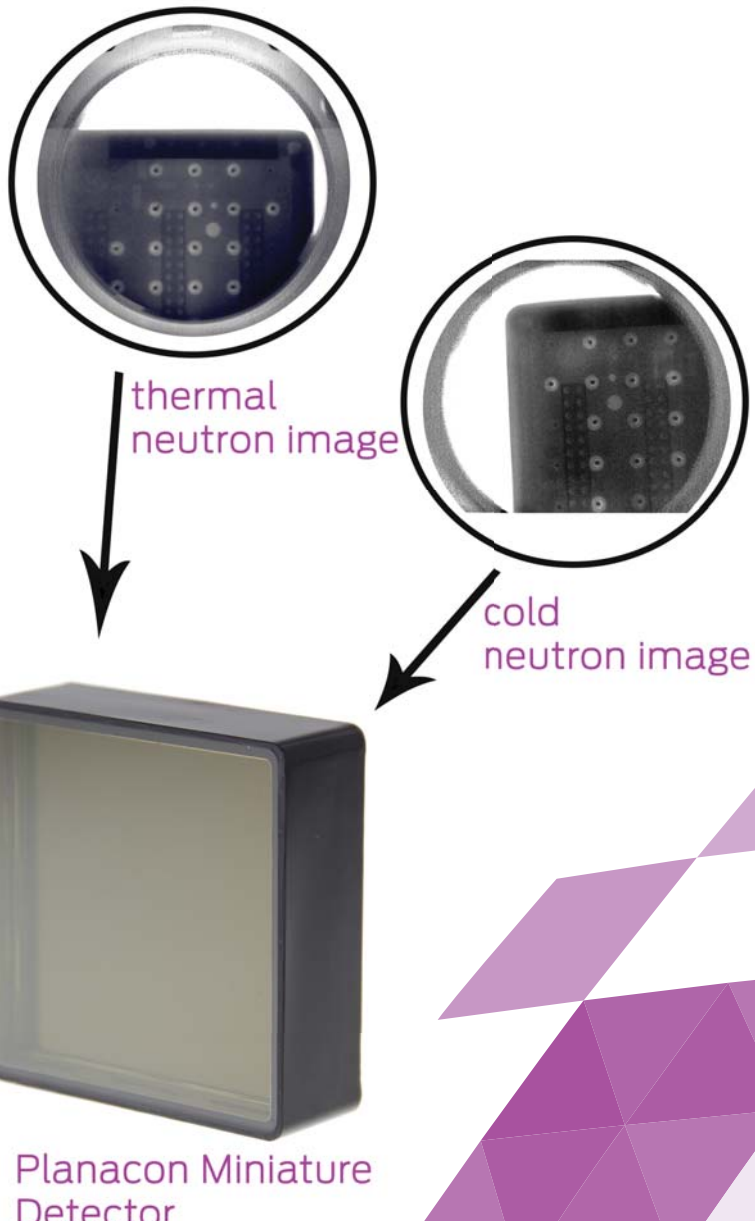
PHOTONIS
Scientific Detectors

Superior Neutron Imaging



Neutronic [i]

High Resolution, Greater Efficiency

This new detector from Photonis is designed to provide either still images or video using both cold and thermal neutron imaging techniques for non-destructive testing and neutron tomography.

Neutron imaging is a non-destructive method used to see inside objects that may be inpenetrable by X-ray or other techniques. Neutrons offer the benefit of being able to see through heavy metals such as lead but can also be used to examine delicate processes.

The Neutronic [i] combines a 100x100 mm^2 neutron sensitive Microchannel Plate with a fast phosphor screen to maximize spatial resolution and sensitivity and to also provide a large field of view. Additionally, the Neutronic [i] is paired with your choice of camera, including our own Nocturn CMOS camera, to bring to the surface what lies beneath, making this system ideal for all non-destructive testing applications.

Process neutron images faster with this new high-resolution detection system from Photonis.

Neutron Imager from Photonis Provides High Resolution Imaging

The 100x100 mm^2 neutron sensitive MCP assembly within the Neutronic [i] is manufactured by Photonis, ensuring better resolution and detection efficiency when compared to traditional scintillator-based neutron imaging systems. The control box is designed to hold the vacuum system, steering logic and high voltage power supply so everything is neatly contained and easy to access.

There are many benefits to using our neutron imaging solution, including:

- **Faster imaging**: Photonis provides thermal neutron detection efficiency of 50% and cold neutron detection efficiency of 70%[1]. The Neutronic [i] is ideally suited for neutron tomography due to its superior speed resulting in limited exposure time for your sample.
- **Superior spatial resolution:** The Neutronic [i] offers <50 µm image resolution over the entire active area, giving you higher quality images than ever before. This system is also able to be used for low-power research reactors due to its superior sensitivity in neutron imaging and tomography.
- **Large field of view:** The 100x100 mm^2 field of view allows you to image larger portions of your sample and reduce overall exposure time.
- **Easily serviced:** With all of the cables and hoses in one compact box, the Neutronic [i] system allows ease of access to perform maintainance.
- **Customizable options:** As the manufacturer, Photonis can offer customized MCP configurations, various models of cameras for output requirements, and many other options.

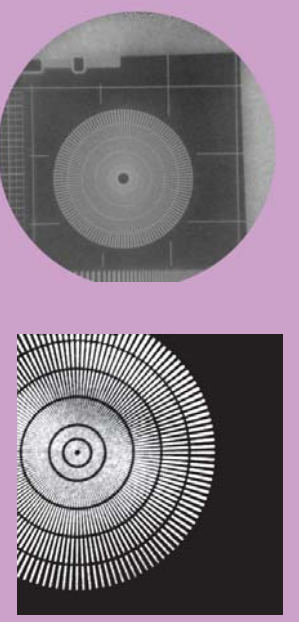


Figure 1: The top image shows a Siemens star on a Gd mask. Using the cold neutron imaging beamline at Oak Ridge National Lab, the Neutronic [i] is able to provide high resolution images at 50 µm as seen in the inner-most circle of the bottom image.

Technical Specifications	
Imaging Resolution	50 µm
Electron Gain @ 1000 Volts	> 1000
Dark Counts at Gain Voltage	< 0.1 counts/second/cm^2 Max
Vacuum Base Pressure	< 1E-6 Torr

*The Neutronic [i] from Photonis licenses NeuView™ technology from Nova Scientific to make Photonis-manufactured MCPs neutron-sensitive.

1. A.S. Tremsin et al., Improved efficiency of high resolution thermal and cold neutron imaging, Nucl. Instr. Meth. A628 (2011) 415–418.

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