



## Tecnai G<sup>2</sup> F20 Cryo Advanced TEM for Beam Sensitive Samples

Within the last decade we have witnessed a revolution in our understanding of the processes responsible for the maintenance, transmission and expression of genetic information at the molecular level. Whereas DNA stores the information for protein synthesis and RNA carries out the instructions encoded in DNA, proteins carry out most biological activities. Their synthesis, structure and function are at the heart of cellular functions. To truly understand a protein's function, scientists must first of all discern its intra- and intercellular behavior and interactions with cell organelles or pathogens and secondly discern its shape and three-dimensional structure down to the atomic level.

To address these challenges, cell and structural biologists need top quality results; results that can only be generated by top quality tools. FEI is The Structural Process Management Company™, with a mission to help you better understand the three-dimensional structures of cells, cell organelles and proteins. At the core of FEI's proven and comprehensive suite of solutions is our powerful Tecnai G<sup>2</sup> F20 Cryo, a dedicated, easy to operate, easy to maintain, versatile, multi-user transmission electron microscope, designed specifically to meet the stringent demands of today's Life Science laboratories.

*Cryo electron microscopy is the most efficient way to obtain structural information of biological specimens and polymers. The Tecnai G<sup>2</sup> F20 Cryo, optimized for the application, delivers the ultimate attainable protection of beam-sensitive specimens. It features:*

- *Low-Dose imaging mode incorporating either traditional flood beam techniques and / or Fast SpotScan used for particularly beam sensitive specimens*
- *High resolution imaging under low dose conditions at low magnifications*
- *Beam blanker*
- *Direct electron dose measurement*
- *Ultra-clean vacuum*
- *Cryo-holders with optimized specifications for all types of applications, including tomography*

## Essential specs

Objective lens	TWIN
Point resolution (nm)	0.27
Information limit (nm)	0.18
- attainable	< 0.16

Cs objective (mm)	2.0
Cc objective (mm)	2.0
Focal length (mm)	2.7
Maximum eucentric tilt	± 70°

### Electron Source

- Schottky Field emitter
- Very high spatial coherence due to high brightness
- Very high temporal coherence due to small energy spread (0.8 eV or less)
- High stability and long life

### Illumination system

- Five lenses
- User-selectable intensity limit for specimen protection
- User-selectable zoom for constant screen intensity

### Imaging

- Patented TWIN objective
- High tilt (70°) and large field of view
- Rotation-free magnification and diffraction series
- Magnification reproducible within 1.5 %
- Embedded CCD camera
- Plate camera with 56 sheets of film

### Specimen stage

- Fully computer-controlled, eucentric side-entry, high-stability CompuStage
- Maximized tilts for any X,Y, Z, α, β combination
- Standard with single tilt holder and 70° tilt cryo-transfer holder
- X, Y movement 2 mm, specimen size 3 mm

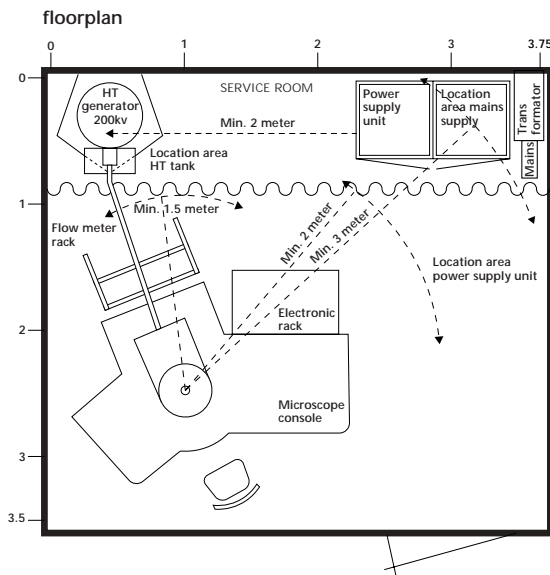
- Specimen recall reproducibility ≤ 0.5 μm (x, y) and ≤ 0.5° (α tilt)
- Drift < 0.5 nm/min with standard single tilt holder, < 1.5 nm/min for cryo-transfer holder

### Vacuum

- Fully interlocked differentially pumped column
- Oil-free vacuum system with turbo molecular pump, pre-pumping column, gun and specimen airlock
- Liner tubes pumped by additional ion getter pump
- Ultra-high vacuum for contamination free observation
- Retractable cryo box
- Vacuum levels: specimen chamber 10<sup>-5</sup> Pa; gun 10<sup>-6</sup> Pa
- Plate camera exchange without switching off High Tension and emitter

### Operation / automation

- Operating system: Industry standard Windows 2000
- Remote Operation available
- Motorized apertures available
- Scripting SW module available
- 2nd Data Monitor available



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