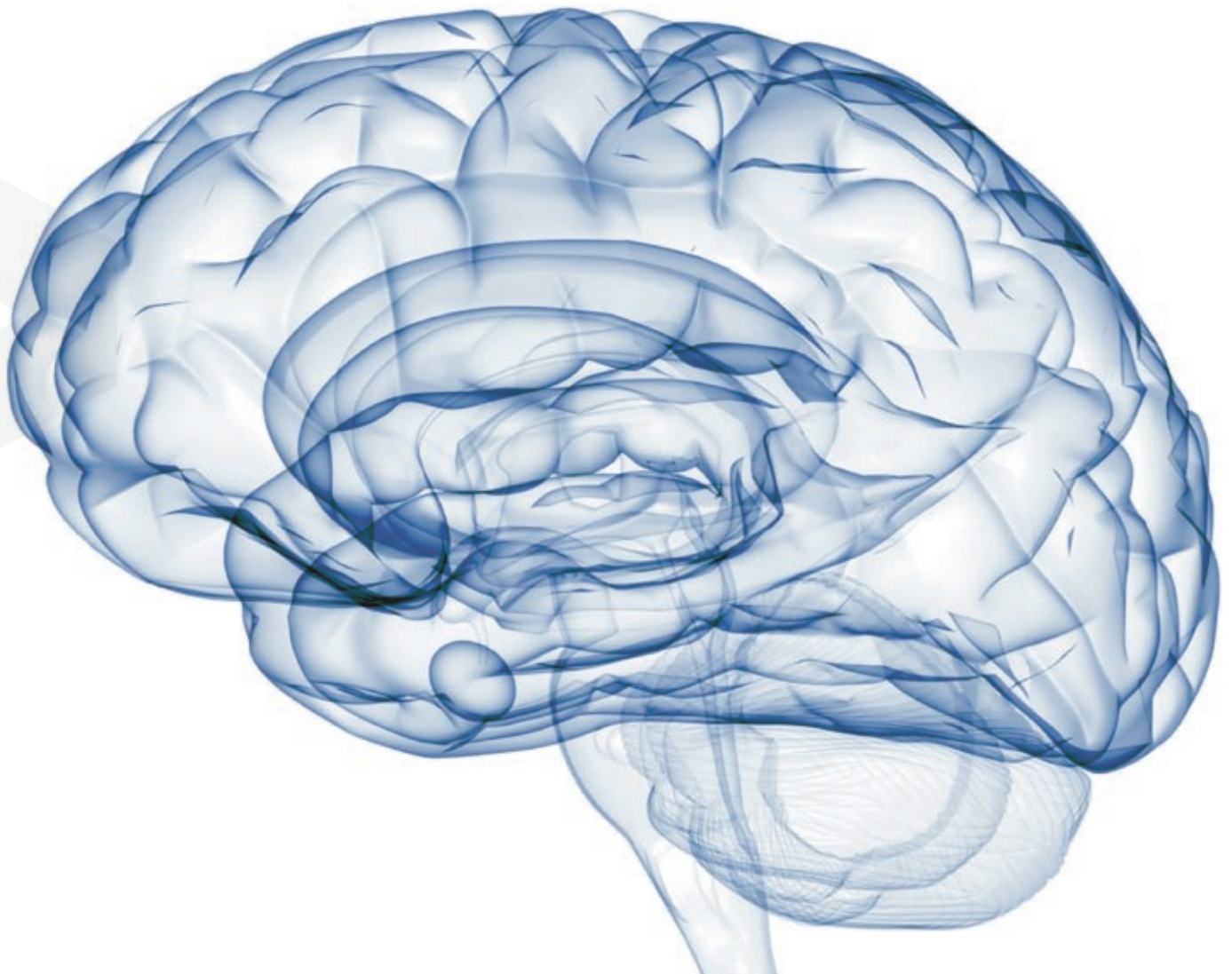
More Brain Means More Success

The human brain is a fascinating piece of work. Without interruption, it calculates a three-dimensional rendering of our environment from the data provided by both our eyes. What is truly remarkable, however, is the brain's ability to gauge situations with lightning speed based on the information it receives, and to react to such situations appropriately.

"Brain jogging" with the Leica M205 C

The design principle of the new Leica M205 C is based on the exceptional flexibility of the brain. The microscope assigns a different task to each of the two beam paths: the right channel contains an image with very high resolution, while the left channel provides very high depth of field. The brain then automatically gathers the best information from both sources and uses it to compose one image with very high richness of detail and depth of field.





LEICA M205 C

Planapo 1.0x

Planapo





You Can Have It All at Once

High magnification with great ergonomic benefits

Conventional stereomicroscopy gives users a choice: They either choose high resolutions and richness of detail, or opt for a larger working distance to be able to manipulate the work specimen. The higher a microscope's resolution, the less free room there is between specimen and objective.

With a 1× objective, the Leica M205 C reaches magnification ranges that previously required high-magnification objectives. This has direct benefits for your everyday work. The M205 C resolves structures of under one micrometer, while providing the user with 61.5 mm of additional free room for specimen manipulation. Sorting and processing – even for the smallest details – can be carried out easily without changing objectives.

APO for all

To take full advantage of the performance capacity of the new instruments, all new M-series components are apochromatically corrected. Thus color seams and curvature of field are finally a thing of the past.

Up to Your Tasks. Put Us to the Test!



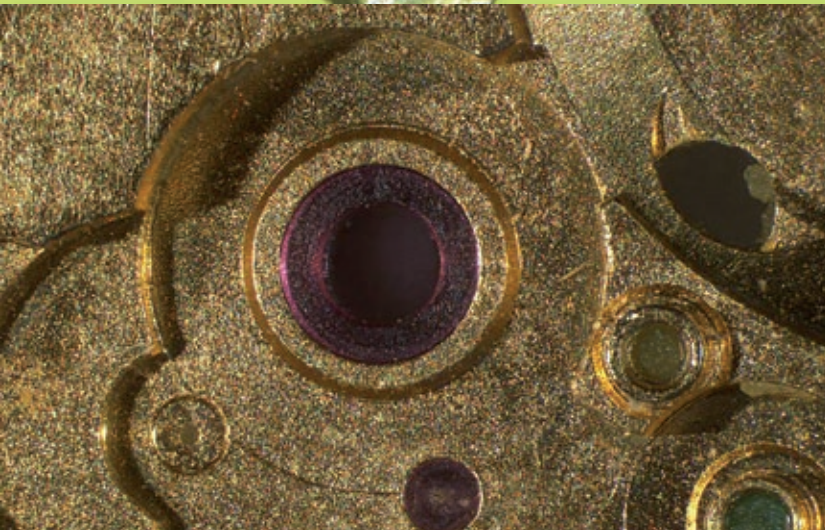
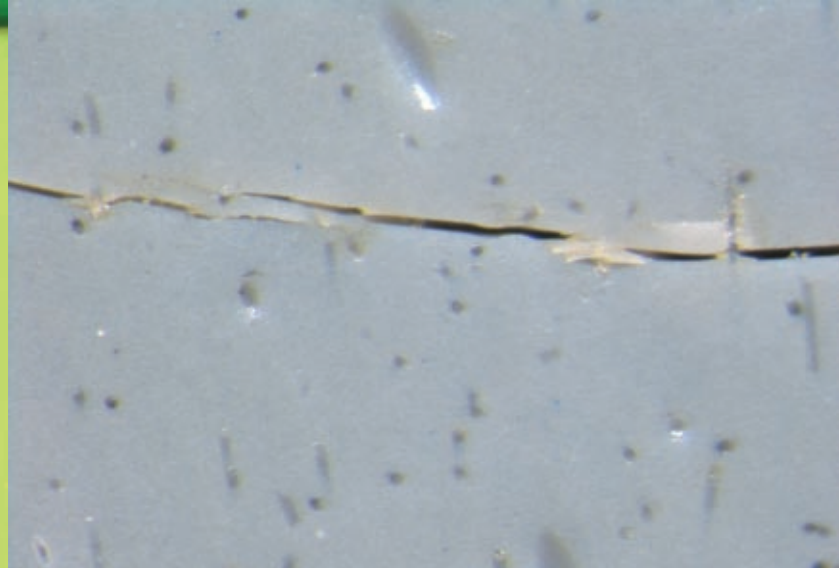
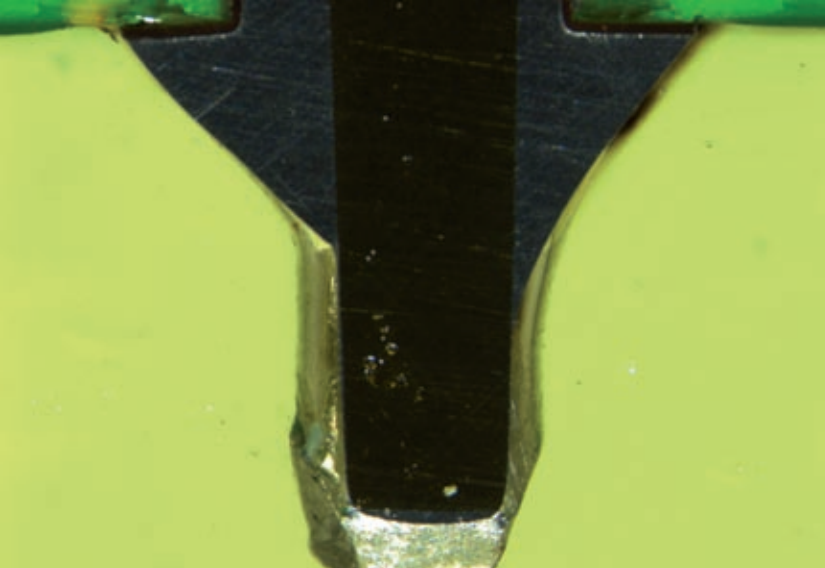
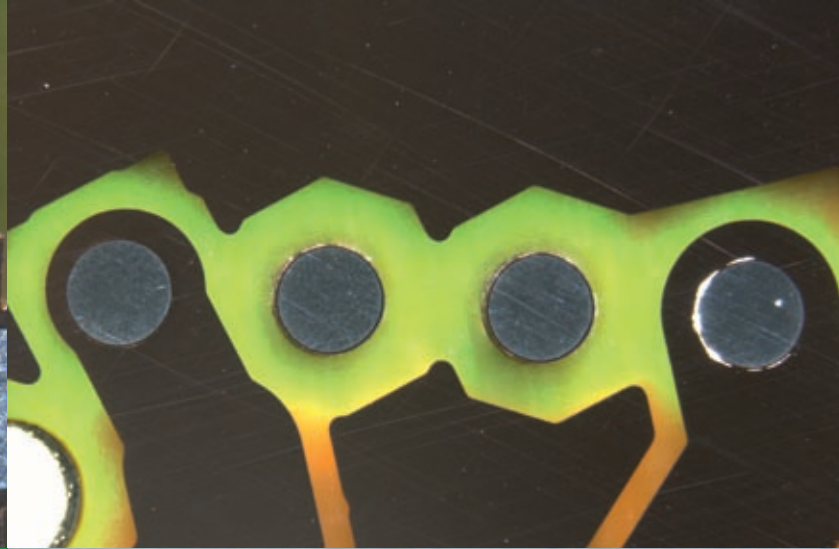
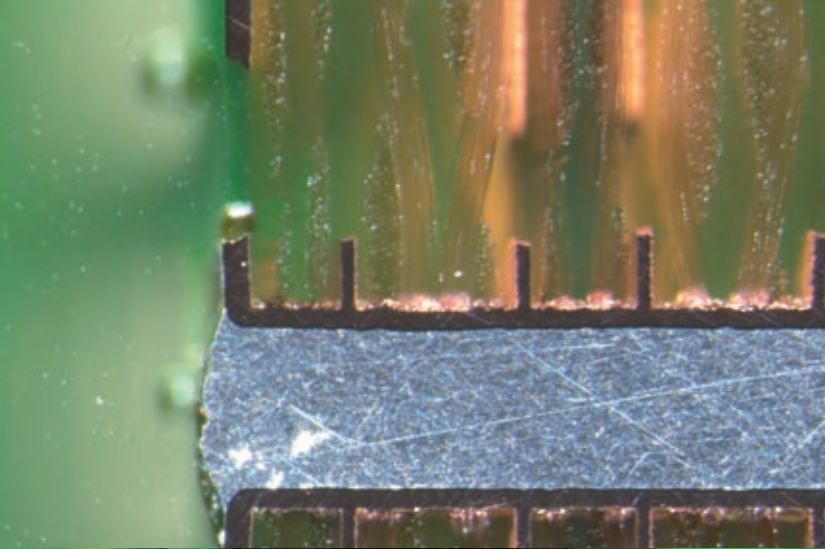
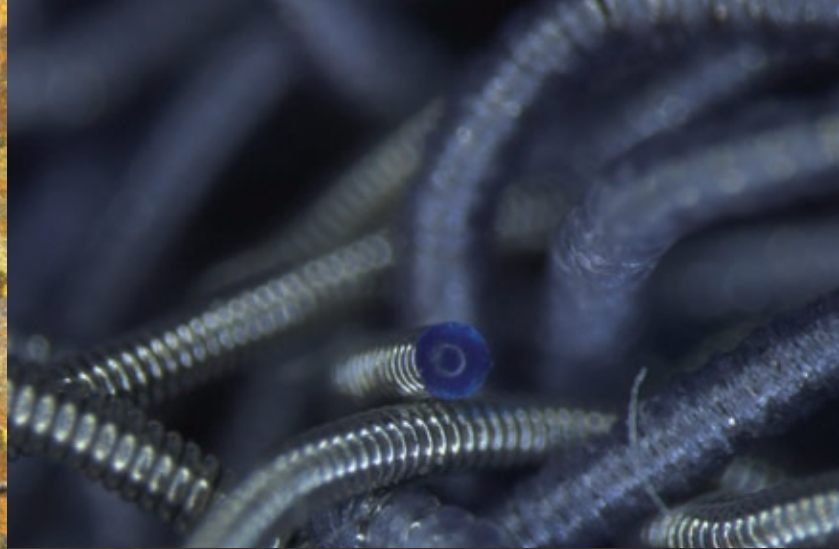
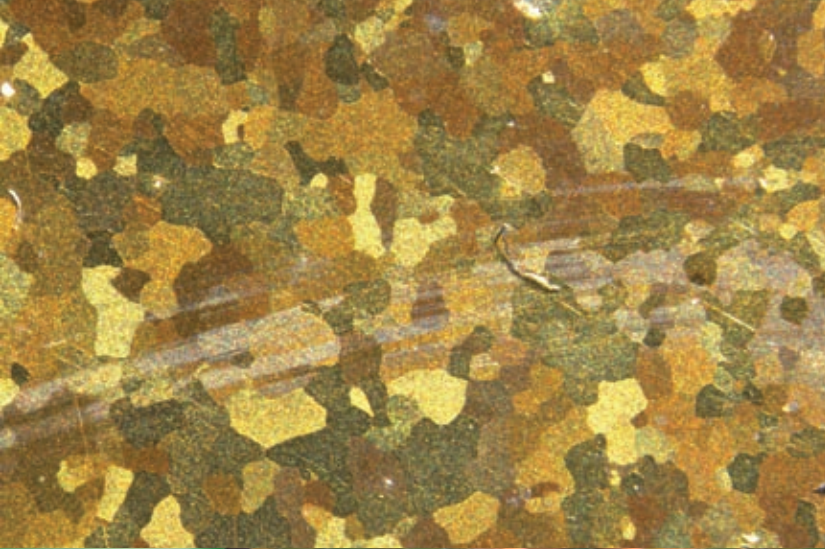
Whenever human lives may be affected, technology must be 100% reliable. For this reason, autopilots in airplanes and trigger mechanisms in airbags, for example, are subjected to stringent materials testing. This testing includes a wide variety of methods used to measure the behavior and material characteristics of standardized material samples or finished parts (component testing) under thermal, mechanical and chemical stress. During the tests, a material is checked for purity, faults or load capacity.

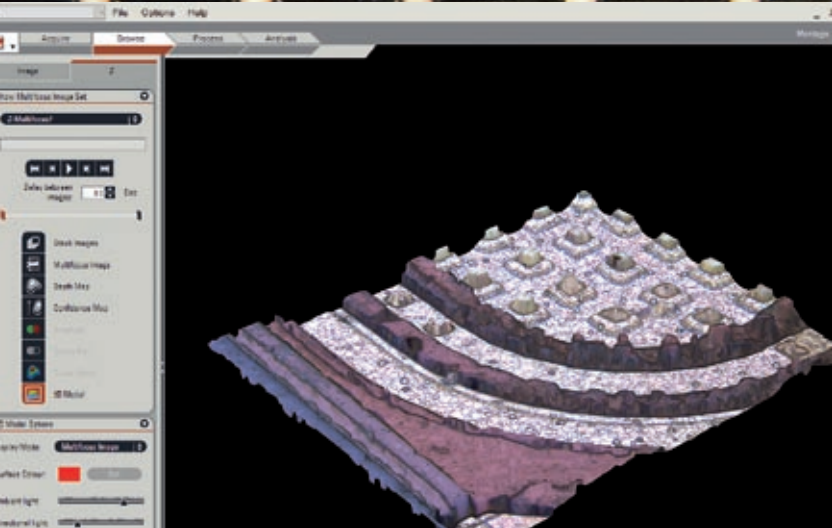
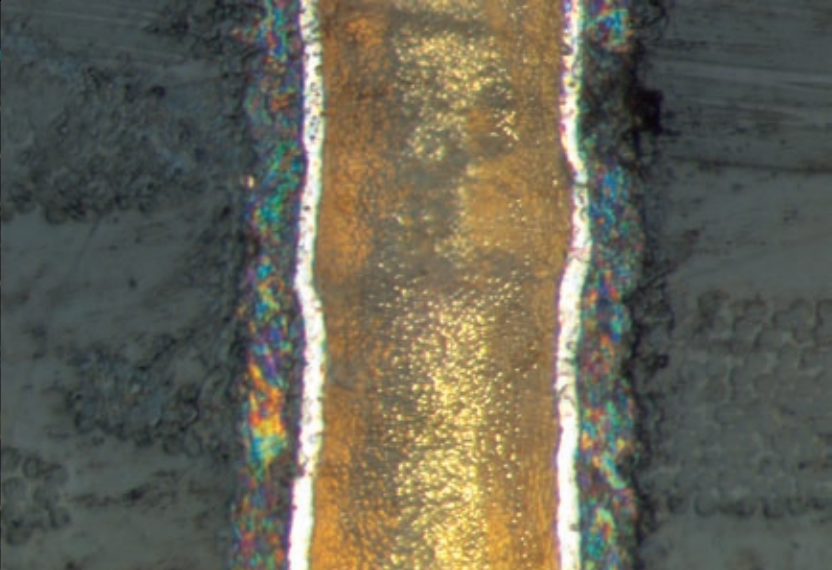
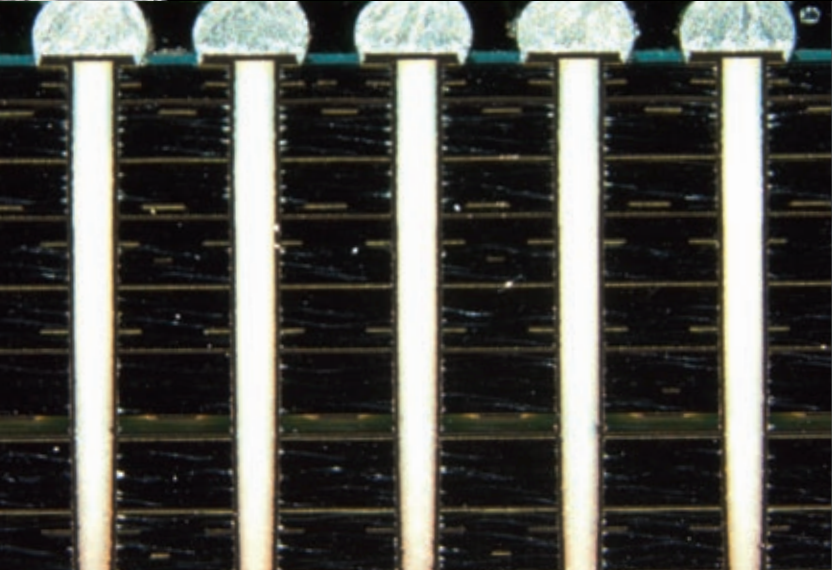
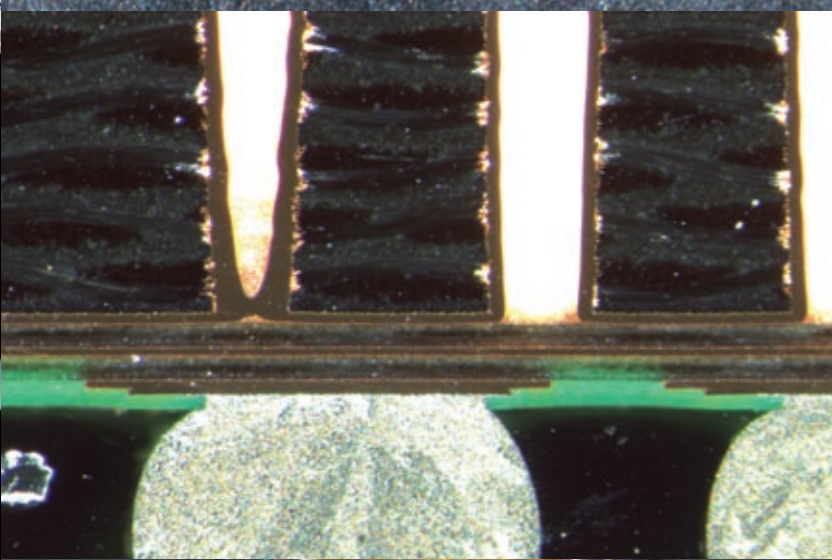
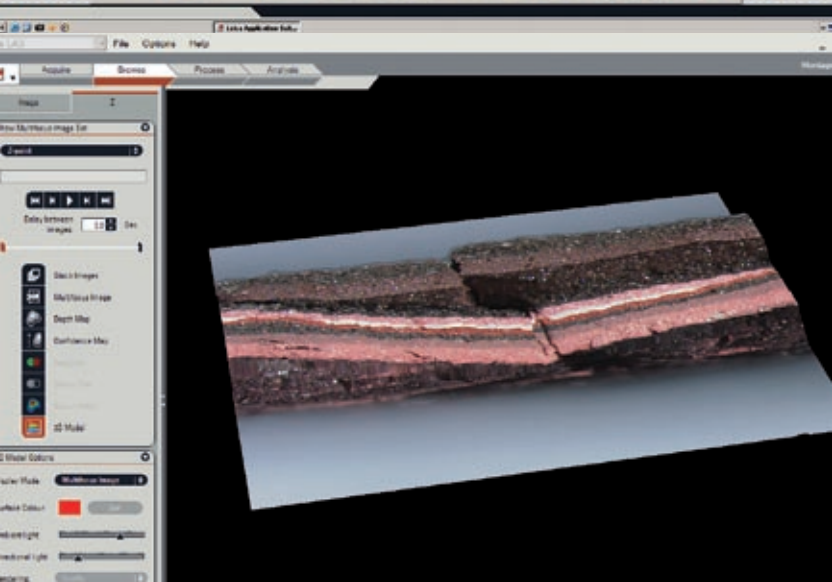
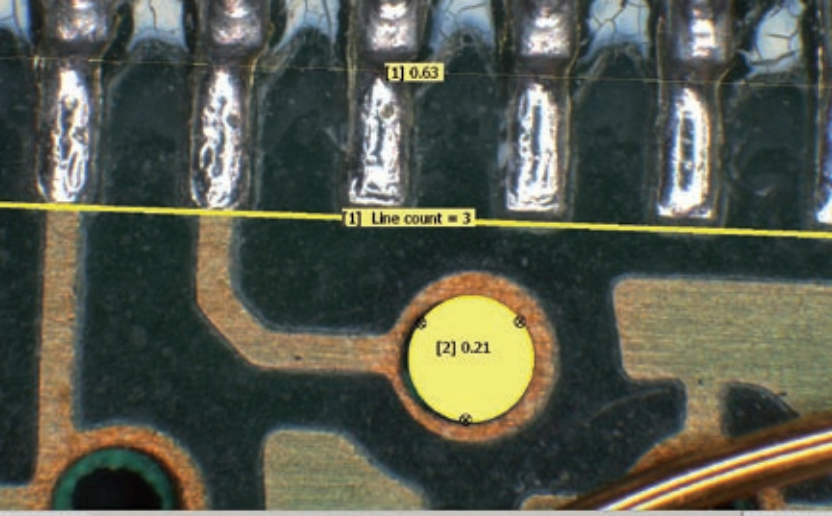
The new Leica M165 C and M205 C allow experts in the materials testing lab to see structures smaller than ever before. The one-of-a-kind FusionOptics™ of the M205 C is the first instrument in stereomicroscopy to enable both a higher depth of field and higher resolution simultaneously.



The electronic encoding of all components involved in imaging allows the tester to virtually eliminate sources of error in measurement applications and reproduce test settings at any time. Using the Leica Application Suite (LAS), you can read out all relevant data, store images in an image database and measure and analyze them using the computer. The two new light sources, the LED5000 MCI™ (Multi Contrast Illumination) and LED5000 RL-80/48, provide a wide range of adjustment and automation options. Along with the automated mechanical stage and the new M-series, they form a complete system. Thus time savings, in addition to error prevention, is one of the foremost advantages of the new M165 C and M205 C.

- | | |
|--|---------------------------------------|
| Brush marks on metal section | Medical implant |
| Through-connections on printed circuit board | Defective through-connection |
| Section through soldered joint | Microcrack through composite material |
| Cutout of clockwork | Section through crimp contact |





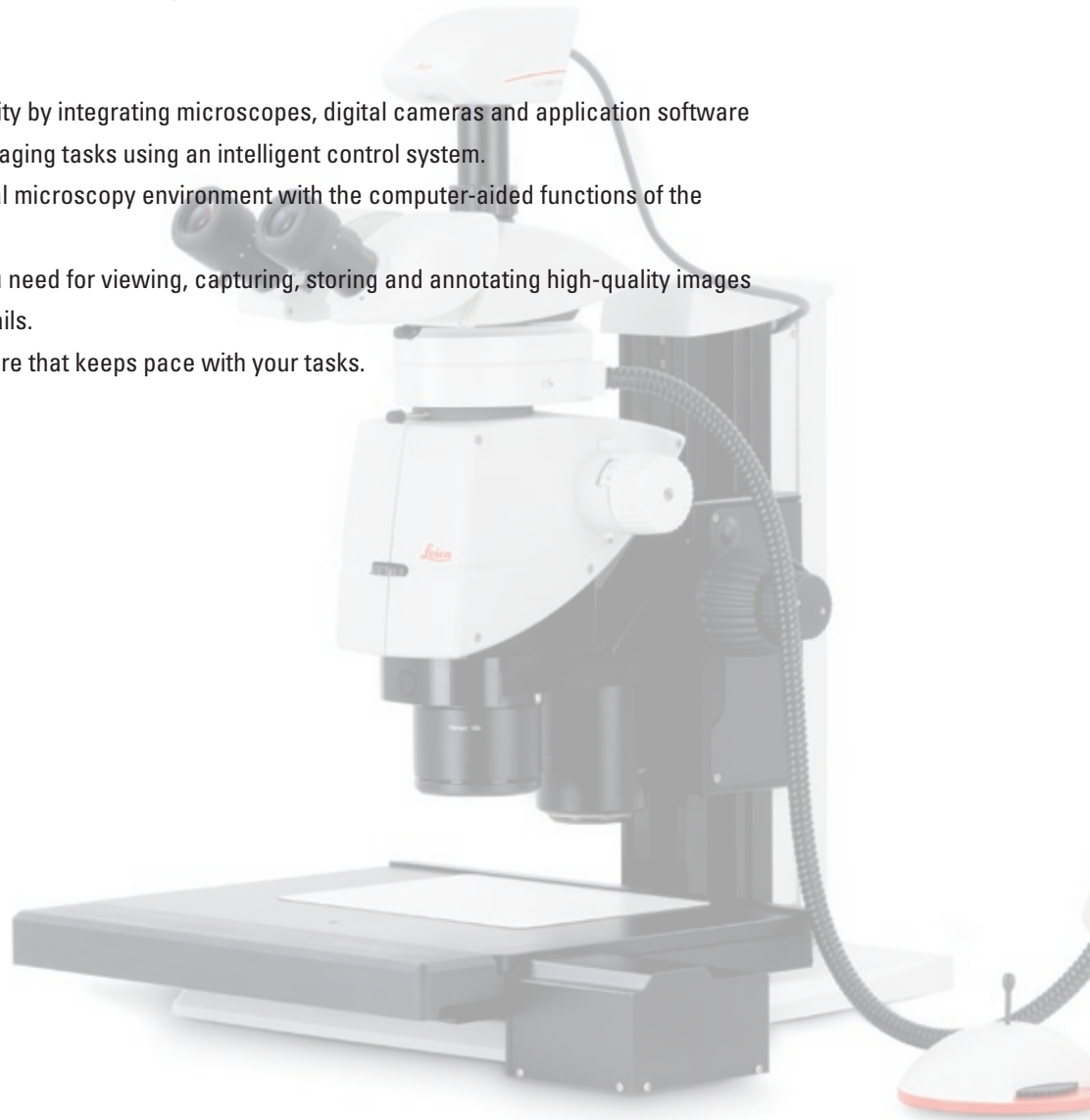
Leica Application Suite: the Cerebrum for Your Data

Integrated complete solution

Thanks to its versatility, the Leica Application Suite can be used for a wide variety of industrial applications. LAS' comprehensive range of image processing functions makes it faster and easier to visualize, process, measure and document digital images. The software monitors all Leica components that are connected to the computer, such as the stereomicroscope, objective changer, DFC camera, LED5000 illumination and motorized cross-stage. The data thus obtained are processed in LAS; to do so, all installed modules communicate with each other. Thus LAS is an intuitive solution that makes both routine and research analysis easier.

Features at a glance:

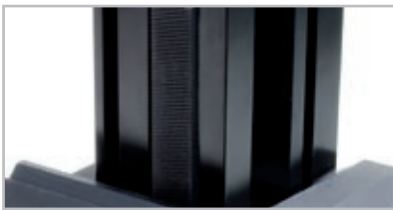
- LAS increases productivity by integrating microscopes, digital cameras and application software in order to coordinate imaging tasks using an intelligent control system.
- LAS automates the digital microscopy environment with the computer-aided functions of the Leica microscopes.
- One application is all you need for viewing, capturing, storing and annotating high-quality images in a gallery with thumbnails.
- High modularity – software that keeps pace with your tasks.



Technical Highlights of the Leica M165 C and M205 C



Objectives: planapochromats, achromats



High magnification is taken into account in the design of the new, extremely stable focusing column



Contacts of the internal instrument encoding



The objective nosepiece meets even the most stringent requirements for the magnification range without laborious refocusing



The LED5000 RL ring illuminator is one of the new, fully integrated illumination components, completely controlled on the instrument or using the Leica Application Suite

Stereomicroscope with the highest zoom

- 20.5:1 zoom allows overview and detail observation using one instrument

Numerical aperture of 0.35 (with 2× planapochromatic objective)

- One-of-a-kind resolution of 1050 lp/mm enables resolution of structures smaller than 472 nm

Rigid, sturdy mechanical structure

- Rigid, sturdy mechanical structure supports high optical performance
- Detail solutions such as integrated cable duct and complete integration of electronics keep your workspace neat and clean

Encoding

- Continuous electronic readout of the magnification
- Automatic assignment of the calibration used for the image eliminates sources of error

Parfocal objective nosepiece

- Objective changes without refocusing
- User-defined combination of main objectives provides huge range of applications
- Encoding provides continuous configuration information to LAS

Modularity

- New Leica M-series instruments can be combined with many existing system components
- Choose from wide selection of objectives, stands, cameras, illuminators and other accessories
- A solution is available for practically every application

Completely integrated illuminator

- New illumination components seamlessly integrated into the complete system
- Complete control and reproducibility of settings
- All settings are elegantly easy to use
- Complete control of settings, manually or using LAS





Relaxed work

- Trinocular tube with 38° viewing angle
- Maximum viewing comfort for different microscope users

Revolutionary FusionOptics™ (M205 C)

- Right channel with high resolution
- Left channel with great depth of field
- Information from both channels is combined in the brain
- Previously unheard-of resolution, brilliance and depth of field

20 notched diopter increments

- Prevents accidental adjustment of dioptic correction
- Replaceable eyecups for the highest standards of hygiene

Apochromatically corrected optics

- Optics corrected for chromatic aberrations and flatness
- No unwanted color seams or distortion during observation, image capturing or image evaluation

Convenient operation under the microscope

- Largest working distances for all Leica main objectives
- Optimum access to work specimen
- Field number 23 enables large-surface overview over the specimen



Left and right channels are separately responsible for depth of field and resolution



38° viewing angles ensure optimally relaxed head posture



The notched increments of the eyepieces prevent accidental adjustment of the dioptic correction



The new, planapochromatic objectives prevent color seams, and field number 23 enables a large overview of the specimen



The working distance of 61.5 mm leaves plenty of free room under the objective

Leica Microsystems – the brand for outstanding products

Leica Microsystems' mission is to be the world's first-choice provider of innovative solutions to our customers' needs for vision, measurement and analysis of microstructures.

Leica, the leading brand for microscopes and scientific instruments, developed from five brand names, all with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Yet Leica symbolizes innovation as well as tradition.

Leica Microsystems – an international company with a strong network of customer services

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and representatives of Leica Microsystems
in more than 100 countries.

In accordance with the ISO 9001 certificate, Leica Microsystems (Switzerland) Ltd, Industry Division, has at its disposal a management system that meets the requirements of the international standard for quality management. In addition, production meets the requirements of the international standard ISO 14001 for environmental management.

The companies of the Leica Microsystems Group operate internationally in three business segments, where we rank with the market leaders.

• Microscopy Systems

Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of microstructures in life sciences and industry. With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

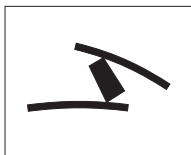
• Specimen Preparation

We provide comprehensive systems and services for clinical histo- and cytopathology applications, biomedical research and industrial quality assurance. Our product range includes instruments, systems and consumables for tissue infiltration and embedding, microtomes and cryostats as well as automated stainers and coverslippers.

• Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery.

Winner 2005



Innovationspreis
der deutschen Wirtschaft
The World's First Innovation Award

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