

SOFTWARE THAT WON'T HOLD YOU BACK

Productivity depends not only on having a high-performance camera, but also on having efficient software and the latest algorithms for data collection and image processing. At Direct Electron, our research and development extends beyond our renowned direct detectors to the software tools that are necessary to generate high-impact results.

MISSION CONTROL SOFTWARE + DIMENSION MODULE

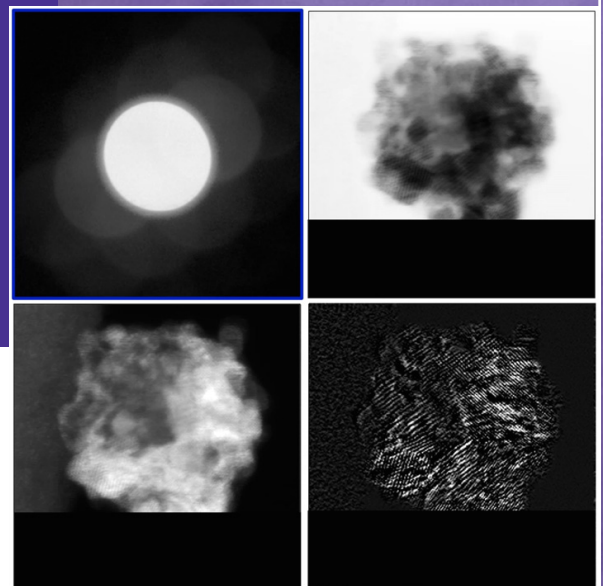
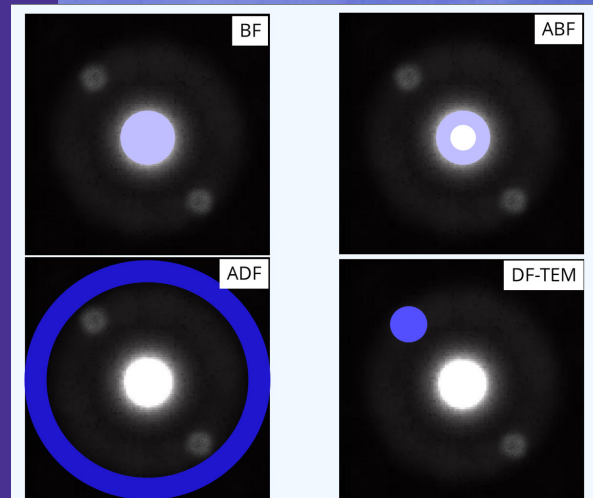
POWERFUL & INTUITIVE USER INTERFACE

Direct Electron's cameras switch easily between full-frame TEM imaging, and smaller readout areas for insitu work or 4D-STEM. Mission Control uses presets to allow rapid changes in camera setup. A tab-based layout guides users through the tasks of setting up the beam and acquiring data.

ACQUISITION SOFTWARE FOR HIGH-RESOLUTION IMAGES AND VIDEOS

Mission Control allows users to acquire images or high-frame rate videos from their TEM specimen. With real-time viewing of frames and Fourier transforms during data acquisition, Mission Control enables standard TEM imaging applications and insitu TEM. For challenging samples, automatic drift-correction is built-in. Frame summing allows real-time viewing of specimens in counting mode.

*FINALLY
4D STEM IS EASY,
UNLIMITED & INTUITIVE!*



Direct Electron
INNOVATION PROPELLING DISCOVERY®

directelectron.com • sales@directelectron.com • (858) 384-0291

MISSION CONTROL + DIMENSION MODULE

LIVE 4D STEM IMAGING

The ability to view live processed data is critical for optimizing imaging conditions, and can offer important information about the local structure of a specimen. Mission Control offers the ability to simultaneously display a live-view of the camera frame with a diffraction pattern, a virtual image of the specimen, the fast Fourier transform (FFT) of the virtual image and a center of mass (CoM) image.

The screenshot displays the DE Mission Control software interface. On the left, the 'Description / Instruction' panel shows 'Acquire 4D STEM data with the DE Camera'. Below this is the '4D STEM Acquisition' section with a 'Start' button and various acquisition parameters like 'Auto Save', '2D Data', and '4D Data'. The 'Display' section shows detector and image space settings. The 'Scan Control' section includes 'Presets', 'Use DE Camera', 'Trigger Source', 'Scan Type', 'Subsampling', 'Scan Size', 'Dwell Time', 'Point Repeat', 'Scan Repeat', 'Rotation', and 'Scan Area ROI'. The 'Camera References' section is at the bottom left. The main area shows a live camera feed of a specimen, a diffraction pattern with a 2 nm scale bar, and a center of mass (CoM) image with a 10 mrad scale bar. On the right, the 'Image Statistics' panel shows a histogram of 'Bright Spot Intensity' with a peak at 30213. Below this is the 'Image Display' section with 'Contrast' and 'Gamma' sliders. The 'Image Metadata' section shows 'Scale Bar Location' and 'Apply to All'. The 'Live Metadata' section shows 'Microscope Mode: HR-STEM', 'Accel. Voltage: 300 kV', 'Magnification: 2000000x', 'Camera Length: 5.0 cm', 'Image Pixel Size: 0.261 mrad', and 'ADIs Per Electron: 208'. The 'Tools' section includes 'Tools Options' and 'External Analysis'.

OPEN DATA FORMATS & COMPATIBLE THIRD-PARTY SOFTWARE

At Direct Electron, we believe only you should control your data, so we avoid placing unnecessary restrictions on how our customers use and analyze images acquired with our cameras. Mission Control therefore supports the use of open, commonly used electron microscopy file formats such as .tif, .mrc and .hdf5 so that users have complete freedom to import data to their choice of software, whether using open-source packages like Fiji, LiberTEM, py4DSTEM, custom scripts, or third-party proprietary software.

The screenshot shows a third-party software interface with a menu bar (File, Edit, Image, Process, Analyze, Plugins, Window, Help) and a toolbar. The main window displays an image of a specimen with a histogram overlay. The histogram shows a peak at 7295.03. The image is titled 'Image_1kx1k_GainCorrected_NoMotionCorr.tif (50%)' and has a resolution of '1024x1024 pixels; 32-bit; 4MB'. The histogram is titled 'B&C' and has a range from 5669.20 to 7295.03. The histogram has 'Minimum' and 'Maximum' sliders, and 'Brightness' and 'Contrast' sliders. There are 'Auto', 'Reset', 'Set', and 'Apply' buttons.

Direct Electron
INNOVATION PROPELLING DISCOVERY