

**AxioCam ICm 1 and Fluorescence Lite**  
Ingeniously Simple.



**Modular Components for Fluorescence Applications  
in Routine Laboratory Work.**



We make it visible.

# AxioCam ICm 1. Fluorescence Becomes Routine.

Small, compact and versatile: AxioCam ICm 1 now makes basic fluorescence microscopy accessible for routine and laboratory applications. When combined with the Fluorescence Lite software module, the result is a system solution that is tailored precisely to the demands of your day-to-day laboratory work.

## **Integrated intelligence:**

### **From simple documentation through to analysis**

Precisely tailored to the requirements of routine work and everyday laboratory practice, AxioCam ICm 1 and the AxioVision LE Fluorescence Lite software offer a wealth of functions in an economical package; providing tools to make your work with fluorescence samples easier. This functionality starts with the manual acquisition of up to six fluorescent channels and their display in a merged image and continues through to the generation of individual reports. Each channel can be individually processed, documented and exported. High quality time lapse images or film sequences using reflected-light, transmitted-light and fluorescence techniques can also be reliably acquired. Operation is extremely simple: the well thought-out software guides the user through the entire workflow – previous knowledge of fluorescence microscopy is not required.

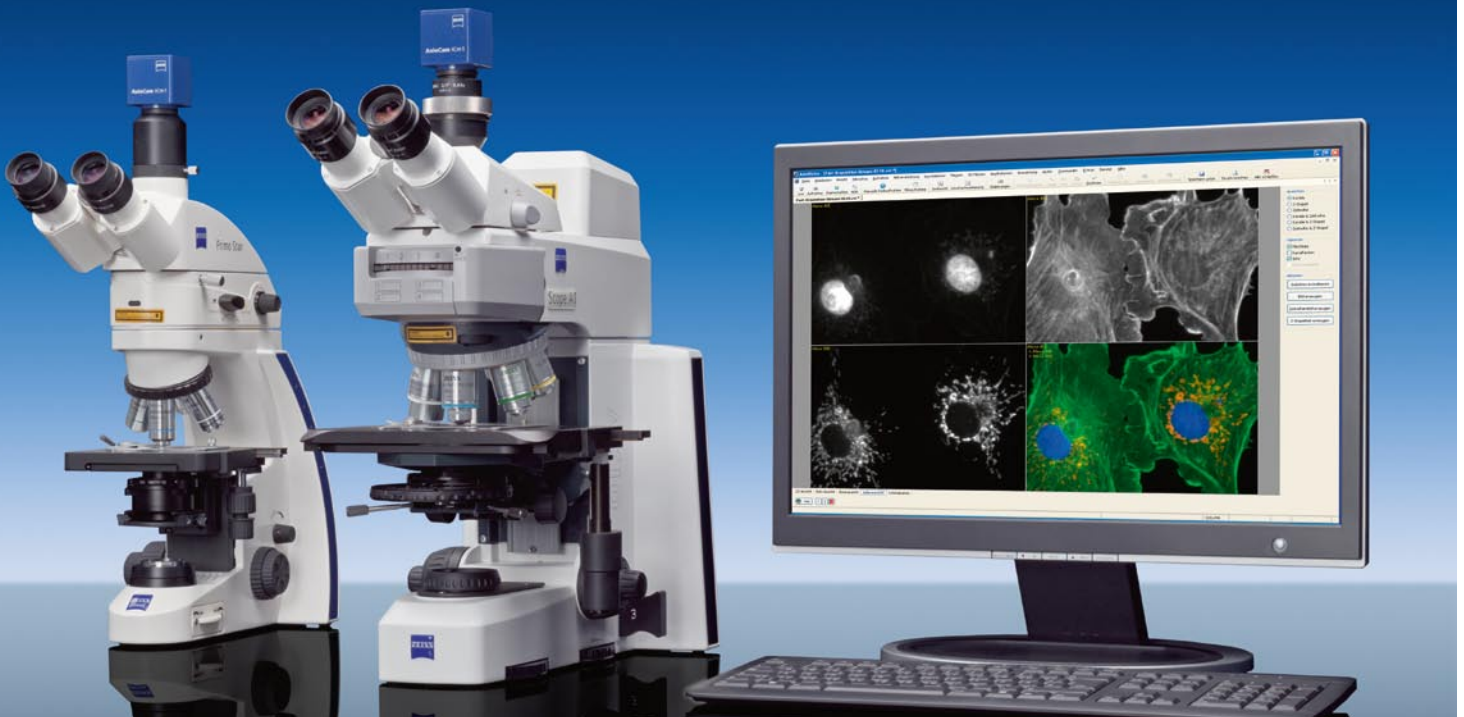
## **Flexible and extremely precise:**

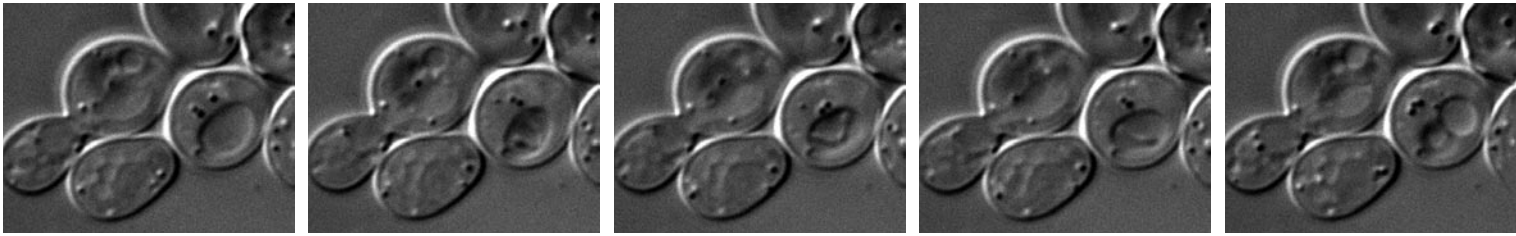
### **The small camera that's a big performer**

When it comes to professionally documenting fluorescence signals with digital technology, AxioCam ICm 1 with its 1.4 megapixel resolution is the right choice. And with the AxioVision LE software, you can put AxioCam ICm 1 to use right away.

- The CCD sensor, with a dynamic range of 1 : 1000, 12-bit digitization and a fast live image, guarantees that you can work efficiently.
- AxioCam ICm 1 can acquire rapid time lapse images: up to 28 images per second.
- Linear and uncompressed data are transferred from AxioCam ICm 1 to the PC – perfect for subsequent image analysis work.
- The camera uses a standard C-mount, ensuring it can be used on any microscope stand.

*The ideal combination in laboratory practice: Primo Star iLED or Axio Scope combined with AxioCam ICm 1 and the AxioVision LE Fluorescence Lite module*





*Time lapse image of dividing yeast cells as an indicator in food chemistry*

**Fluorescence:**

**The standard in modern microscopy**

Whether in research or routine applications or in laboratory and clinical practices, fluorescence microscopy – developed by Carl Zeiss and first offered in 1904 – is now firmly established as an indispensable contrasting method. The fluorescence process uses specific labeling techniques to display extremely fine structures in tissues and cells that are not visible in transmitted-light. Physiological parameters, such as the concentration of messengers in cells, can be determined in this way and tracked over a defined period of time.

**Typical areas of application**

- Histochemistry
- Microbiology
- Clinical routine
- Quality assurance
- Forensics

**Versatility for day-to-day laboratory work:**

**AxioCam ICm 1 and Fluorescence Lite in practice**

AxioCam ICm 1 and Fluorescence Lite have been designed as the perfect complement to Primo Star iLED, Axio Scope and Axiovert manual microscopes. This opens up an impressive range of applications for users – and when combined with fluorescent markers, can be expanded further still. Common applications include: routine tasks in cell culture, routine microbial analyses, quality assurance documentation and the optimization of staining protocols. Additionally, the camera and software package works for more challenging tasks such as time lapse imaging.

**Fluorescence in forensics:**

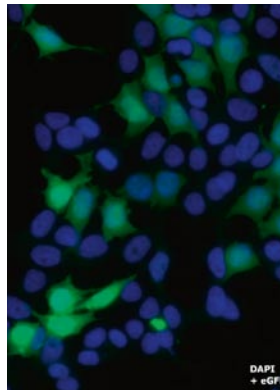
**Analysis of textile fibers**

Autofluorescence or staining can contribute to the identification of a textile fiber. This means that the use of fluorescence and other contrasting techniques can lead to a match being established between a trace fiber and the comparison material. Fluorescence Lite makes it possible to acquire up to six different channels and compare these in a single step.

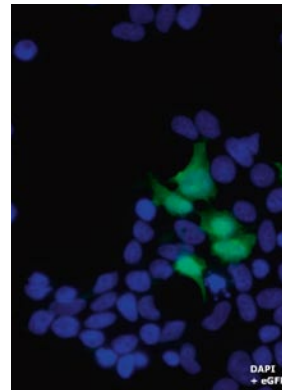
**Quality assurance in food chemistry:**

**Determination of growth rates**

Fluorescence Lite enables you to observe and measure dynamic processes – irrespective of the duration and contrasting technique. Changes in the growth rate of microorganisms or cell cultures can therefore be recorded and documented with ease.



*Good transfection of HeLa cells by a genetically modified vector*



*A DNA titer that is too low leads to a poor transfection result*

**Fluorescence in routine laboratory work:**

**Determination of transfection rates**

In combination with Fluorescence Lite, AxioCam ICm 1 can be used to monitor the success of molecular-biological tests. Its excellent sensitivity means that AxioCam ICm 1 is able to acquire even weak fluorescence signals clearly.



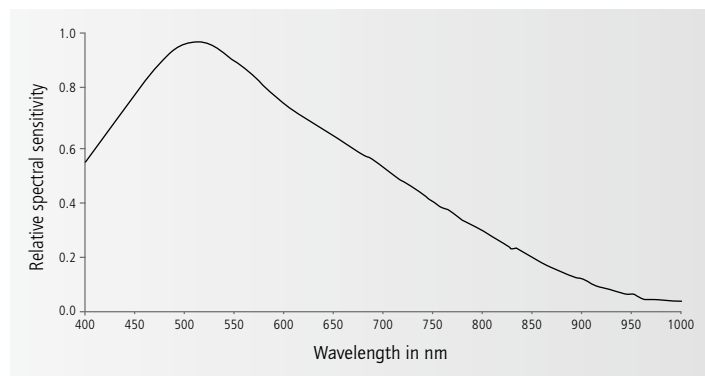
*A denim fiber in transmitted-light and fluorescence reveals the typical intermittent effect of the indigo dye*

# AxioCam ICm1 and Fluorescence Lite. Data and Facts.

## AxioCam ICm 1

<b>Sensor</b>	Sony ICX 267, progressive readout, no filter mask
<b>CCD basic resolution</b>	1388 x 1038 = 1.4 megapixels
<b>Pixel size</b>	4.65 µm x 4.65 µm
<b>Sensor size</b>	6.4 mm x 4.8 mm, equivalent 1/2" CCD (diagonal 7.9 mm)
<b>Spectral sensitivity</b>	Approx. 400 nm-1000 nm, without IR barrier filter
<b>Dynamic range</b>	Typically 1 : 1000 (40 dB)
<b>Range of integration time</b>	1 ms to 4 s
<b>Live image</b>	15 fps at 1388 x 1038 pixels, full frame 26 fps at 768 x 520 pixels, subframe 28 fps at 600 x 480 pixels, subframe
<b>Readout of subframes (ROI)</b>	Freely selectable
<b>Readout modes</b>	Progressive
<b>Signal amplification</b>	24 dB analog
<b>Digitization</b>	12 bits/pixel
<b>Interface</b>	2x FireWire/IEEE 1394b (400 megabits/s), 1x IEEE 1394b to IEEE 1394a Legacy cable supplied
<b>Optical interface</b>	C-Mount
<b>Housing (dimensions)</b>	Approx. 45 mm x 45 mm x 44.5 mm
<b>Operating system</b>	Microsoft® Windows XP Professional Service Pack 3, Microsoft® Windows Vista Service Pack 1
<b>Registration</b>	CE, FCC Class B
<b>Power supply</b>	8-36 V, DC, 3.5 W power supply provided by FireWire bus from PC (external power supply only required for notebook operation)
<b>Ambient conditions (operation)</b>	+5° to +45° Celsius, max. 80 % relative humidity, no condensation, free air circulation required

## Relative spectral sensitivity AxioCam ICm 1



## AxioVision LE Fluorescence Lite module

<b>Acquisition</b>	
Multichannel images	Acquisition of up to six channels and display in a single color image. Each channel can be individually processed, documented and exported
Films	Acquisition of film sequences of transmitted-light, reflected-light or fluorescence samples (with export to common Microsoft® Windows film formats *.avi and *.mov)
<b>Measurement</b>	
Scaling	Creating and saving of image scalings
Length	Length and distance measurements directly in the image for interesting objects
Angle	Measurement of the angle of two sides in relation to each other
<b>Documentation</b>	
Printing of images	Printing of single and multichannel images for documentation
Creating/exporting of tables	Creating of a data table based on the measurement tools drawn in and convenient exchange of the table with other programs such as Microsoft® Excel
<b>Navigation</b>	
Image gallery	Display of all open images side by side and selection of interesting images for viewing
Image browser	Finding and organization of images stored on hard disk
Optimum display	Display of channels as a pseudo-color merged image or monochrome display of each individual channel
<b>Annotation</b>	
Annotations	Addition of text and drawing objects (arrows, scale bars etc.) to the image. Annotations remain editable even after the file has been saved
Style	The font, line type and color of annotations can be changed as desired and saved in the image
<b>Camera</b>	
Supported cameras	AxioCam product family
Automatic exposure time	Automatic setting of exposure time, which can be readjusted depending on sample brightness
Shading correction	Optimizes the illumination of the acquired image during or after acquisition
Black reference	Correction of image noise when long exposure times are used (subtraction of a dark image)
Gain	Analog/digital gain for acquisition of weak fluorescence signals
<b>Minimum requirements</b>	
Hardware	Intel® Pentium® 4 processor, 1.7 GHz, minimum of 2 GB RAM, 400 MB of free hard disk space, minimum monitor resolution of 1280 x 1024 pixels, 1 free USB port

**Carl Zeiss MicroImaging GmbH**  
07740 Jena, Germany

BioSciences | Göttingen Location  
Phone : +49 5515060 660  
Telefax: +49 551 5060 464  
E-Mail : micro@zeiss.de

[www.zeiss.de/axiocam](http://www.zeiss.de/axiocam)