GATAN

Advanced AutoFilter Suite
Model 700.LS.702.90

The Advanced AutoFilter® Suite further extends the capabilities of your imaging filter by adding acquisition modes to the AutoFilter suite: RangeEELS, EFTEM MultiMap and advanced EFTEM SI. These modes provide the ability to set up, perform and repeat common electron energy loss spectroscopy (EELS) or energy-filtered transmission electron microscopy (EFTEM) based acquisitions covering multiple elements or features of interest as a single experiment. A new level of ease of use is provided via a sample-centric paradigm combined with fast routines for automatically optimizing acquisition parameters. These and other features significantly advance the toolset available for advanced EELS materials characterization.

The advanced AutoFilter suite software is an extension to our industry standard AutoFilter suite, providing the ability to set up and acquire EELS and EFTEM data over multiple features of interest in a single, automated acquisition. This is achieved by a number of innovations. A new setup paradigm allows experiments to be configured in a sample-centric manner. Powerful new routines for the dynamic optimization of key acquisition parameters enable automated acquisition without user intervention. Further, the ability to store and recall experimental configurations aids reproducibility.

The suite supports three new acquisition modes that are commonly required for microanalysis:

RangeEELS mode allows extended spliced energy loss spectra to be acquired over multiple energy regions. Autoexposure and automated splice point determination are used to ensure optimal a signal-to-noise ratio (SNR) throughout. Hence a single high quality EELS spectrum covering all features of interest can be captured in a single click.

EFTEM MultiMap mode provides the ability to perform multiple EFTEM acquisitions (e.g., zero-loss imaging, elemental mapping) as a single experiment. Features such as autoexposure and auto-binning ensure that each image is captured optimally, and acquired data is archived to file automatically for convenience. Hence acquiring multiple maps at optimal quality from a single region becomes a fast and simple task.

Advanced EFTEM SI mode adds powerful new features to the EFTEM spectrum imaging (SI) package. Acquisition range can be set up intuitively by element or feature for improved ease of use. Further, automatic exposure allows acquisition of extended
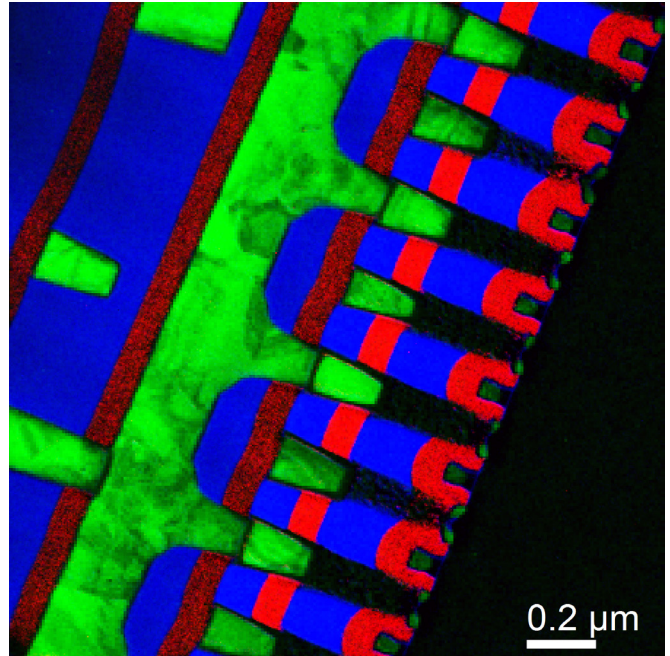
EFTEM spectrum images over large energy loss ranges with optimal SNR maintained dynamically throughout.

Applications

- TEM
- EELS
- EFTEM

Benefits

- **Advanced acquisition modes:** Three new advanced acquisition modes: RangeEELS, EFTEM MultiMap and Advanced EFTEM SI

- **Easy to use interface:** Fast, fully automated data acquisition via an easy to use interface

- **Intuitive experiment setup:** Sample-centric paradigm providing intuitive experiment setup via periodic table

- **Easy reproducibility:** Store and recall experiment profiles for easy reproducibility

- **Compatible with GIF Quantum® system:** Compatible with all GIF Quantum imaging filters

- **Compatible with in-column imaging filters :** Compatible with in-column imaging filters, starting with Gatan Microscopy Suite® (GMS) 2.1 software

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Requirements

System requirements	Suggested configuration
DigitalMicrograph® software (GMS 1.9.0 or higher)	2 GB RAM or greater
Gatan Imaging Filter® (GIF) system; not compatible with models 865, 866, GIF 2002, and older models	
Compatible with in-column imaging filters, starting with GMS 2.1	
EFTEM SI package (for Advanced EFTEM SI)	

Specifications are subject to change

Ordering

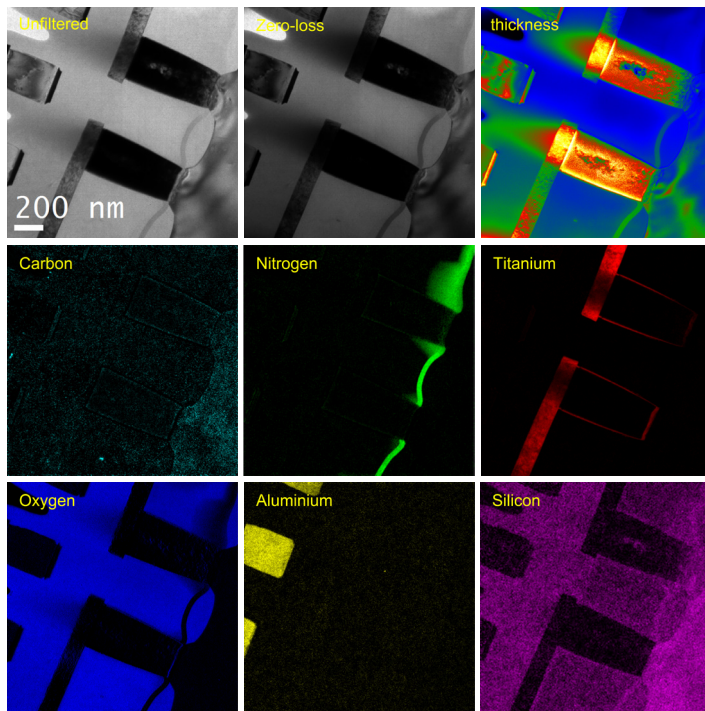| Model	Description
700.LS.702.90.32.1	Advanced AutoFilter Suite; 32-bit
700.LS.702.90.64.1	Advanced AutoFilter Suite; 64-bit

Figure 1. Images and maps acquired as a single acquisition using EFTEM MultiMap software. Autoexposure and auto-binning were active for all maps, illustrating optimal acquisition of data from the intense zero-loss peak through to extremely weak signals such as the silicon K-edge at 1839 eV loss. Total acquisition time <10 min. Sample is a commercial semiconductor device, captured using GIF Quantum 965 system.
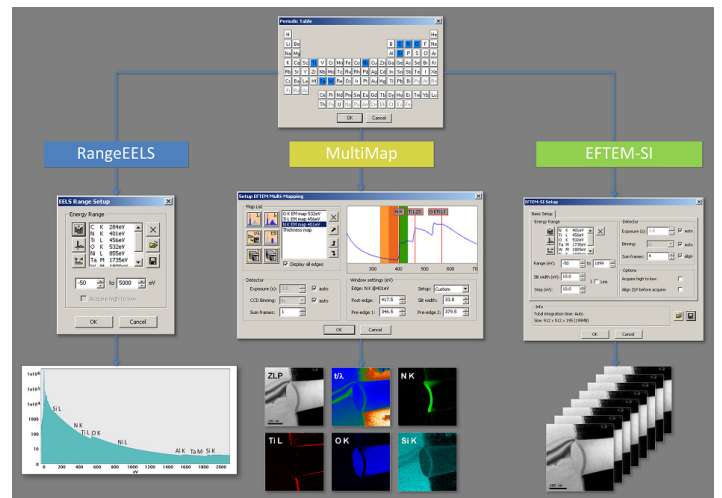

Figure 2. Schematic diagram showing the additional acquisition modes and user interfaces provided by the Advanced AutoFilter Suite: RangeEELS system (left), EFTEM MultiMap software (center) and advanced EFTEM SI system (right). All three modes can be set up following an intuitive sample-centric paradigm via a periodic table element list.

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