# LV-16 CAMERA
Stunning Clarity For LEEM/PEEM

Delivering Bigger | Better | Faster | Cameras For Electron Microscopy

DIRECT DETECTION FOR LOW-ENERGY ELECTRON MICROSCOPY

➤ Direct detection of low-energy primary electrons— a revolutionary advancement for LEEM/PEEM.

➤ 4k × 4k (16.8 million) pixels.

➤ Movie-mode imaging of dynamic specimens with drift-correction.

➤ DE Mission Control software saves open data fomats and is controllable by API.

➤ The largest impact hardware upgrade you can make per dollar.
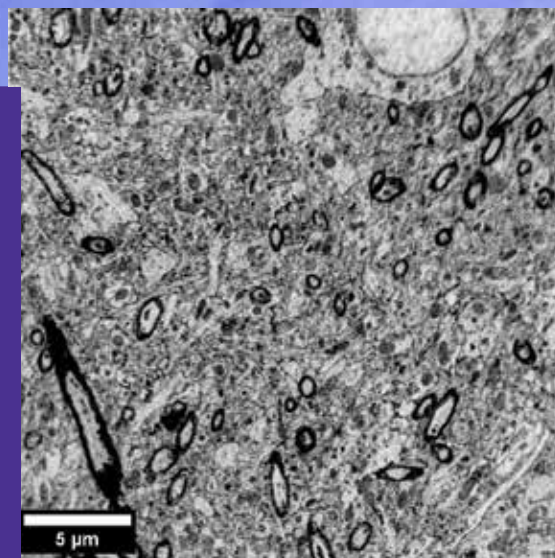
PEEM image of mouse brain. Sample was provided by Gregg Wildenberg *(University of Chicago).*
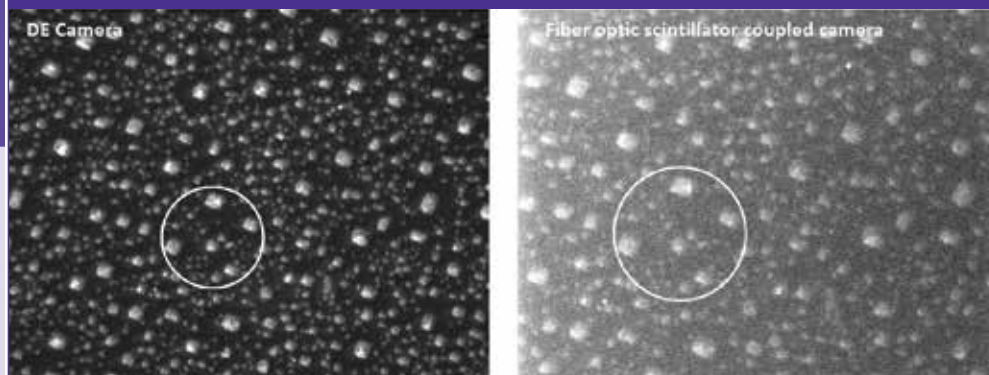
15keV comparison between the LV-16 (left) and a non-direct detection camera (right). The images show a silicon surface, collected in PEEM mode. The integration time was 300 seconds. The circle marks the same area in both images. The LV-16 was operated with 2x binning so that both images are 2k x 2k pixels.
Courtesy of Rudolf Tromp, (IBM, Yorktown Heights, NY, USA).

DETECTOR APPLICATIONS:
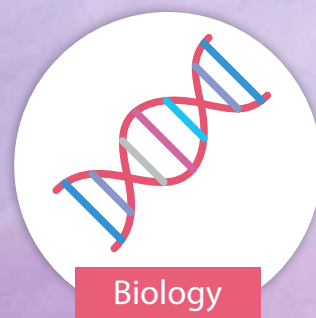
Biology
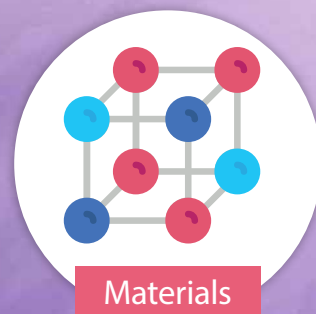
Materials

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Electron Energy	Optimized for 10 - 40 keV
Pixel Array Specification	4096 × 4096 (16.8 million pixels)	6.5 µm pixel pitch
Single Electron SNR	~250:1 (15 kV)
Sensor Design	On-chip correlated double sampling (CDS)	backthinned	radiation hardened
Acquisition Frame Rate	92fps max, unbinned full-frame	281 fps max, binned-2× full-frame subarray readout up to 4,237 fps (2048 × 128)	user-selectable hardware frame rate
Mounting Position	Optionally fully retractable	CF (ConFlat) flange	custom mounting options
Sensor Protection	Integrated sensor protection shutter	TEM blanking/shuttering	failsafe software
Computer System	High-performance computer	Windows 10	NVidia GPU(s)	up to 58 TB storage
Image Format	Non-proprietary to ensure broad compatibility	TIFF, MRC, AVI, MP4, etc.
Acquisition Software	DE Mission Control software for advanced image/movie acquisition and analysis

1 µm

0.3 1/nm
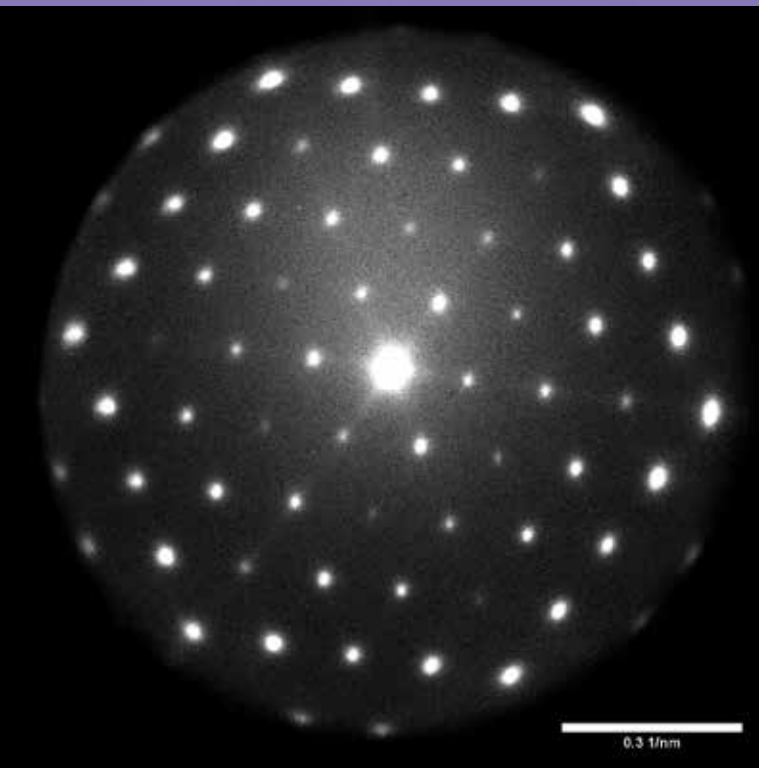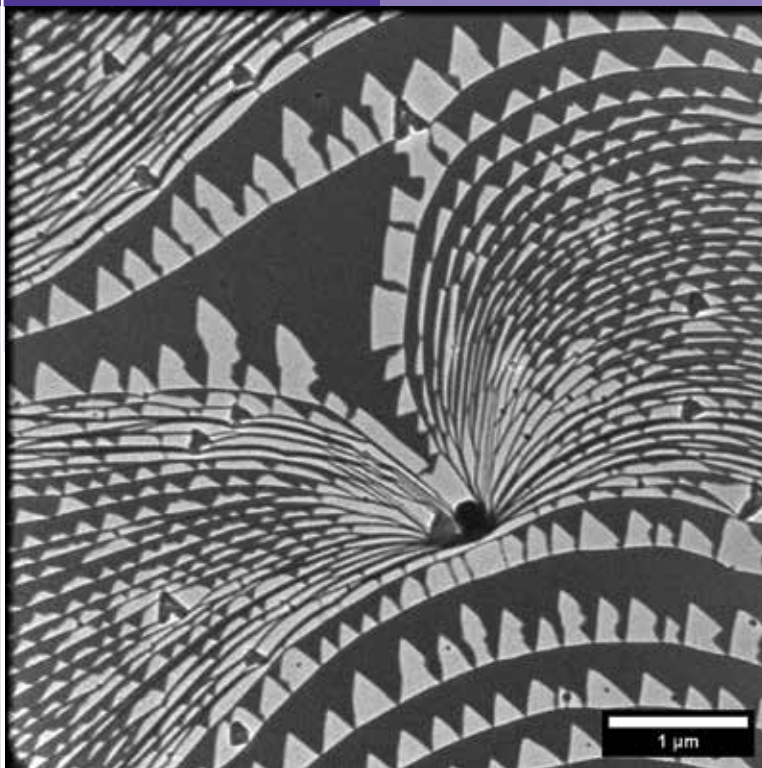
Left: image of Si(111), with (7x7) (bright) and (1x1) (dark) co-existing at about 860 Celsius, imaged in LEEM mode at 10.7 eV.
The dark spot is a carbide defect on the surface and the lines emanating from it are atomic steps.
Right: A LEED diffraction pattern of Si(111) acquired at 5.5 keV bounded by the edge of the Ewald sphere.
Diffraction spots are due to the (7x7) reconstruction. *Courtesy of Rudolf Tromp, IBM.*