

iFLM Correlative System

Integrated fluorescence light microscope for the Aquilos 2 Cryo-FIB

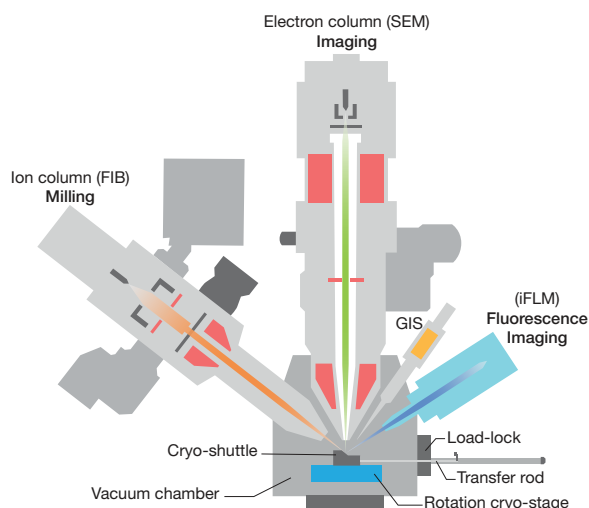
The iFLM Correlative System is an integrated light microscope for cryo-correlative imaging inside the Aquilos 2 Cryo-FIB high-vacuum chamber.

Correlative fluorescence and electron imaging in one system

The Thermo Scientific™ iFLM™ Correlative System (Integrative Fluorescence Light Microscope) allows you to combine fluorescence imaging and ion milling within a single Thermo Scientific cryo-DualBeam™ microscope. The iFLM Correlative System is an optional, versatile optical module for new instruments that can also be retrofitted into existing Thermo Scientific Aquilos™ 2 Cryo-FIBs.

Extending the capabilities of the Aquilos 2 Cryo-FIB

The Aquilos 2 Cryo-FIB is the leading DualBeam system for the production of cryo-electron tomography lamellae. The system is designed for lamella production from cells on EM grids as well as from high-pressure frozen (HPF) samples with the optional Thermo Scientific Easylift™ Nanomanipulator. The possibility to inspect both sample types using the iFLM Correlative System extends the range of applications and offers increased throughput and specificity for cryo-tomography.



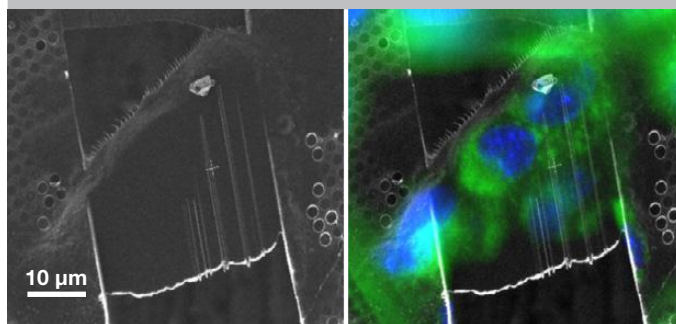
Aquilos 2 Cryo-FIB with the iFLM Correlative System indicated in light blue.

Key Benefits

Correlate two imaging modalities within one system. The iFLM Correlative System allows samples to be imaged directly within the high vacuum of the Aquilos 2 Cryo-FIB without additional transfer steps from an external cryo-light microscope. This saves time and reduces the risk of sample contamination.

Localization of fluorescent targets inside the Aquilos high-vacuum chamber. Fluorescently marked cells can be located directly in the Aquilos 2 Cryo-FIB by using the iFLM Correlative System. This enables rapid identification of cell phenotypes and the subsequent selection of target sites for cryo-lamellae production.

Check-back option during and after lamella milling. Correlation with the iFLM Correlative System allows the lamella milling process to be monitored step-by-step to ensure that the target is contained in the final lamella.



Cryo-lamella prepared with the Aquilos 2 Cryo-FIB (left). Overlay of SEM image with fluorescence image obtained with the iFLM Correlative System (right).

Inspection and verification of fluorescent targets inside finished cryo-lamellae

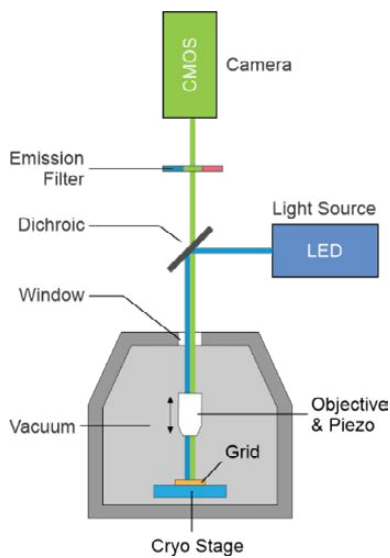
A key benefit of the iFLM Correlative System is the ability to check the final lamellae for fluorescently labelled targets, ensuring they are located within the 200-300 nm thin cryo-lamellae. This is particularly useful in combination with (included) Thermo Scientific AutoTEM™ Software, which can produce several lamellae on a single EM-grid. The iFLM Correlative System can then inspect these lamellae and verify which contain the targets of interest. This facilitates and accelerates subsequent data acquisition in the cryo-TEM.

Correlative software

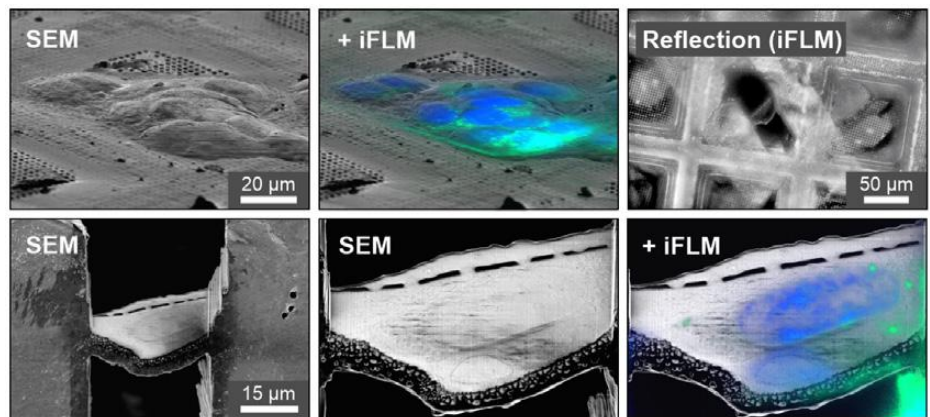
Included Thermo Scientific Maps Software enables data correlation between iFLM Correlative System and FIB-SEM. iFLM and other correlative light microscopy data can be imported for targeting and the identification of features of interest. The iFLM Correlative System features its own software interface that controls the fluorescence microscope and allows the user to switch between electron and light microscope imaging positions. iFLM data can be swiftly imported into Maps Software while retaining positional information from the grid.



The iFLM Correlative System module on the Aquilos 2 Cryo-FIB.



The iFLM Correlative System beam path.



Cryo-lamella preparation with the iFLM Correlative System. **Top row:** Cluster of frozen CHO (Chinese Hamster Ovary) cells on a grid with overlaid fluorescence (blue channel: Hoechst Blue, green channel: Mitotracker). The iFLM Correlative System allows imaging in reflection mode to utilize surface details effectively for correlation. **Bottom row:** Cryo-lamella exhibiting cryo-contrast (secondary electron imaging). The fluorescence overlay highlights labelled subcellular organelles (nucleus and mitochondria) and matches the signal obtained by cryo-contrast very well.

System features

- Widefield optical system
- LED illumination source
- Reflection and fluorescence imaging
- Objective*: Piezo-driven, 20x, 0.7 N.A., minimum FOV ~350 µm
- A range of dedicated iFLM sample shuttles
- CMOS* Camera
- Fully compatible with the Thermo Scientific Aquilos 2 Cryo-FIB

*Final selection pending

Warranty and training

- 1-year warranty
- Choice of service maintenance contracts
- Choice of training options

Find out more at [thermofisher.com/aquilos](https://www.thermofisher.com/aquilos)