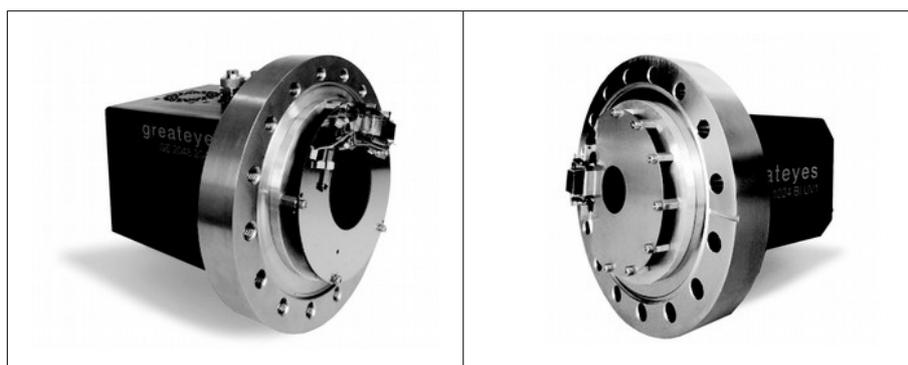**greateyes**

NEWSLETTER: July 2015

(1) Refined hexagonal camera design

The scientific cameras portfolio underwent a new design cycle. The most obvious change is the new hexagonal structure of the camera body which changed from the previous rectangular shape. Despite a more attractive appearance, the modification was needed to improve the permanent vacuum sealing inside the camera. Furthermore certain changes were made to the internal design which simplifies testing, production and after-sales support.


(2) Fast in-vacuum shutters available

For all VUV, EUV, X-ray cameras equipped with vacuum flanges CFDN100, we are now offering the integration of fast in-vacuum mechanical shutter system. The shutter protects the CCD sensor from high energy radiation. It opens during exposure time and closes before sensor readout, preventing smearing effects. Depending on the size of the CCD sensor different shutter apertures are offered with opening times ranging from 3ms to 14ms. The wires for the shutter coil are connected using the cameras own vacuum feed-throughs, there is no need for external flanges. Different blade finishes are available for use with incoherent or coherent light sources (lasers, etc.). The standard finish is black Teflon over a stainless steel substrate. For higher demands an AlSiO coating over a BeCu substrate or an AlMgF2 coating over a BeCu substrate is available for the shutter blades.

(3) Scientific camera firmware and software update
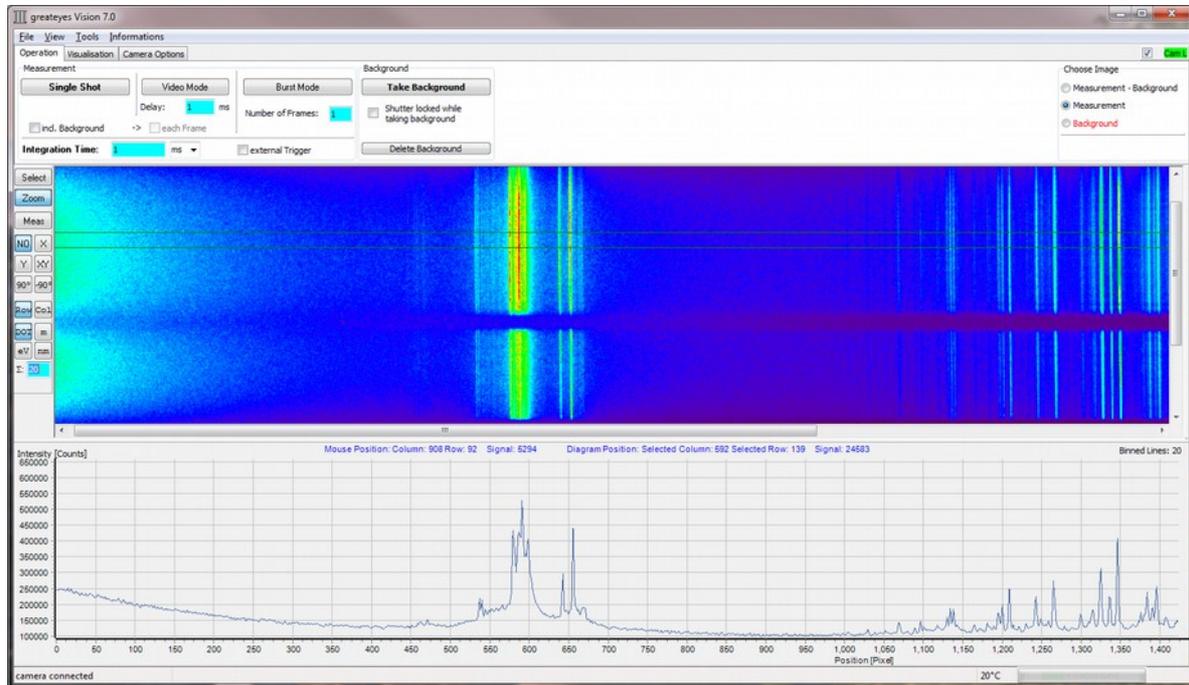
EUV spectrum of a laser-plasma source
measured at TU-Berlin, many thanks to the group of Prof. Kanngießer

For greateyes scientific cameras based on latest electronic platform, greateyes releases a new firmware and a new software for Windows.

Relevant features of the firmware Update 9:

- Cropped Mode Imaging for fast frame rates (See explanations in the glossary on the end)
- Burst Mode Imaging to take precise sequences of images with pre-defined settings
- Optimised values for all readout pixel frequencies

Relevant features of the greateyes Vision 7.0 Software Update:

- Support for Cropped Mode Imaging
- Support for Burst Mode Imaging
- Software based summation of a defined number of Lines in the final image
- Hardware based summation (binning) of a subset of lines called subimage
- Improved switching between measurement, background, measurement-background
- Open/saving of data as txt, tif 16bit, jpeg, bmp, raw data files
- Visualisation enhancements, data display like std deviation, max./min values, total intensity,..
- Improved GUI (Graphical User Interface) with more easy and intuitive handling
- General bug fixes

How to obtain your firmware and software update:

1. Check the hardware version of your camera:

Backside view of the camera	Hardware Version	Action
	Old version. The camera has a single +5V connector.	Requires a change of complete electronics, a rebuild of the camera must be performed. Ask for complete upgrade including firmware and software update. We will generate a specific offer.
	Latest version. The camera has a multi voltage power supply connector. The customer also has a separate greateyes power supply box for the camera.	Ready for cost-free firmware and software update.

2. Check the firmware version of your camera

Start your camera software. Click on the info tab and select "Camera Information". Check the firmware section:

Firmware:	Action
9/xxxxxx	You have the latest firmware.
other value	Older firmware, camera must be shipped to greateyes for reprogramming.

3. Check the greateyes Vision software version

Start your camera software. Click on the info tab and select "Software Information".

Software Version:	Action
7.0.xxxx.xx	You have the latest Software.
lower value	Older software. You need a new software.

In case you are interested in an update, please send an e-mail to info@greateyes.de:

Subject line:	UPDATE Request
Text section:	Serial number of the camera
	Old or latest hardware (result from 1.)
	Firmware version
	Software version
	Your contact details including phone number, address, institution.

We will process your update request on individual basis. In case you have the latest hardware, the software and firmware update is cost free. In case you need a firmware update, the camera must be send to greateyes, reprogrammed, checked for functionality and shipped back together with the new software. If you have an old hardware, we will generate a specific quotation for complete upgrade.
Typically we will propose a certain time frame in which we are realizing your update.

(4) Other software packages

For the new Software Development Kit (SDK), tested LabVIEW drivers, EPICS driver and Linux support contact us based on your requirements.

(5) Post your scientific publications

If you have published papers, poster or other scientific articles using greateyes scientific cameras, our team would appreciated if you inform us about your work. In case you are interested we may also reference your articles on our website, providing more visibility of your research. There is also the opportunity to write an application note which we will publish under the application section of the greateyes website.

(6) Upcoming Conferences/Exhibitions

Get in touch with greateyes and learn about the products during the following events:

PTB Seminar on VUV and EUV metrology 2015
5th - 6th November 2015
Physikalisch-Technische Bundesanstalt (PTB), Abbestraße 2–12, 10587 Berlin

PRORA 2015
12th - 13th November 2015
WISTA, Rudower Chaussee 17, 12489 Berlin

(7) Presentations & Product Demonstration

Currently we are offering a cost-free talk about : "Requirements for scientific image detectors". If you are interested integrate our presentation into your group meeting or related scientific event please get in touch with us.

In case you are interested to test the greateyes scientific cameras together with your application, please send an request as well.

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Glossary

Full-Frame CCD Sensor The full-frame CCD sensor consists of a photosensitive pixelated area, where incoming light photons are detected, and the light shielded part, named readout-register. To readout the sensor, the accumulated charge produced from the incoming photons must be shifted vertically row by row into the serial readout register. The register must be shifted horizontally for each row to readout each individual pixel.	
Vertical and horizontal binning In the vertical binning mode two or more lines are combined together, shifted to the readout register, and are read out together as one line. Using the horizontal binning mode the full sensor is read out and two or more columns are summed up by the software afterwards. Vertical and horizontal binning can be flexibly combined.	
Crop Mode Crop mode is a specialized readout mode for achieving fast frame rates. In this mode the user defines a number of lines (sub-area) above the readout register. The camera starts to readout only the defined lines. The smaller the defined array size, the faster the frame rate achievable. The crop mode is ideal for applications which demands fast temporal resolution. The rest of the sensor area must be shielded against incoming light.	
Burst-mode: In burst-mode the camera takes a number of image frames under predefined parameters like binning, crop-mode, ... at fixed delay or trigger events. The frames are streamed to the PC based on a single request. Burst mode allows precise time-sequence measurements. This is in contrast to video mode where each image is requested by the software separately. No precise timing from frame to frame can be granted in video-mode.	