SEMCam
## Extraordinary Resolution For EBSD

Delivering Bigger | Better | Faster | Cameras For Electron Microscopy

## DIRECT DETECTION FOR ELECTRON BACKSCATTER DIFFRACTION

➤ Direct detection of low-energy backscattered electrons a revolutionary advancement for EBSD.

➤ High signal-to-noise ratio (SNR) and a large field-of-view delivers >10× the information content compared to conventional detectors.

➤ 2k × 2k (4.2 million) pixels.

➤ Extensible & open software to easily integrate with many versions of indexing software.

➤ Compressive sensing mode detection enables 6000 pps imaging over the full area of the sensor.

➤ Unrivaled features, with an integrated Faraday plate.

➤ Sensitive to a broad range of accelerating voltages.

➤ Optional TKD positioning stage.

➤ The largest impact hardware upgrade you can make per dollar.
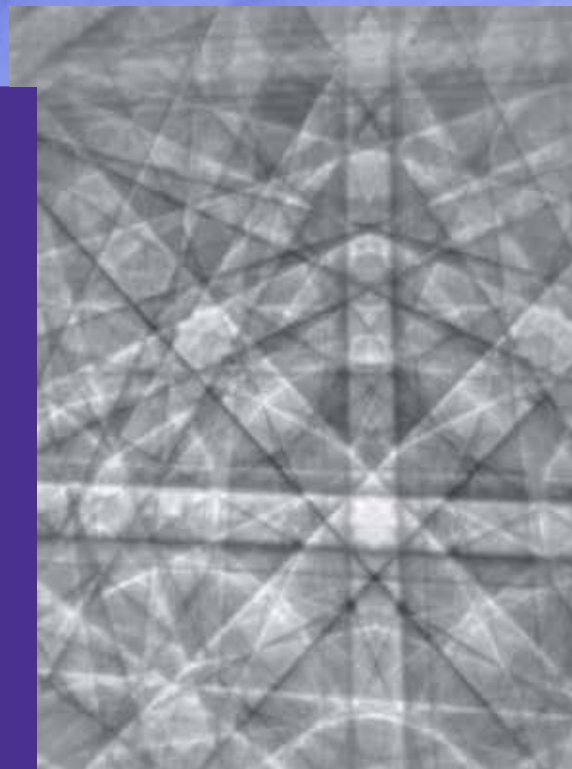
Kikuchi pattern of single crystal silicon with DE-SEMCam at 12 kV. 255 fps 1 second exosure with 4 nA beam current. *Courtesy of Dan Gianola, (University of California, Santa Barbara, USA).*

DETECTOR APPLICATIONS:

Materials
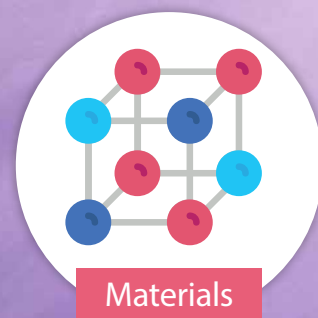
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SEMCAM SYSTEM

Electron Energy	Sensitive for 3 - 40 kV (optinized for 8-20 kV)
Pixel Array Specification	2048 × 2048 (4.2 million pixels)	13 μm pixel pitch
Single Electron SNR	~10:1 (15 kV)
Sensor Design	>3T pixel design with on-chip correlated double sampling (CDS) backthinned	radiation hardened
Acquisition Frame Rate	281fps max, full-frame	subarray readout up to 4,237 fps (2048 × 128) compressive sensing readout enables >6000 fps over full sensor area
Mounting Position	SEM port mount	extend/retract motion	optional TKD positioning stage high-performance computer	Windows 10	NVidia GPU(s)	up to 58 TB storage
Computer System	Non-proprietary to ensure broad compatibility	TIFF, MRC, AVI, MP4, etc.
Image Format	Image acquisition: DE-IM (full-featured, modern GUI)	ImageJ / μManager
Acquisition Software	DE Mission Control software for advanced image/movie acquisition and analysis; compatible with BLG Vantage for HR-EBSD strain-map generation
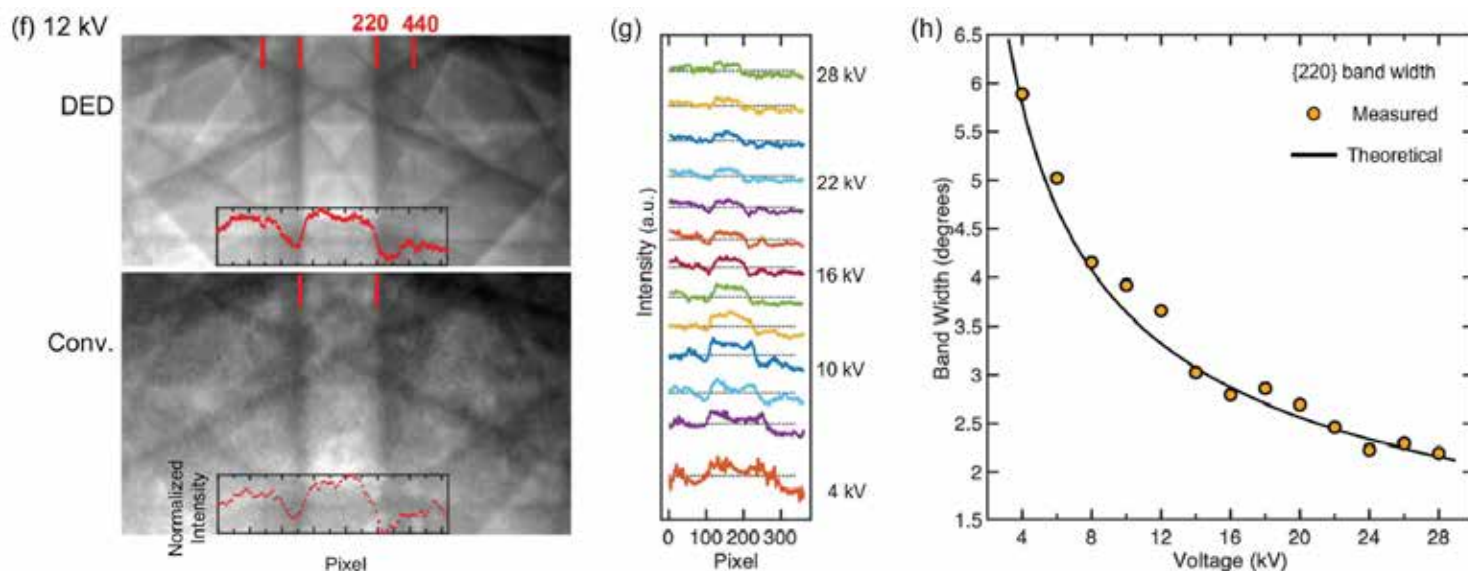
Comparison between the DE-SEMCam (top) and conventional CCD (bottom). The images show Kikuchi bands of single crystal silicon, collected in a 1 second exposure. The accelerating voltage was 12 kV and the beam current was 4 nA. Note the improved resolution and image contract. *Courtesy of Dan Gianola, (University of California, Santa Barbara, USA).*