



Product comparison:

## JENOPTIK GRYPHAX® POLARIS vs. RIGEL

# GRYPHAX®

Explore the micro universe  
monochrome in low light.



The **superior solution**  
for low light research microscope applications

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## JENOPTIK GRYPHAX® – comparison

All camera comparisons are based on results of our JENOPTIK digital image laboratory. The quality of our cameras is proven by spectral measurement at our laboratory and is based on guidelines of EMVA 1288 standard.

### Comparison of JENOPTIK GRYPHAX® POLARIS vs. RIGEL



Refine every microscope workstation

JENOPTIK GRYPHAX® POLARIS is the superior solution for monochrome fluorescence applications.

JENOPTIK GRYPHAX® POLARIS is the **superior solution** for low light research microscope applications. It is powered by a **back-illuminated CMOS sensor made by SONY**.

This camera provides fast live images, with **highest dynamic range** combined with the brilliant Jenoptik image quality. **Collect information beyond visible light**.

Within this comparison we look at the GRYPHAX® POLARIS compared to JENOPTIK GRYPHAX® RIGEL, the successors of all monochrome research ProgRes® CCD monochrome cameras.

Sensor/Camera	JENOPTIK GRYPHAX® POLARIS with clear glass filter	JENOPTIK GRYPHAX® RIGEL with clear glass filter
Utilized sensor diagonal	12.2 mm	<b>13.3 mm</b>
Quantum Efficiency [N(e-)/N(p)] @ 532nm (green)	<b>0.73 QE(λ)</b> see spectral data	0.66 QE(λ) see spectral data
Dark Noise [DN/e-]	1.0 DN (at 13 bit); 16e-	<b>0.8 DN (at 12 bit); 6e-</b>
Dynamic Range (DR)	<b>77 dB</b>	73 dB
Pixel dimensions	<b>7.2 μm x 7.2 μm</b>	5.86 μm x 5.86 μm

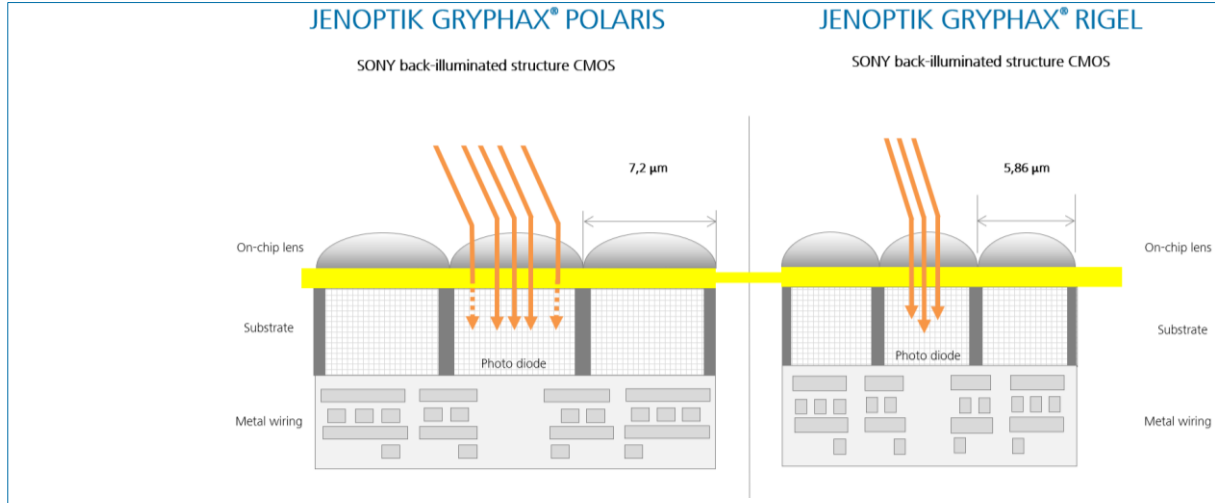
By reason on our measurements, done within our laboratory and based on guidelines of EMVA 1288.

## Sensor



### JENOPTIK GRYPHAX® POLARIS & RIGEL

are equipped with SONY's **back-illuminated CMOS** sensor technology.

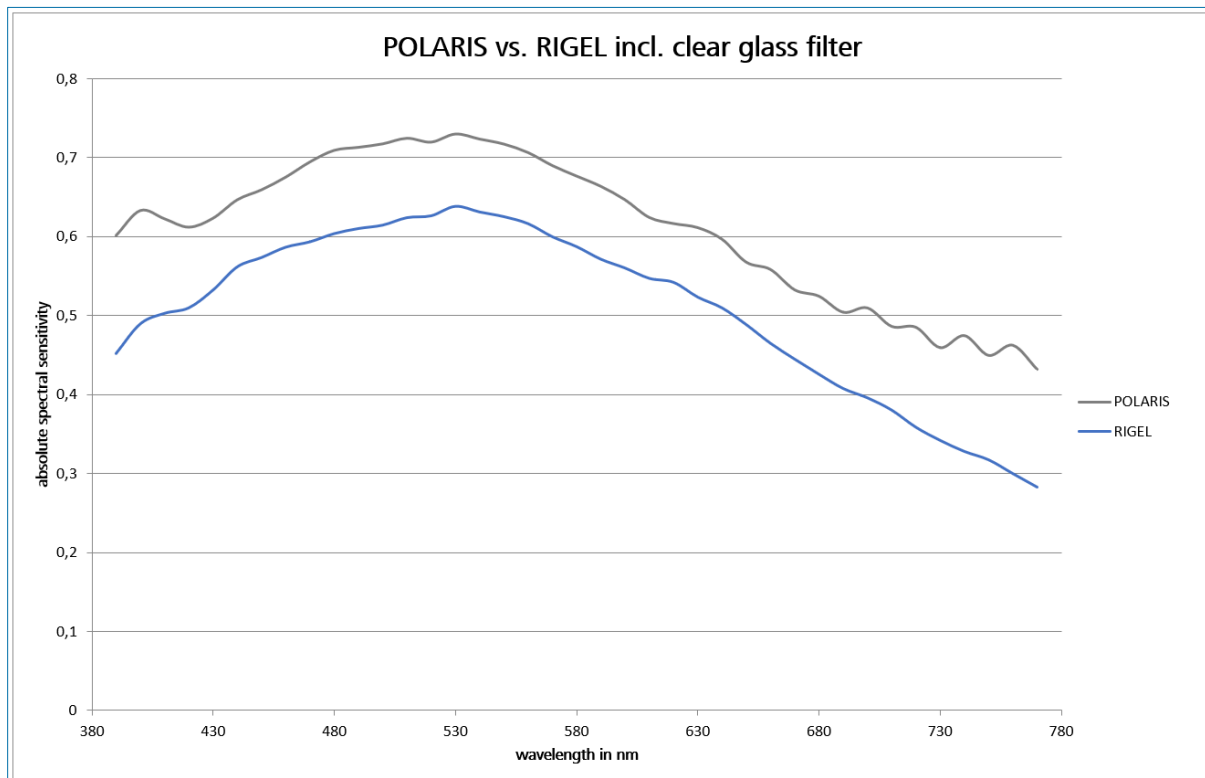


Source: Graphic done by Jenoptik based on information from [www.sony.net](http://www.sony.net)

With a conventional front-illumination structure, the metal wiring and transistors on the surface of the silicon substrate that form the sensor's light-sensitive area (photo-diode) impede photon gathering carried out by the on-chip lens, and this has also been an important issue in the miniaturization of pixels and widening optical angle response. A back-illuminated structure minimizes the degradation of sensitivity to optical angle response, while also increasing the amount of light that enters each pixel due to the lack of obstacles such as metal wiring and transistors that have been moved to the reverse of the silicon substrate. However, compared to conventional front-illuminated structures, back-illuminated structures commonly causes problems such as noise, dark current, defective pixels and color mixture that lead to image degradation and also cause a decrease in the signal-to-noise ratio. To overcome this Sony has developed a unique photo-diode structure and on-chip lens optimized for back-illuminated structures, that achieves a higher sensitivity and a lower random noise without light by reducing noise, dark current and defect pixels compared to the conventional front-illuminated structure. Additionally, Sony's advanced technologies such as high-precision alignment have addressed any color mixture problems.

Source: information from [www.sony.net](http://www.sony.net)

## Quantum efficiency with clear glass





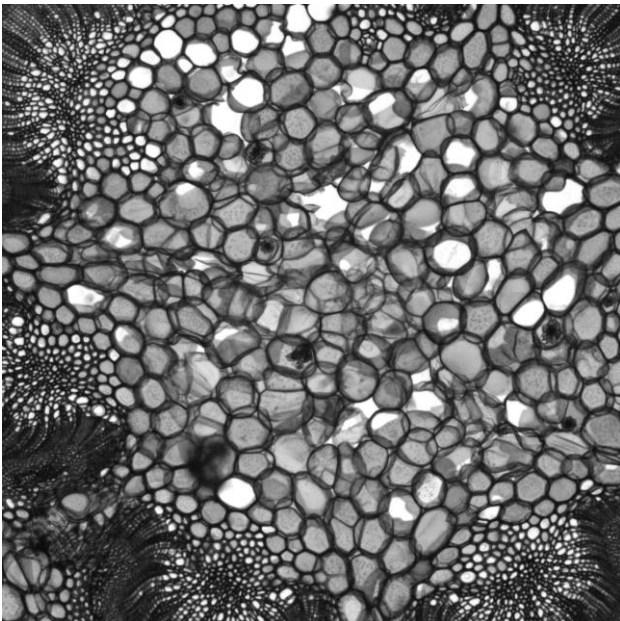
**JENOPTIK GRYPHAX® POLARIS** quantum efficiency is more than **10 percent higher** (at 532 nm) than GRYPHAX® RIGEL.

**JENOPTIK GRYPHAX® POLARIS advantages:**

- ☆ **Most effective** photon to electron transformation
- ☆ **Low dark noise and low dark current**
- ☆ **High live & video frame rate**
- ☆ **Highest dynamic range**
- ☆ **Secure investment:** long-lasting & reliable hardware

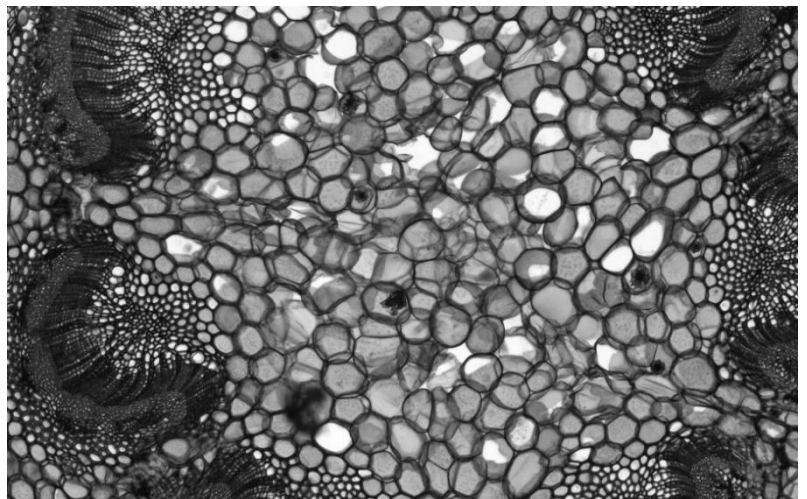
**Sensor size and basic TV-adapter 1,0**

**JENOPTIK GRYPHAX POLARIS**  
CMOS 1/1.2"

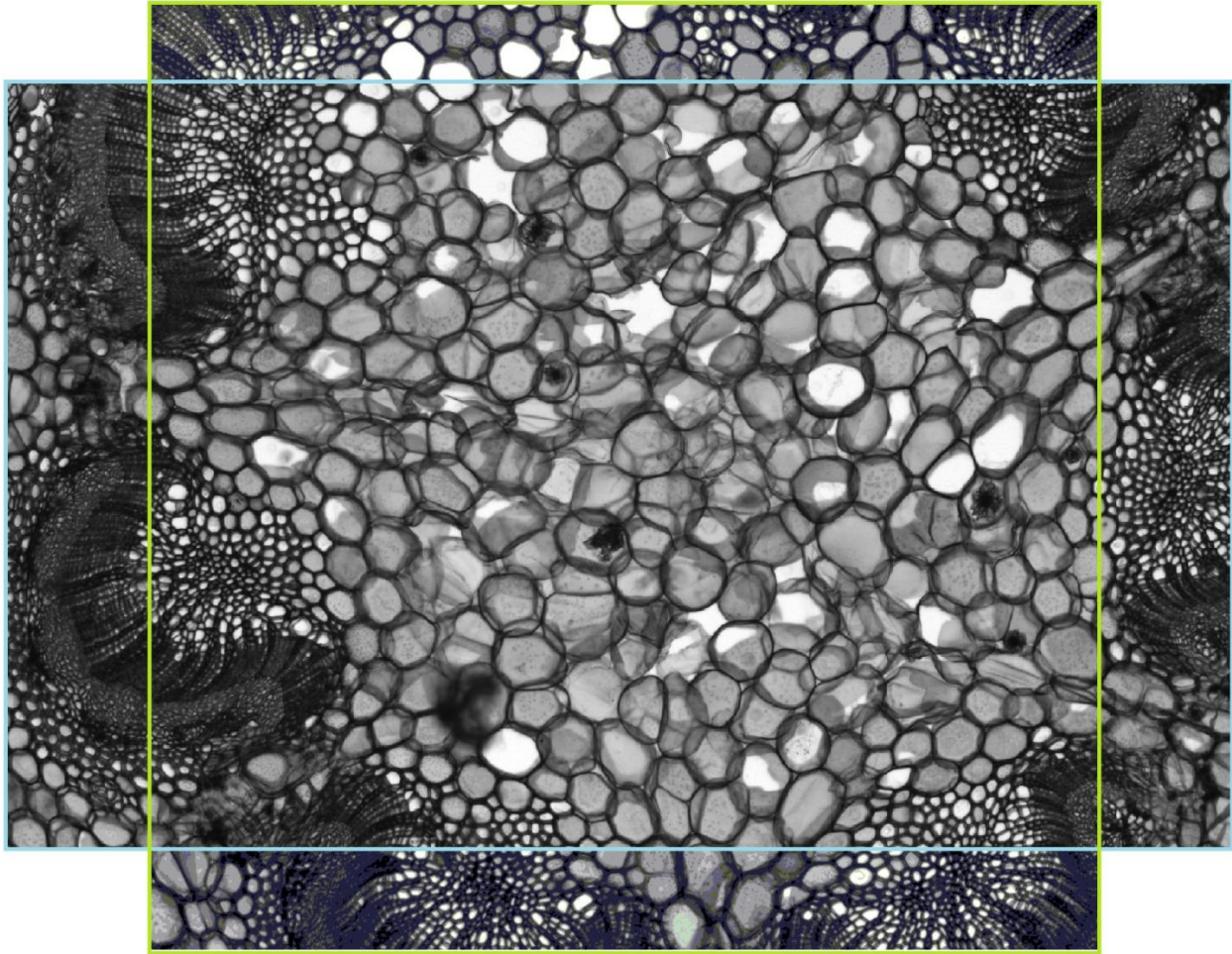


TV-Adaption Zeiss 1,0x (60N-C 1")

**JENOPTIK GRYPHAX® RIGEL**  
CMOS 1/1.2"



TV-Adaption Zeiss 1,0x (60N-C 1")



**Equipment:** Microscope Zeiss AxioScope.A1  
Lens Zeiss 5x EC-Epiplan-NEOFLUAR  
**Sample:** Hedera Helix (Gemeiner Efeu) Blattstiel quer "1037"



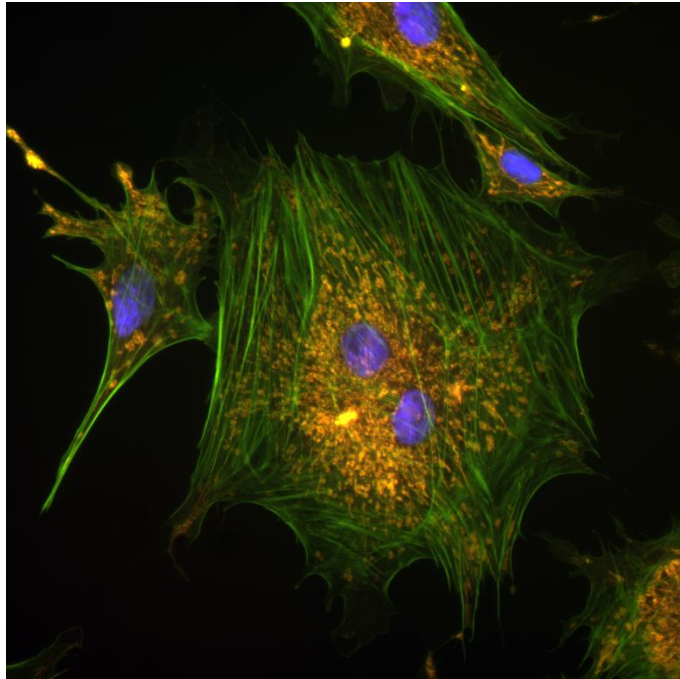
JENOPTIK GRYPHAX® POLARIS has a square sensor field for optimize image field of view on microscopes

JENOPTIK GRYPHAX® POLARIS advantages:

- ☆ Microscopy-optimized field of view
- ☆ Cost-efficient TV adaption 1x are suitable

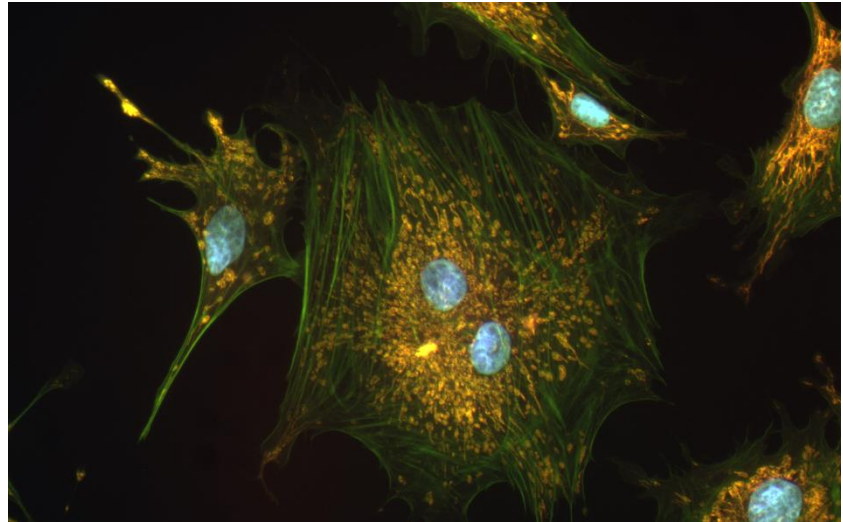
Multi - Fluorescence

JENOPTIK GRYPHAX® POLARIS  
CMOS 1/1.2"



TV-Adaption Zeiss 1,0x (60-C 1")

JENOPTIK GRYPHAX® RIGEL  
CMOS 1/1.2"



TV-Adaption Zeiss 1,0x (60-C 1")

**Equipment:** Microscope Zeiss AxioScope 40  
Lens Zeiss Plan-NEOFLUAR 40x

**Sample:** BPAAE Cells with MitoTracker Red CMXRos Alexa Fluor 488 Phalloidin



JENOPTIK GRYPHAX® POLARIS camera delivers the best image quality in monochrome and pseudo color images. It provides the **highest sensitivity** and **outstanding dynamic range** with large pixel dimension based on a back illuminated CMOS sensor.

JENOPTIK GRYPHAX® POLARIS **advantages:**

- ☆ **Large pixel dimensions**
- ☆ **Highest sensitivity**
- ☆ **Outstanding dynamic range**

Main features of JENOPTIK GRYPHAX software take advantage of the modern camera characteristics.

## Video

### JENOPTIK GRYPHAX® advantages:

- ☆ Video speed at live image: “You get what you see”
- ☆ Video recording of living or to be moved specimen at brilliant image quality

## EDF / Z-stacking

### JENOPTIK GRYPHAX® advantage:

- ☆ Real-time appearance of EDF/ Z-stacking saves time.

## Panorama

### JENOPTIK GRYPHAX® advantage:

- ☆ Real-time appearance of panorama saves time.

## Captured Image

### JENOPTIK GRYPHAX® advantage:

- ☆ These cameras provide **microscopy optimized field of view** in combination with sensitive sensor technology and highest dynamic range.

## Software



JENOPTIK GRYPHAX software is workflow optimized capture software. It is created to help users intuitive getting the perfect live and captured image and saving time.

### JENOPTIK GRYPHAX® Software advantage:

- ☆ Cross-platform compatible **WIN, MAC** and **LINUX**
- ☆ **Identical GUI** across WIN, MAC and LINUX platform
- ☆ **Versatility:** Free SDK, wide range of 3rd party software support
- ☆ **Drivers for:** µManager, Twain, MetaMorph and DirectX support included
- ☆ **Stability:** Made in Germany, software updates free of charge

## Weight and dimension

JENOPTIK GRYPHAX® POLARIS	JENOPTIK GRYPHAX® RIGEL
Weight: ~ 400 gr	Weight: ~ 400 gr
Dimension:: L x W x H in mm 85 x 75 x 50,2	Dimension: L x W x H in mm 85 x 75 x 50,2

### JENOPTIK GRYPHAX® Packaging advantage:

- ☆ **Lower transport costs** due to less weight and dimension of housing and camera packaging.

## Applications and contrast techniques

### JENOPTIK GRYPHAX® POLARIS recommended Applications

- Life & Medical Science
- Education Life & Medical Science
- Material & Manufacturing
- Education Material & Manufacturing
- Fluorescence
- Education Fluorescence

### JENOPTIK GRYPHAX® POLARIS recommended contrast techniques

- BF – Bright-Field
- DF – Dark-Field
- DIC – Differential-Interference-Contrast
- Ph – Phase contrast
- Pol - Polarization

JENOPTIK GRYPHAX® POLARIS is the **superior solution** for fluorescence, life science & medical, material & manufacturing applications.



## Summary

### JENOPTIK GRYPHAX® POLARIS advantages at a glance:

- ☆ **Most effective** photon to electron transformation
- ☆ **Low dark noise** and **low dark current**
- ☆ **Highest dynamic range**
- ☆ **Secure investment:** long-lasting & reliable hardware
- ☆ **Square** microscopy-**optimized** field of view
- ☆ **Cost-efficient** TV adaption 1x are suitable
- ☆ Using **increased** Gain to get a fast live image for easy focusing
- ☆ **Video speed** at live image: “You get what you see”
- ☆ Real-time appearance of **EDF/ Z-stacking** images saves time
- ☆ Real-time appearance of **Panorama** saves time
- ☆ Cross-platform compatible **WIN, MAC** and **LINUX**
- ☆ **Identical GUI** across WIN, MAC and LINUX platform
- ☆ **Versatility:** Free SDK, wide range of 3rd party software support
- ☆ **Drivers for:** µManager, Twain, MetaMorph and DirectX support included
- ☆ **Stability:** Made in Germany, software updates free of charge
- ☆ Low transport costs due to less weight and dimension



Refine every microscope workstation with  
JENOPTIK GRYPHAX® POLARIS

The **superior solution** for low light research microscope applications

Also take a look on our [new product portfolio JENOPTIK GRYPHAX®!](#)

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monochrome in low light.



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