

# AxioCam MRc 5 A World of Digital Possibilities



**More flexibility and more performance  
in microscope camera technology**



We make it visible.



## Impressive Performance

**A trend setter in digital microscopy, the AxioCam MRc 5 provides outstanding 5 Megapixel resolution, FireWire, high dynamics, and great flexibility in read-out modes. In addition, the AxioCam MRc 5 offers brilliant, true color, high-quality images rich in detail. As a result, new horizons are opening up for applications in medicine, biology, and in materials development and testing. AxioCam MRc 5 responds quickly to the various demands of research and laboratory work, meeting new challenges with power and precision. With all the convenience of a "real scientific camera", and at a price that cannot fail to impress. Never before has a camera in this class combined so much quality and flexibility.**

### **High performance: flexibility up to 5 Megapixels**

5 Megapixels, 36-bit RGB color depth – these impressive performance parameters of the AxioCam MRc 5 are based on a new generation of innovative CCD sensors. Thanks to their increased pixel density and significantly higher image resolution, these sensors produce color images of exceptional brilliance and needle-sharp detail. The 2/3" sensor size permits optimal utilization of the field of view – ideal for your documentation and analyses. Furthermore, fast live color images enable you

to easily select segments of your specimen at a mouse click.

### **Full dynamic range: no compromises**

The AxioCam MRc5 features a dynamic range of 1:1300 with the 12 bit digitization ensuring loss-free image dynamics for optimal capture of various color intensities. These specifications guarantee high performance when working with difficult specimens (e.g. reflecting surfaces in materials microscopy). They allow you to capture and archive image data with maximum color accuracy and image quality. Put quite simply: to evaluate specimens with optimal reliability and confidence.

### **Higher speed or higher resolution: you decide**

The AxioCam MRc 5 is an outstanding performer in the 5 Megapixel class of high-resolution digital cameras, offering exceptionally fast live images. The frame rate can be freely scaled, providing you with the ideal ratio between speed of data transmission, and resolution that your specimen requires. Even with long integration times, high frame rates are obtained in live images, making AxioCam MRc 5 the ideal camera for an exceptionally wide-ranging spectrum of applications.



\* Images with kind permission of ACCESS e.V., Aachen and Foundry Institute of RWTH Aachen, Germany.



- a) Large intestine section (human), Alzian-PAS staining.
- b) Cast iron specimen, etched in polarization channel.
- c) Cross-section of corn leaf, multichannel fluorescence.

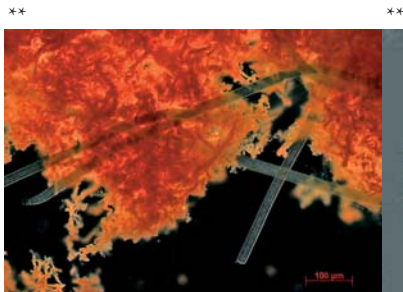
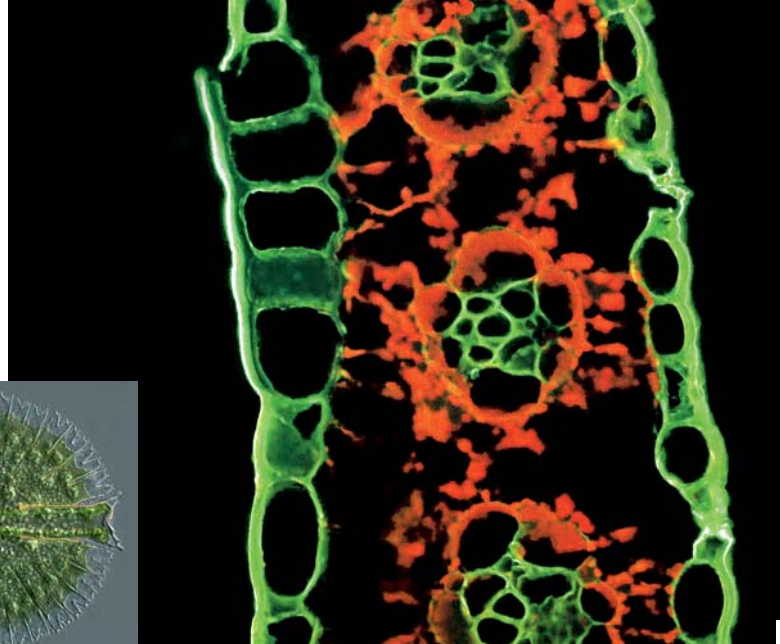
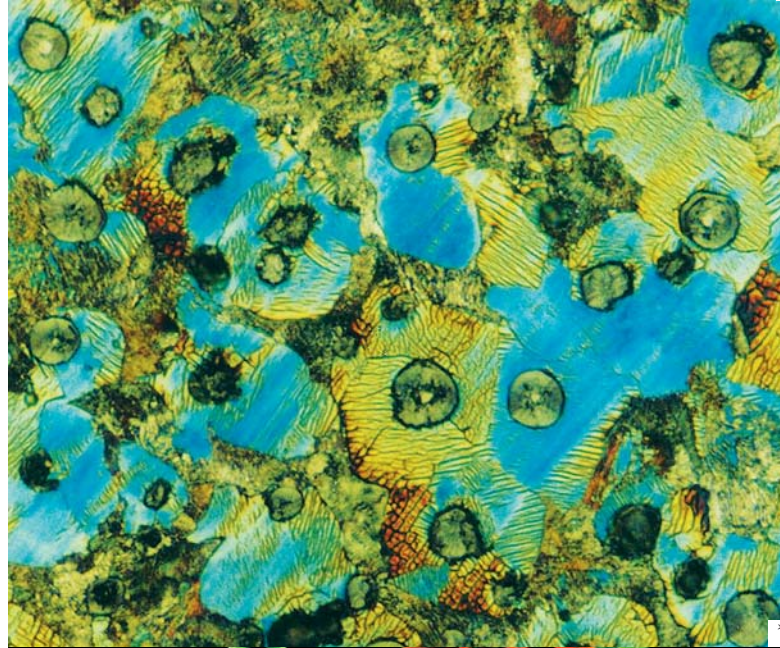
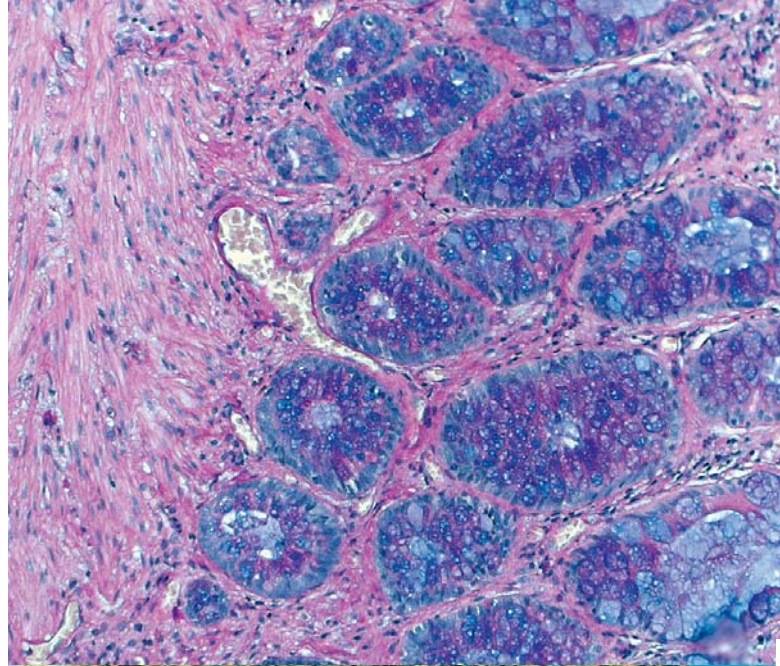
# Superior Down to the Last Detail

## Versatility to suit your applications

Many impressive features ensure the high performance of the AxioCam MRc 5. Maximum electronic signal processing of the cooled "Zeiss Blue" guarantees minimal interference – and thus an excellent signal-to-noise ratio. The results are superb: extremely quickly acquired high-resolution color images, even with low light specimens and long integration times. This is true for all your needs, from simple documentation and reports to large scientific posters.

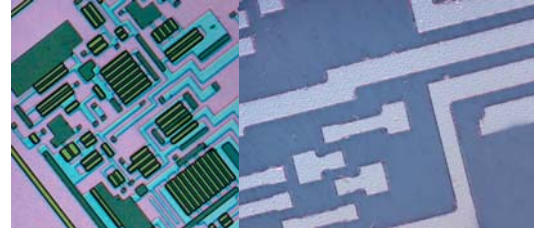
## The read-out modes: freedom for every requirement

Today's microscope cameras are expected to meet the needs of a broad range of applications. And it is precisely here that the AxioCam MRc 5 offers a superior combination of groundbreaking modes. For the image acquisition, for example, resolution is freely selectable – from low resolution right up to ultra-high 5 Megapixels. The 'Quality' mode, on the one hand, utilizes all the image information. The 'Fast' mode, on the other, reads half the pixel information, providing you with the freedom to capture moving specimens artifact-free. In addition, binning functions of 1 x 1 to 10 x 10 allow you to increase light sensitivity or the speed of image acquisition. In either case, you have the option of selecting image sections (ROI).



\*\* Images with kind permission of Prof. David D. Patterson, University of Sydney.





## A Pleasure to Use

### Simple connection: complete mobility

You are ahead with the FireWire: this standardized data interface offers you a wealth of advantages. They range from a simple link to a computer to 100% computer-controlled camera operation and rapid live image speeds. Above all, the FireWire interface provides you with the option of connecting the camera (mostly via hub) to your notebook. As a result, you benefit from greater mobility and can, for example, present your results immediately after image acquisition – without additional framegrabbers or interface cards.

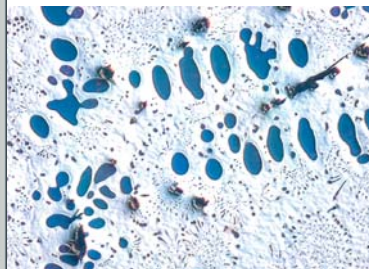
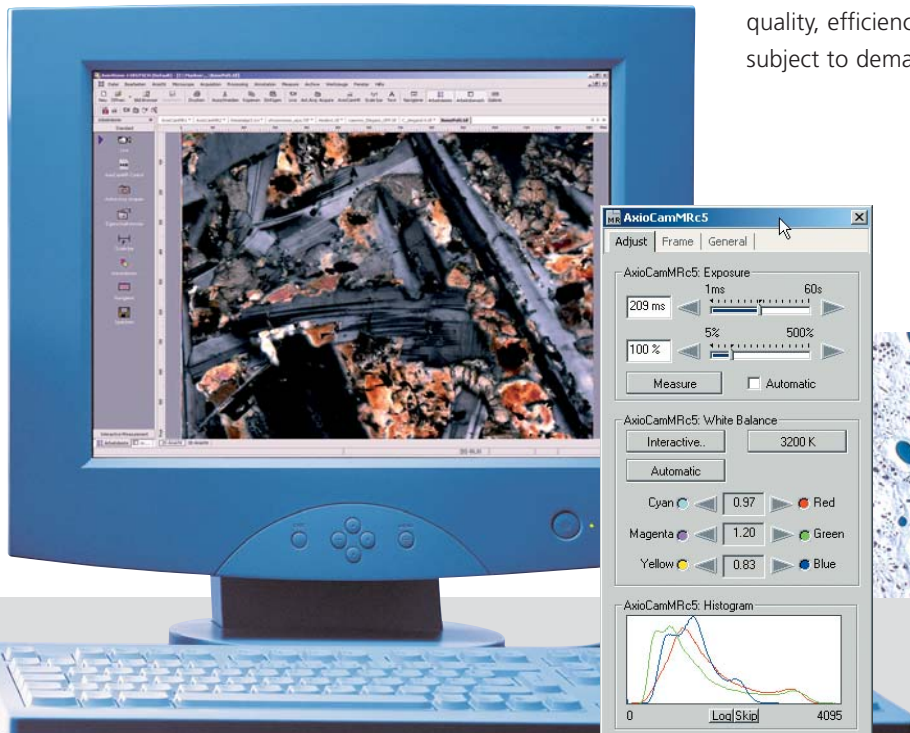
### The software: from basic to high-end

The AxioCam MRc 5 is completely integrated into the imaging software that has been specially developed for the specific demands of microscopy. It comes equipped with image acquisition and processing functions for PC and notebook, which can all be operated intuitively. This complete integration of camera and operating software ensures that you have a powerful and upgradable system for digital imaging at your fingertips. In addition, the homogeneous components are perfectly compatible.

*Thanks to its easy and intuitive operation, the AxioCam MRc 5 displays all settings and enables you to quickly access the full range of camera functions.*

### Versatility as standard

The innovative "Zeiss Blue" was developed for a broad spectrum of applications in research and routine, which require rapid workflows, high-resolution and color fidelity images. This is true in pathology, histology and cytology, where a large number of specimens have to be analyzed and documented every day with greatest precision. This is also applicable for the entire materials field: in industrial inspections, for example, where image quality, efficiency and cost-effective workflows are subject to demanding standards of excellence.

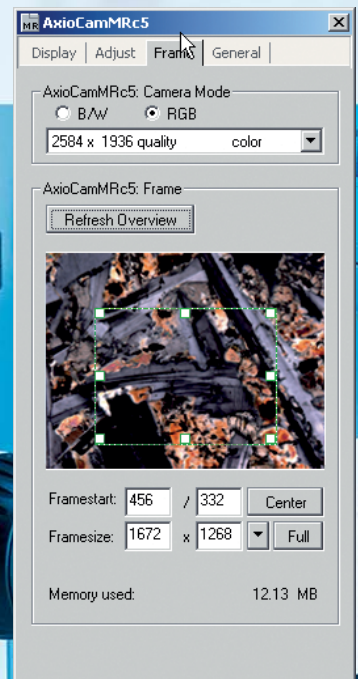


# MRC 5



## AxioCam MRC 5

- 5 Megapixel (2584 x 1936) resolution
- 36-bit color depth
- Dynamic range of 1:1300 for optimal brightness resolution
- Peltier cooling for minimized background noise
- Fast live image modes for easy orientation on the specimen
- Flexible read-out modes for optimal capture conditions
- Binning from 1 x 1 to 10 x 10 to increase camera sensitivity
- Read-out of regions of interest (ROI) on the sensor to define important image sections
- Integration times of 1 ms up to 60 s
- C-mount interface for easy linking of camera to microscope
- 2/3" sensor size for large field of view
- FireWire/IEEE 1394a interface for easy connection to PC and notebook
- Power supply with only one cable
- Trigger In/Out signal for control of external components
- Intuitive imaging software with measuring functions for PC



# AxioCam MRc 5 - Facts and Figures

- **Number of pixels:** 2584 (H) x 1936 (V) = 5 Megapixels
- **Digitization:** 12 bit / 12 Mhz pixel clock
- **Dynamic range:** Typical 1:1300
- **Integration time:** 1 ms to 60 s
- **Cooling:** Single stage Peltier cooling
- **Interface:** FireWire / IEEE 1394a, 6-pin jack, speed 400 Mbit

## Live Image Frame Rate:

Mode	H	x	V	Max. Frame Rate
Slow	1296	x	968	3 frames/s
Medium	430	x	322	11 frames/s
Fast	258	x	193	16 frames/s

**Note:** Max. image frame rate depends on exposure time and the hardware and software of the PC

## Selectable Resolution in Quality Mode (Interlaced):

(Recommended for highest image quality)

H	x	V	Binning
516	x	387	5 x 5
646	x	484	4 x 4
861	x	645	3 x 3
1292	x	968	2 x 2
2584	x	1936	1 x 1

(All modes in color)

## Selectable Resolution in Fast Mode (Progressive):

(Recommended for moving objects)

H	x	V	Binning	Color
258	x	193	10 x 10	Color
323	x	242	8 x 8	Mono
430	x	322	6 x 6	Color
646	x	484	4 x 4	Mono
1292	x	968	2 x 2	Color
1292	x	968	2 x 2	Mono
2584	x	1936	1 x 1 interpolated	Color

Read-out of sensor sub-regions: Random definition of regions of interest (ROI) on the sensor

Pixel size:	3,4 µm x 3,4 µm
Sensor size:	8,7 mm x 6,6 mm equivalent to 2/3" CCD
Sensor:	ICX 282, Interline Transfer
Spectral range:	Approx. 400 nm to 710 nm with infrared barrier filter BG40
Read-out modes:	Progressive / Interlaced
Control signals:	TTL-output for controlling external electrical shutters
Optical interface:	C-mount
Thread depth for objectives:	Max. of 5 mm (C-mount)
Max. file size per image:	Approx. 30 MB at 2584 x 1936 with 3 x 12 bit
Operating systems:	Microsoft® Windows 2000 Professional (from SP4) Microsoft® Windows XP Professional (from SP2)
Size / weight:	Approx. 11 cm x 8 cm x 4,5 cm (2,3" x 3,2" x 1,7") / 370 g
Housing:	Blue anodized aluminum, with cooling fins, 1/4" connection for tripod mount
Registration :	CE, cUL
Power supply:	12 V DC, 250 mA, supply via FireWire / IEEE 1394a interface and data cable from the PC (no external power supply necessary if used in combination with PC). When working with a notebook an active FireWire / IEEE 1394a hub may be required
Ambient condition (operation):	+5° to +35° Celsius; max. of 80% relative air humidity, not condensing, free air circulation required
Multi-camera option:	Switching between and operating up to 4 cameras on a single PC using the AxioVision software for camera control

## Minimum requirements for PC

Intel® Pentium® 4 processor, 1,3 GHz, 512 MB RAM, 40 GB hard disk  
Intel® chipsets i845, i865, i915G, i925X  
Graphics adapter 1280 x 1024 resolution, 32 bit real color, 64 MB RAM  
FireWire / IEEE 1394a interface (OHCI compatibel)

## Minimum requirements for notebook

Intel® Mobile Pentium® 4 processor, 1,0 GHz, 512 MB RAM, 40 GB hard disk  
Intel® chipset i845MP  
Graphics adapter 1280 x 1024 resolution, 32 bit real color  
FireWire / IEEE 1394a interface (OHCI compatibel)  
Additional power supply may be required

## Carl Zeiss Microscopy GmbH

07745 Jena, Germany  
microscopy@zeiss.com  
www.zeiss.de/axiocam