DE-SEMCam System

extraordinary resolution for EBSD

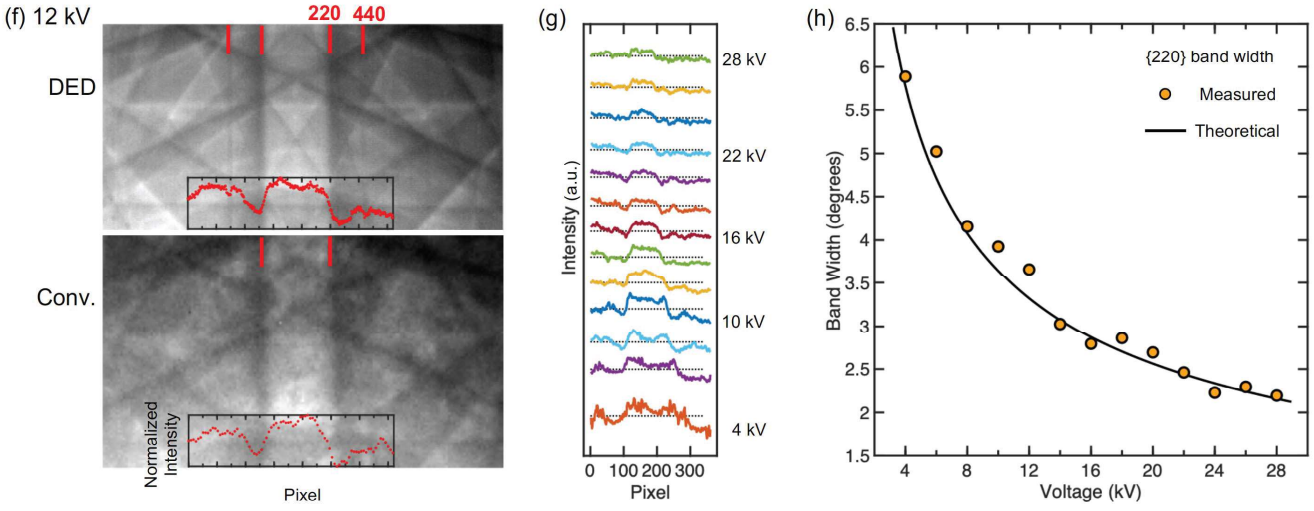
delivering | bigger | better | faster | cameras for electron microscopy

Direct Electron®
INNOVATION PROPELLING DISCOVERY

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 fielf-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.

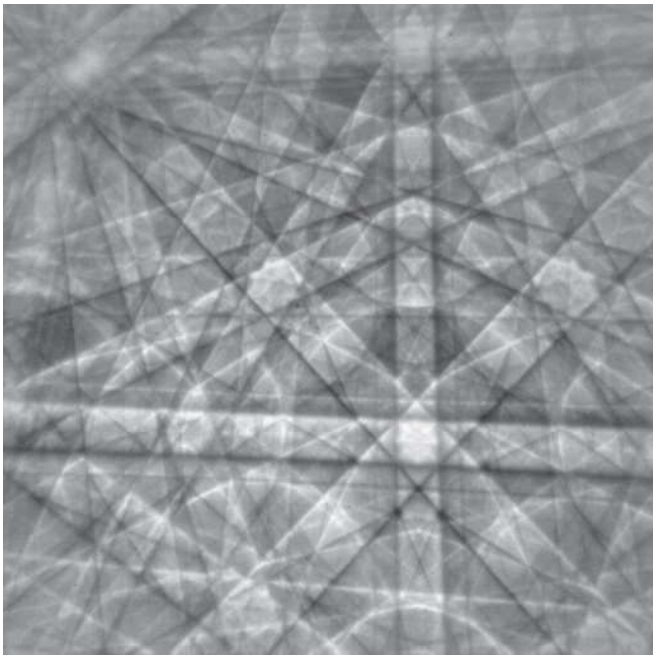
Comparison between the DE-SEMCam (top) and conventional CCD (bottom). The images show Kikuchi bands of single crystal silicon, collected in a 1 second exposure. The accelerating voltage was 12 kV and the beam current was 4 nA. Note the improved resolution and image contract.
Courtesy of Dan Gianola, (University of California, Santa Barbara, USA).



DE-SEMCam System

email | info@directelectron.com web | www.directelectron.com phone | +1 858-384-0291

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
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	image acquisition: DE-IM (full-featured, modern GUI) | ImageJ / µManager streaming acquisition: DE-StreamPix (realtime, continuous display and recording) customization: software development kit (SDK) for integration with custom software



Kikuchi pattern of single crystal silicon with DE-SEMCam at 12 kV. 255 pps 1 second exosure with 4 nA beam current.
Courtesy of Dan Gianola, (University of California, Santa Barbara, USA).

Specifications and performance are subject to change.
Example images of various camera applications were collected by researchers using one of Direct Electron's cameras.