Product comparison:

JENOPTIK GRYPHAX® ARKTUR vs. ProgRes® SpeedXTcore3

GRYPHAX®

Explore your micro universe
with revolutionary 4 & 8 MPix | 4K Live.

The advanced solution for routine 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® ARKTUR

Refine every microscope workstation.

JENOPTIK GRYPHAX® ARKTUR replaces all 3 MPix microscope cameras.

JENOPTIK GRYPHAX® ARKTUR is made as an advanced solution for routine microscope applications, using a 2/3" back-illuminated CMOS sensor made by SONY.

This camera provides high dynamic range images with non-visible noise, combined with the brilliant Jenoptik color reproduction. Fast live images are provided by 2, 4 or 8 MPix.

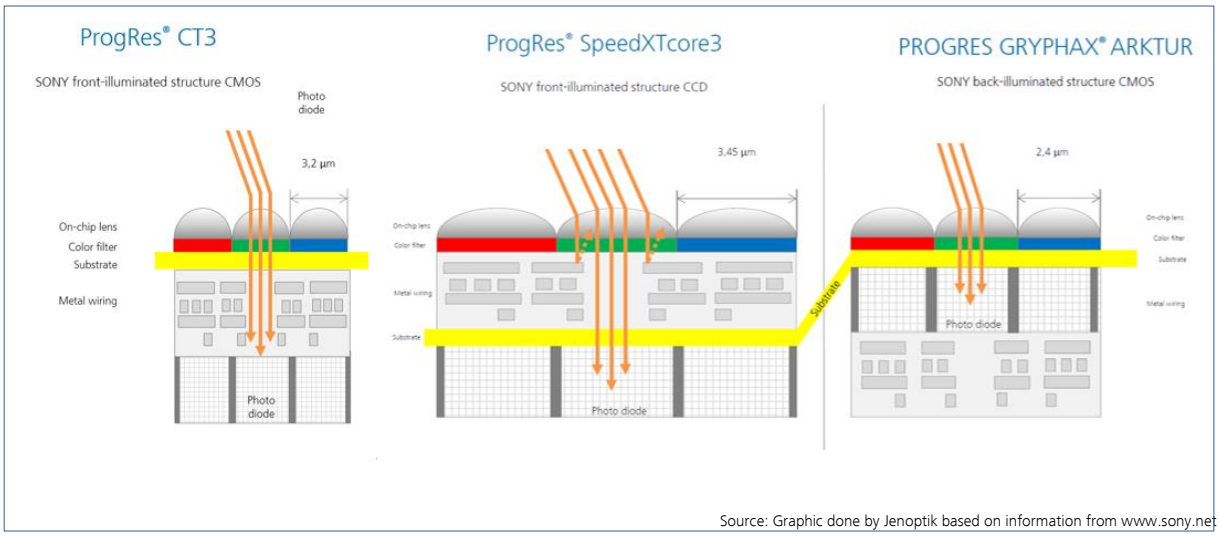
Within this comparison we take a look at the ProgRes® SpeedXTcore 3 compared to JENOPTIK GRYPHAX® ARKTUR, the successor of all 3 MPix ProgRes® CCD cameras.

Sensor/Camera	ProgRes® CT3 with IR cut filter	**ProgRes® SpeedXTcore 3** with IR cut filter	**JENOPTIK GRYPHAX® ARKTUR** with IR cut filter
Utilized sensor diagonal	8,19 mm	8,93 mm	**10,58** mm
FPS	8 at 3.1 MPix (2048 x 1536)	17 at 3 MPix (2080 x 1542) With interlace effect	**30 at 8.3 MPix** (3840 x 2160) **50 at Full HD**
Quantum Efficiency [N(e-)/N(p)] @ 532nm (green)	0.30 QE(λ) see spectral data	0.30 QE(λ) see spectral data	**0.64** QE(λ) see spectral data
Dark Noise [DN/e-]	1.8 DN; 30e-	1,12 DN (at 10 bit); 9e-	**0.4 DN; 6e-**
Dynamic Range (DR)	54.0 dB	58.5 dB	**66.0 dB**

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

Sensor

JENOPTIK GRYPHAX® ARKTUR s equipped with SONY's **back-illuminated** CMOS sensor technology.

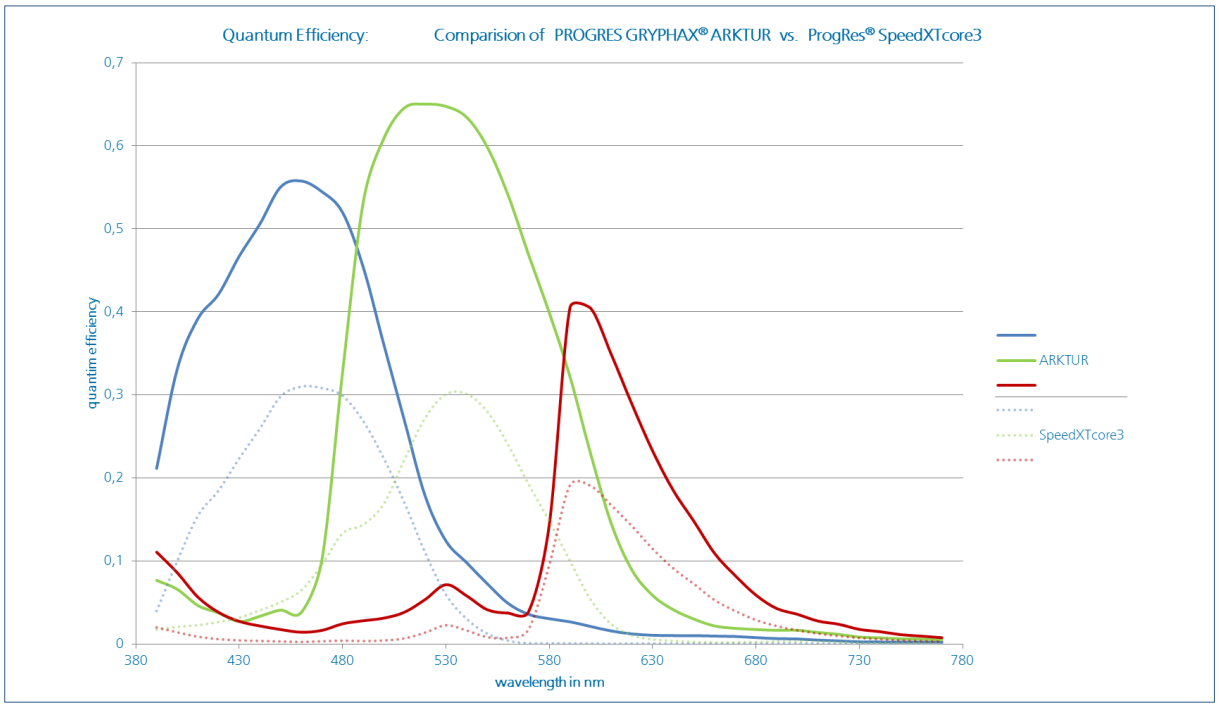


Source: Graphic done by Jenoptik based on information from www.sony.net

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

Quantum efficiency with IR-cut filter:



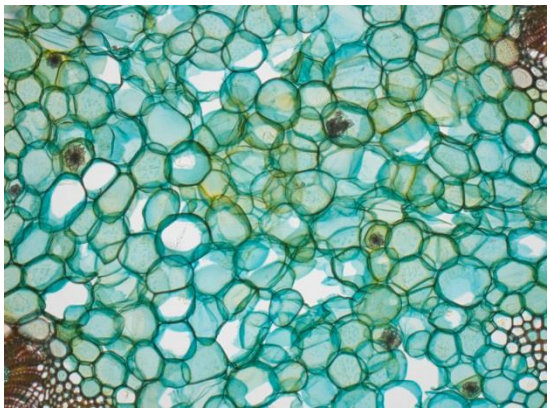
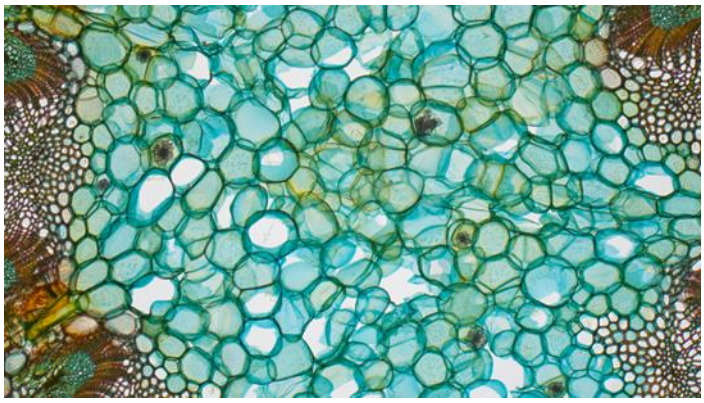
JENOPTIK GRYPHAX® ARKTUR's quantum efficiency is more than two times higher (at 532 nm) than ProgRes® SpeedXTcore 3.

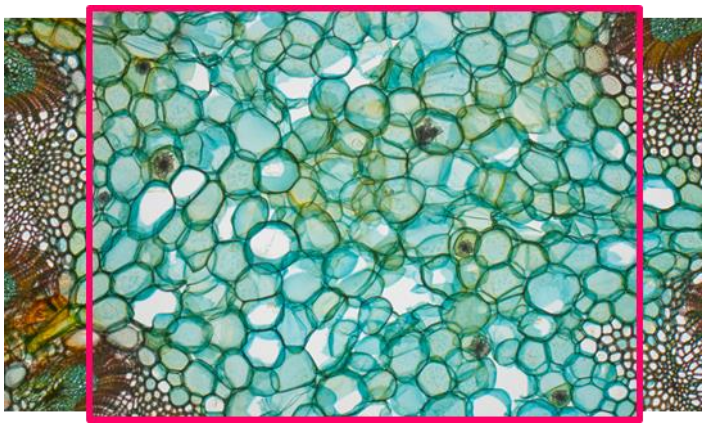
JENOPTIK GRYPHAX® ARKTUR advantages:

- ☆ Effective photon to electron transformation
- ☆ No interlace effect & no smear
- ☆ Low dark noise and low dark current
- ☆ High input clock frequency
- ☆ High dynamic range
- ☆ Secure investment: long-lasting & reliable hardware

Sensor size with basic TV-adapter 1,0

Magnify the field of view with the perfect TV-adaption, depending on the microscope brand.

ProgRes® SpeedXTcore3 CCD 1/1.8”	JENOPTIK GRYPHAX® ARKTUR CMOS 2/3”
	
TV-Adaption Zeiss 1,0x (60N-C 1")	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"	

Sensor size with best fitting TV-adapter 0,63

ProgRes® SpeedXTcore3 CCD 1/1.8"	JENOPTIK GRYPHAX® ARKTUR CMOS 2/3"
	
TV-Adaption Zeiss 0,63x (60N-C 2/3")	TV-Adaption Zeiss 0,63x (60N-C 2/3")

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

JENOPTIK GRYPHAX® ARKTUR

has a more than **25 % larger** sensor field than ProgRes® SpeedXTcore 3.

JENOPTIK GRYPHAX® ARKTUR **advantages**:

- ☆ Microscopy-optimized field of view
- ☆ Ideally suited for the use of 4K (Ultra HD) monitors
- ☆ Cost-efficient TV adaption 1x are suitable

Live image

JENOPTIK GRYPHAX® ARKTUR is equipped with an all pixel scan sensor optimized for state of the art 4K monitors. It provides outstanding live image speed of 30fps at 4K (8 MPix) resolution. This is nearly two times faster compared to SpeedXTcore 3.

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

Video

JENOPTIK GRYPHAX® ARKTUR advantages:

- ☆ Video speed at live image: "You get what you see"
- ☆ Video recording of living or to be moved specimen at brilliant image quality, without interlace effect.

EDF / Z-stacking

JENOPTIK GRYPHAX® ARKTUR advantage:

- ☆ Real-time appearance of EDF/ Z-stacking images (no interlace effect, no distorted images) saves time.

Panorama

JENOPTIK GRYPHAX® ARKTUR advantage:

- ☆ Real-time appearance of panorama (no interlace effect, no distorted images) saves time.

Captured image

JENOPTIK GRYPHAX® ARKTUR advantage:

- ☆ This camera provides revolutionary 4 and 8 MPix images.

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

Applications and contrast techniques

JENOPTIK GRYPHAX® ARKTUR recommended Applications

●●●○ Life & Medical Science
○○○○ Education Life & Medical Science
●●●○ Material & Manufacturing
○○○○ Education Material & Manufacturing
○○○○ Fluorescence
○○○○ Education Fluorescence

JENOPTIK GRYPHAX® SUBRA recommended contrast techniques

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

JENOPTIK GRYPHAX® ARKTUR is the exclusive solution for life & medical science | material & manufacturing applications.

Weight and dimension

ProgRes® CT3 & ProgRes® SpeedXTcore 3		JENOPTIK GRYPHAX® ARKTUR	
Weight:	~ 600 gr	Weight:	~ 400 gr
Dimension::	L x W x H in mm 89 x 84 x 93	Dimension:	L x W x H in mm 85 x 75 x 50

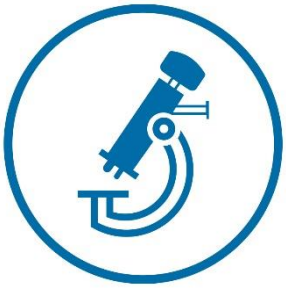
JENOPTIK GRYPHAX® Packaging **advantage:**

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

Summary

JENOPTIK GRYPHAX® ARKTUR advantages at a glance:

- ☆ Effective photon to electron transformation
- ☆ No interlace effect & no smear
- ☆ Low dark noise and low dark current
- ☆ High input clock frequency
- ☆ High dynamic range
- ☆ Secure investment: long-lasting & reliable hardware
- ☆ Microscopy-optimized field of view
- ☆ Ideally suited for the use of 4K (Ultra HD) monitors
- ☆ Cost-efficient TV adaption 1x are suitable
- ☆ Video speed at live image: "You get what you see"
- ☆ Real-time appearance of EDF/ Z-stacking saves time
- ☆ Real-time appearance of panorama saves time
- ☆ Camera provides revolutionary 3 and 8 MPix images.
- ☆ Cross-platform compatible WIN, MAC and LINUX
- ☆ Identical GUI across WIN, MAC and LINUX platform
- ☆ Lower transport costs due to less weight and dimension



Refine every microscope workstation with JENOPTIK GRYPHAX® ARKTUR.

The advanced solution for routine applications

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

GRYPHAX®

Explore your micro universe
with revolutionary 4 & 8 MPix | 4K Live.

The advanced solution for routine applications