IIIII PHOTONIC
SCIENCE

X-ray
sCMOS 16MP
Detector

High resolution X-ray imaging

The detector offers up to 95.5mm x 95.5mm active area and 16 megapixel resolution. A custom scintillator is deposited onto the camera in order to allow 1keV up to 300keV.

Array versions with multiple modules are also available, delivering up to 64 megapixel resolution. The X-ray sCMOS detector delivers up to 4.5 fps full resolution and 18 fps in binning 2 x 2 allowing real time acquisition routine.

A built in shutter allows smear free, shutterless acquisition even with exposure time down to millisecond range. Frame rate of >10 fps can be achieved when used in local sub area mode or line scan mode.

A device server driver control allows remote acquisition through existing GUI interface. The detectors have a native 16-bit acquisition mode.

Key Features

| Input sizes : single module
95.5 x 95.5mm

| Array Sizes : multiple modules
191 x 191mm / 382 x 95.5mm

| Scintillator
Gadox:Tb for operation from 1-55 keV,
structured CSI scintillator from 20-300 keV

| Simultaneous integration / readout enabling
100% duty cycle acquisition

| OEM versions available

## Applications

X-ray microtomography

X-ray PCB testing

Phase contrast imaging

X-ray source qualification

X-ray radiography

X-ray coherent diffraction imaging

Specialist Camera Solutions

Industrial | Defence | Scientific

X-ray sCMOS 16MP Detector standard models

Characteristics	sCMOS 16MP_52	sCMOS 16MP_95	sCMOS 16MP_135
Resolution	4096 x 4096		
Input Size (mm)	36.7 x 36.7	67 x 67	95.5 x 95.5
Input Size (μm)	9 x 9	16.4 x 16.4	23.3 x 23.3
Dynamic Range	15,000:1		
Frame Rate	4.5 fps at full resolution in binning 1 x 1, 18 fps in binning 2 x 2		
Full Well Capacity	70,000 electrons in binning 1 x 1, 150,000 electrons in binning 2 x 2		
Read Out Noise	<4.4electrons rms in binning 1 x 1, <10 electrons rms in binning 2 x 2		
Dark Current	<1 electron/pixel/second		
Sensor Temperature (ºC)	Operating at -20°C with water cooling		
Digitization	16-bit		
Peak QE	58% at scintillator emission wavelength (without microlens)		
Exposure	50 microseconds up to 1 minute		
Spatial Resolution	sCMOS_16MP_52 with Gadox:Tb(30lp/mm), sCMOS_16MP_95 with CsI(20lp/mm), sCMOS_16MP_135 with CsI(151p/mm)		
Detector Interface	Gigabit Ethernet / Genicam compliant		
Energy Range	1keV-55keV with Gadox:Tb/20keV-300keV with CSI		
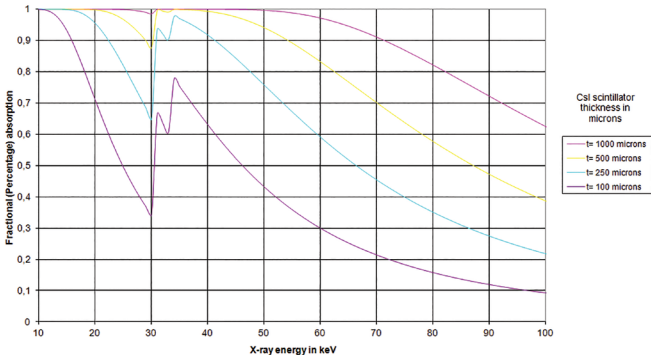
X-ray absorption efficiency
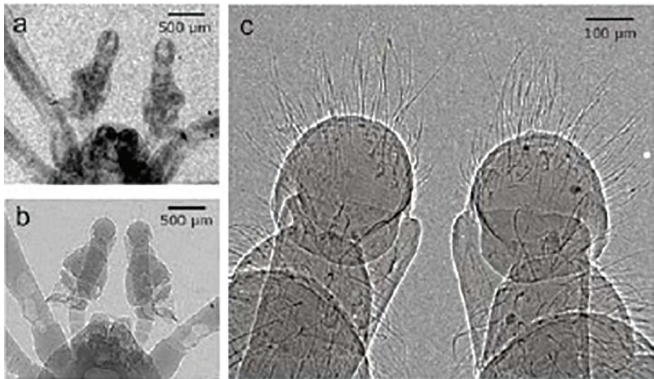
Spider leg, courtesy Excillum, T.Tuohimaa 5μm pulsed liquid jet source, 50kV, 0.8mA, magnification x1 (left), x4, right, 4kx4k resolution, voxel size 9μm