

Stela Hybrid-Pixel Camera

Model 1015

Introducing Stela™ – the only fully integrated hybrid-pixel electron detector with the Gatan Microscopy Suite® (GMS) software for advanced electron diffraction studies.

Benefits

One platform, many solutions

- **Industry-leading Gatan Microcopy Suite software:**
Seamlessly integrates diffraction imaging and 4D STEM with hybrid-pixel electron detection
- **Quickly turns subtle observations into bright insights:**
Analyze and assess results in minutes to optimize the experiment and collect the best 4D STEM dataset possible

Diffraction uncompromised

- **Exceptional-dynamic range for 4D STEM:** Captures weak and intense reflections to enable advanced diffraction studies
- **Acquires a 4D cube at >16,000 pixels/s:**
 - Reduces specimen drift and damage
 - Covers large sample areas in less time
- **Optimized for imaging at low kV:** Ideal for materials that require diffraction studies at <80 kV

Known as the industry standard for electron microscopy experimental control and analysis, GMS enables many techniques, including imaging, diffraction, spectroscopy, *in-situ* microscopy, and tomography. When combined with the Stela



camera, diffraction imaging and 4D STEM workflows are now fully integrated with hybrid-pixel electron detection. This single interface is not only optimized for data acquisition and processing but streamlines the workflow to shorten your time to results.

Hardware synchronized 4D STEM eliminates user-error and data loss during acquisition. And, pre-optimized 4D STEM tools along with DigitalMicrograph® and Python scripting allow for

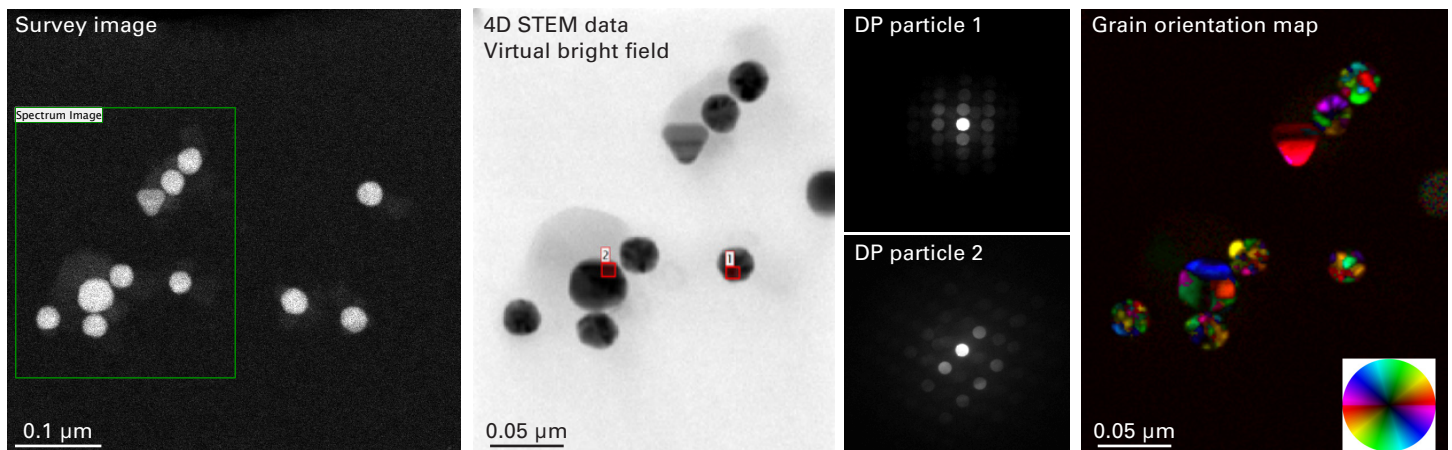


Figure 1. A 4D STEM diffraction data cube collected using the Stela camera and STEMx system. Specimen: Au nanoparticles. Scan area: 176 x 218 pixels, Diffraction image size: 256 x 256 pixels. Color map showing grain orientations classified based on the angular position of the maximum diffraction peak per probe position using a DigitalMicrograph script.

Specifications

Model	0.25 MP	0.5 MP
TEM operating voltage (kV)	30 – 200	
Sensor size (pixels)	512 x 512	1,024 x 512
Pixel size (µm)	75	
Full frame read-out speed (fps)	>2,000 (16-bit) >4,000 (8-bit)	
Max. read-out speed, 128 x 128 pixels (fps)	>16,000 (8-bit)	
Image bit depth (bit)	8/16/32 Mode dependent	
Max. counting rate (pA/pixel)	>1	
DQE @ 0.5 Nyquist	200 kV ≥40% 60 kV ≥65%	
Read modes	Bin: x1, x2, x4 Sub-area: ½ and ¼	
Acquisition modes	Image, Dose Fractionation Video (<i>in situ</i>)	
Mounting position	Bottom, Terminal	
GIF compatible	No	
Gatan Microscopy Suite	Included	

Specifications are subject to change without notice.

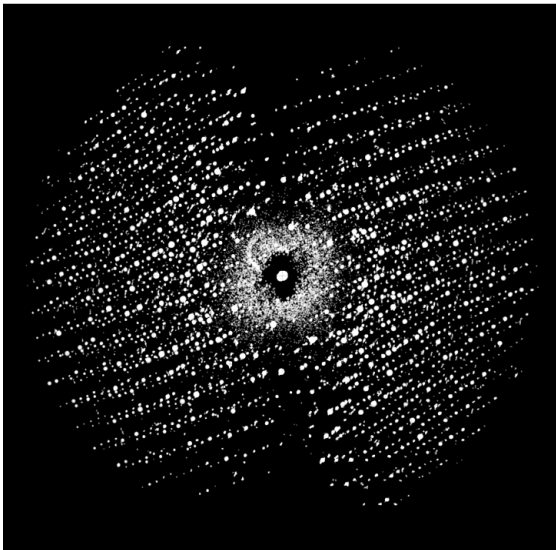


Figure 2. 3D visualization of the reciprocal space reconstructed from continuous diffraction tomography data (micro-ED) collected using the Stela camera in *in-situ* recording mode. Specimen: Tylenol crystal, diffraction image size: 512 x 512 pixels, tilt range: ±70°, total acquisition time: 3 s. 3D reconstruction courtesy of Dr. dos Reis, Northwestern University.

the highest quality diffraction data acquisition and processing, irrespective of the user level of expertise and complexity of their experiment.

Stela utilizes the DECTRIS hybrid-pixel electron detector that employs electron counting to minimize noise and uses on-the-fly digitization for the highest dynamic range. Low-noise, high-dynamic range, along with its unparalleled fast frame rate, and optimized performance at low kV, make Stela the best electron diffraction camera for a variety of advanced material characterization and studies.

Ordering

Model	Description
1015.1	Stela Camera (0.5 MP)
1015.2	Stela Camera (0.25 MP)

STEMx™ system is required for 4D STEM applications.

Applications

- Diffraction imaging
- Low-kV diffraction
- *In-situ* diffraction
- 4D STEM diffraction
- Diffraction tomography (micro-ED)

Other products to consider

- STEMx 4D STEM
- Gatan Microscopy Suite Software
- *In-Situ* Explorer

