

# OneView Camera

## Model 1095

**One camera does it all**—high quality image and high-speed video capture.

**View “live” video**—25 frames per second at full 4k x 4k resolution.

The OneView™ camera adds powerful new video capabilities to the superb image quality you have come to expect from the UltraScan® 4000 camera, and sets a new performance benchmark in scientific imaging for transmission electron microscopy (TEM).

The OneView camera uses a proprietary CMOS sensor optimized for both sensitivity and speed. An ultra-fast built-in shutter allows you to image at near 100% duty cycle, guaranteeing optimal use of specimen dose and the highest quality imaging at the fastest frame rates. A redesigned scintillator and fiber optic plate are customized for the OneView CMOS sensor for single electron detection as well as high dose applications.

Eliminate the need to use the TEM’s viewing screen. Align, search, focus, and stigmatize with ease on an UltraHD monitor at 25 frames per second (fps). Then, seamlessly transition to image or video capture, without needing to change modes, through a completely redesigned, intuitive user interface.

Final image quality is greater than the sum of its parts. The unparalleled 25 fps full resolution frame rate combined with in-line data processing enables real-time drift correction, dynamic range extension, and enables powerful image recording modes.

OneView image recording automatically optimizes for exposure time, signal-to-noise ratio, or total specimen dose. Select the optional real-time drift correction to maintain full image resolution in the presence of drift, and outlier removal to automate removal of captured x-rays.

The OneView *in-situ* option can be used for *in-situ* electron microscopy (EM). Record high quality video over a range of resolution and speed combinations, from 4096 x 4096 pixels at 25 fps, to 1024 x 1024 pixels at 200 fps at higher binning modes. Take advantage of true UltraHD viewing modes at video frame rates, both for display and data recording with the *in-situ* option.

Stop guessing when an *in-situ* reaction will occur. Use the LookBack streaming video function to post-event trigger video capture so you never miss the start of an *in-situ* reaction again. LookBack reduces total data storage requirements by allowing you to start the actual video capture after the desired reaction has begun, so that you only need to capture known good video.



The OneView camera enables you to view and capture data with the highest resolution across time and space to support all of your TEM applications.

Don't settle for a traditional CMOS or CCD camera. Only the OneView camera maximally leverages your total TEM investment. OneView camera—the one to beat.

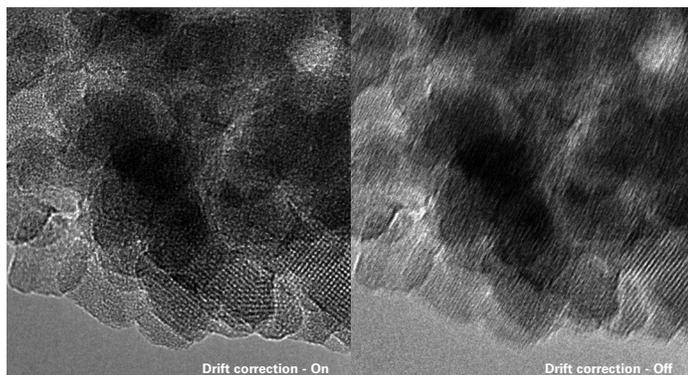
### Benefits

- **4096 x 4096, 15 µm pixels:** Large, high-resolution field of view
- **CMOS sensor with built-in shutter:** Near 100% duty cycle data acquisition maximizes signal-to-noise and optimally uses specimen dose
- **25 full frames per second:** No need to compromise resolution for speed, always have a “live” experience at full resolution
- **In-line data processing:** Guarantee optimal image quality with real-time drift correction and outlier removal and extend dynamic range beyond 16-bits

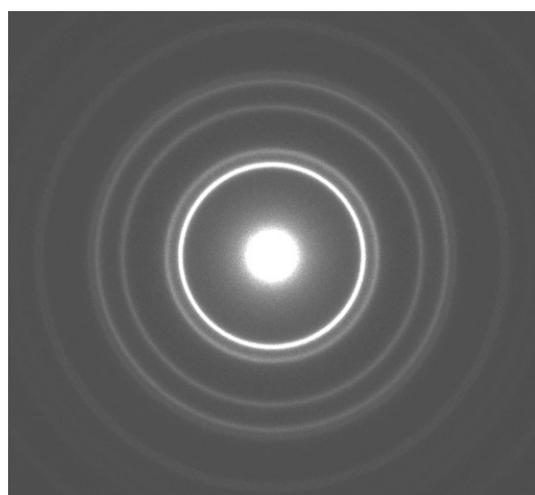
### Applications

- Battery, solar & energy
- LED, semiconductor & data storage
- Structural and cell biology
- Drug discovery
- Pathology
- Medical devices
- Chemical analysis
- Compositional analysis
- Metals and alloys
- Oil, gas & geosciences
- Energy, utilities & environment

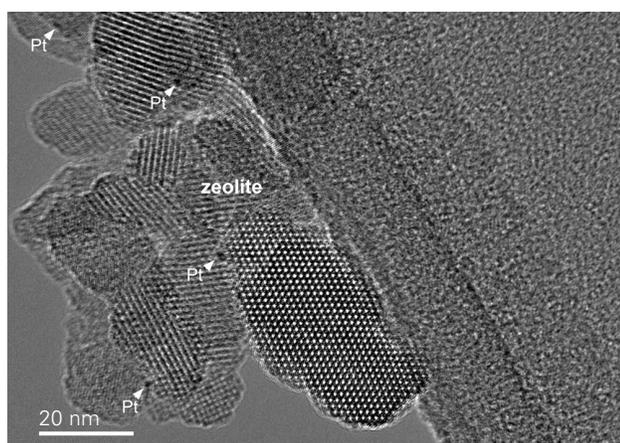
## OneView Camera, Model 1095



**Figure 1.** Demonstrating the drift correction capabilities of the OneView camera, and the ability to capture high quality 16 megapixel still images and video. Image of zeolite sample captured with OneView camera; electron energy: 120 kV; TEM indicated magnification: 10 kx; image size: 4k x 4k; exposure time: 1 s; number of frames: 25. *Sample courtesy of Chevron, zeolite SSZ-57.*



**Figure 2.** Demonstrating clean collection of diffraction patterns using the OneView camera. Image captured with OneView camera; electron energy: 200 kV, image size: 4k x 4k; exposure time: 1 s; number of frames: 25.



**Figure 3.** High resolution image of a zeolite sample containing small metal Pt particles was captured with OneView camera; TEM magnification: 255 kx; electron energy: 200 keV; exposure time: 2 s; drift correction: on. *Sample courtesy of Chevron, zeolite SSZ-57.*

## Specifications

|   |   |
|---|---|
| TEM operating voltage (kV)                                      | Up to 400   |
| Sensor active size (mm)   | 61.4 x 61.4                                       |
| Sensor size (pixels)  | 4096 x 4096                                       |
| Pixel size ( $\mu\text{m}$ )                                    | 15  |
| Full sensor read-out speed (fps)                                | 25  |
| Image display (fps)   | 25  |
| Recording modes   | Image<br>Video ( <i>in-situ</i> option)           |
| Image formats   | 1:1 (4k, 2k, 1k)<br>16:9 (UHD, HD)                |
| Video formats   | 1:1 (4k, 2k, 1k)<br>16:9 (UHD, HD)                |
| Image capture modes   | Exposure time<br>Signal-to-noise<br>Specimen dose |
| 1:1 <i>in-situ</i> video capture speed (fps)                    |   |
| 4096 x 4096 pixels  | 25  |
| 2048 x 2048 pixels  | 100   |
| 1024 x 1024 pixels  | 200   |
| 16:9 <i>in-situ</i> video capture speed (fps)                   |   |
| 3840 x 2160 pixels (UHD)  | 40  |
| 1920 x 1080 pixels (HD)   | 135   |
| Conversion efficiency @ 200 kV (counts/primary e <sup>-</sup> ) | >35   |
| DQE (200 kV, 4k x 4k)   |   |
| Quarter Nyquist (%)   | >20   |
| Half Nyquist (%)  | >10   |
| Dynamic range   | >16-bit with frame accumulation                   |
| GIF compatible  | Yes   |

Specifications are subject to change.

## Ordering

| Model   | Description                               |
|---------|---|
| 1095    | OneView camera                            |
| 1095.IS | <i>In-situ</i> upgrade for OneView camera |