

MerlinEM Direct Electron Detector



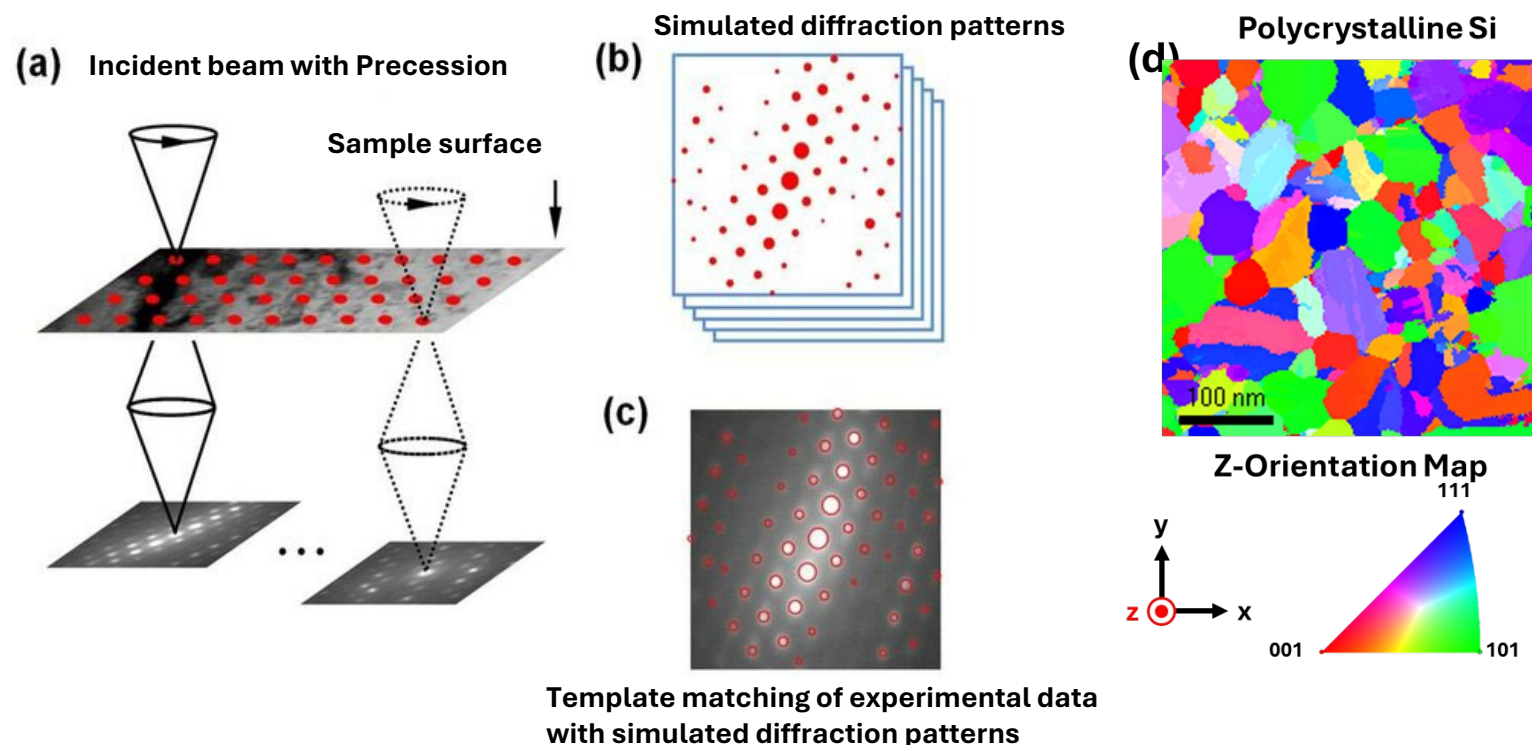
The MerlinEM Direct Electron Detector (DED), a pixelated detector ideal for applications such as Phase and orientation mapping, 4D STEM and TEM dynamic imaging, offers rapid readout and improved signal to noise.

Specifications:

- Noiseless data
- Zero dark counts
- Direct detection
- Radiation tolerant
- 30 - 300 keV detection
- Up to 2000 fps 12 bit mode
- 30 keV - 300 keV operation
- Active area: 14 x 14 mm (256 x 256 pixels)

NanoMegas ASTAR TEM Orientation and Phase mapping

ASTAR is an automatic crystallographic indexing and orientation/phase mapping tool developed for TEM.



Similar to Electron Backscattered Diffraction (EBSD) in Scanning Electron Microscopy (SEM), the NanoMEGAS ASTAR provides grain orientation and phase mapping in Transmission Electron Microscopy (TEM) using **precession electron diffraction (PED)** to reduce dynamic scattering events. Crystal structure, phase maps, grain orientation and strain can be acquired by analyzing the diffraction patterns at each pixel. With the integration of the MerlinEM direct electron detector into the Talos F200X, the overall quality of the phase and orientation mapping data has significantly improved.

Advantages:

- Spatial Resolution: down to ~2nm for orientation maps.
- Precession angle: 0.5 to 1 degree
- Has digital scan generator – no need for STEM unit
- Scanning step from 0.1 nm to 100 nm with maximum scanning area of 5x5 microns

Applications:

- Crystallographic orientation and phase mapping of polycrystalline films and precipitates in matrix materials