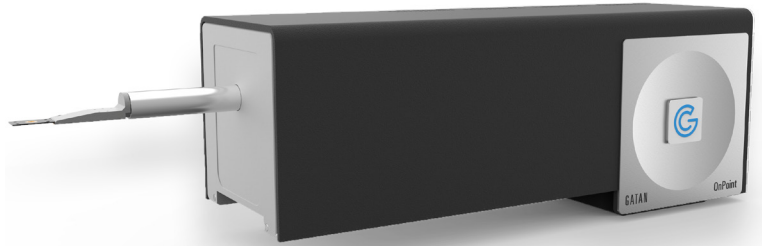


OnPoint Backscattered Electron Detector

Model 400

Introducing the OnPoint™ detector, the new standard for backscattered electron (BSE) detection that delivers unprecedented sensitivity and speed to better understand non-conductive samples; such as polymers, plastics, and biological materials. Using a detector optimized for low kV, this system expands your ability to study uncoated samples, low atomic number (Z) elements, as well as large 3D datasets.



Benefits

- **Resolves features distorted by charging or beam damage:** Attains images at low kV to reduce charge build-up and to prevent damage to delicate samples
- **Captures large, 3D datasets quickly:** Acquires large field of view images or 3D datasets up to six-times faster
- **Differentiates low-Z elements:** Delivers the highest signal-to-noise ratio (SNR) available to help distinguish between elements with a similar atomic number
- **Provides highest BSE collection efficiency:** Produces higher SNR images because it captures electrons other detectors miss as well as minimizes the noise in the detection system
- **Ensures peak performance within minutes:** User-exchangeable sensor enables you to maintain your system at the highest performance, no service visit required

The OnPoint system enhances your ability to image difficult or non-conductive samples known to be sensitive to charging or other beam damage. By operating at beam energies below 5 kV, the detector reduces the interaction volume of the electron beam with the sample to minimize charging and damage. Unlike standard BSE detectors, this unique sensitivity enables the OnPoint detector to produce a relative response below 5 kV that is comparable to those acquired between 15 – 30 kV electrons (Figure 2). In practice, this increases the Z-contrast of a material as well as provides experimental conditions that are suitable for a wider range of samples.

Furthermore, the system delivers the highest BSE collection efficiency (50 – 80%) to detect low-Z elements. Using a unique detector geometry, OnPoint captures the large volume of electrons just outside the pole piece perimeter that many in-lens or standard BSE detectors miss. Even at shorter working distances (<3 mm), this collection efficiency continues to surpass standard BSE detectors to ensure you collect the highest SNR images available.

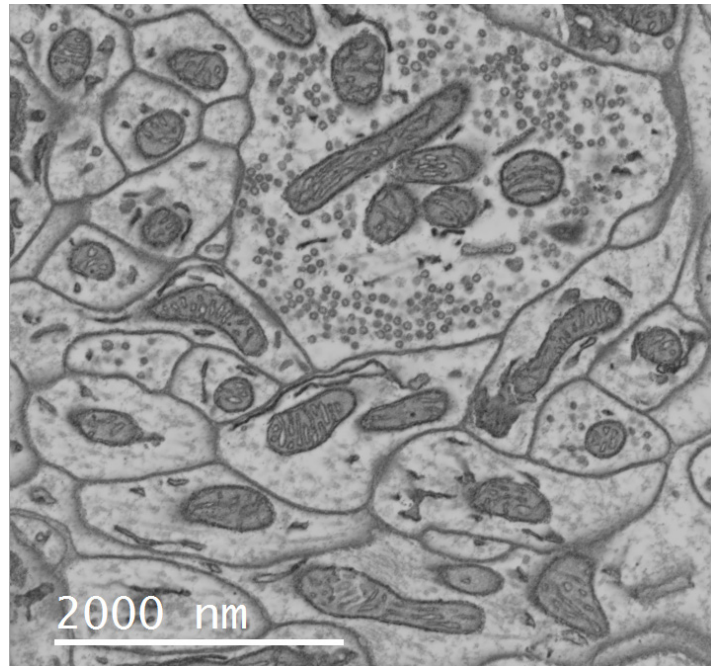


Figure 1. Demonstrates how low kV conditions can preserve and discriminate fine features, such as synaptic vesicles. *Sample: 2 kV, 0.2 nm pixels, 24k x 24k image, 1 μs dwell time. Image courtesy of T. Deerinck NCMIR/UCSD.*

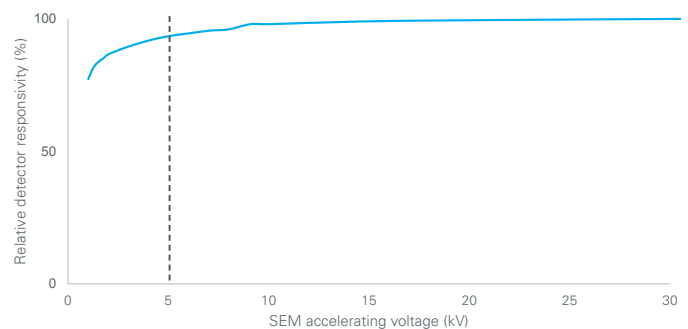


Figure 2. Shows the relative response of the OnPoint detector to incident electrons is comparable below 5 kV to those acquired between 15 – 30 kV electrons.

OnPoint Backscattered Electron Detector, Model 400

The OnPoint detector increases your productivity to acquire large 3D datasets or fields of view that were previously too time-consuming to tackle. From the beginning to the end of image acquisition, the OnPoint system utilizes a low-noise, high-speed amplifier chain to decrease the time it takes to obtain a high-quality image. When combined with a large field of view scan generator, this capability can significantly decrease time barriers associated with stitching and stage movement. As a result, the OnPoint system now captures the same SNR 3View® images four-times faster (Figure 3); plus it minimizes environmental drift or vibration that may degrade image quality.

Unique to the OnPoint detector is a retractable, low profile tip. When inserted, this allows you to use shorter working distances to maximize the performance (resolution and sensitivity) of your SEM. It also provides a convenient access point to exchange the consumable sensor inside the SEM chamber so you can be confident you can maintain the system at peak performance within minutes.

Applications

- Neuroscience
- Cell biology
- Natural resources
- Alloys (Al, Mg)
- Plastics, polymers

Specifications

Detector speed (MHz)	2
Diode insertion repeatability (µm)	<50
Detector height at pole piece (mm)	<1.5
Detector dark noise (%)	<0.2
Shipping weight (kg)	32
(lb.)	71

Specifications are subject to change.

Ordering

Model	Description
400	OnPoint BSE detector
400.3V	OnPoint BSE detector upgrade (existing 3View system)
400.SNSR.1	OnPoint BSE sensor (replacement)
400.T	OnPoint installation

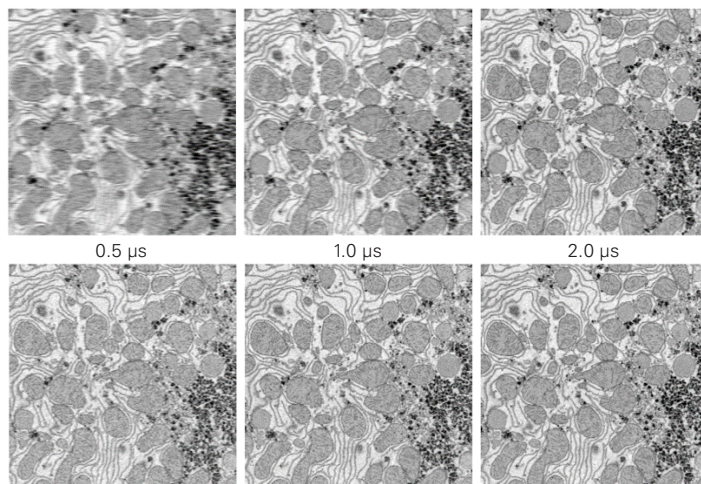


Figure 3. Compares image quality from the 1st generation 3View detector (top) to the OnPoint detector (bottom) at various dwell times. Results show the OnPoint detector delivers equal or better resolution images using shorter dwell times (0.5 vs. 2.0 µs). *Sample: Brain, 3 kV, 15 kx, 0.5 µs dwell time.*

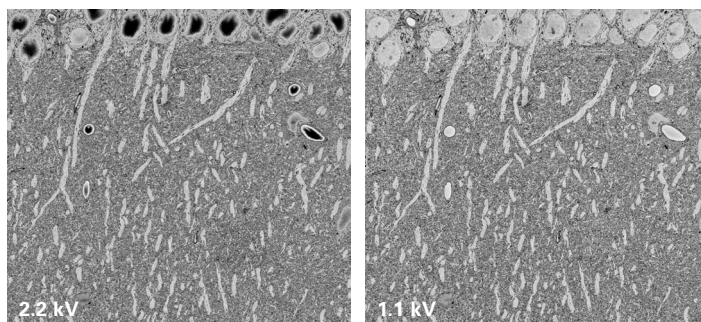


Figure 4. Resolves features at 1.1 kV (right) that were previously distorted (e.g., black spots) by charging or beam damage at 2.2 kV (left). *Sample: Mouse cerebellum. Image courtesy of T. Deerinck NCMIR/UCSD.*

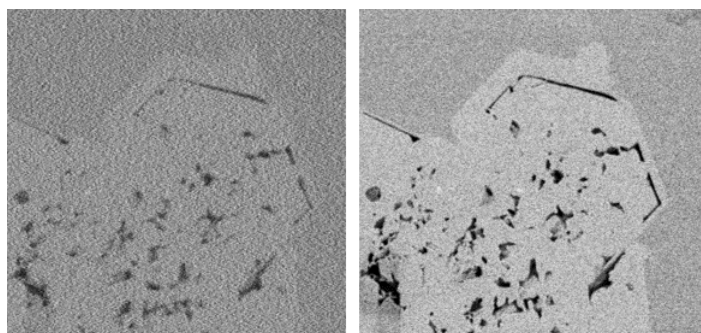


Figure 5. OnPoint (right) captures more details from a shale sample than the standard BSE detector (left). *Sample: Shale, 2 kV, 10 kx, 0.5 µs dwell time.*

Other products to consider

- 3View system
- DigiScan™ II system
- Gatan Microscopy Suite® (GMS) software
- DigitalMontage® software