TEMLink TEM Lamella Extraction Station
Semi automated full wafer TEM lamella lift out

Today's demanding semiconductor and data storage manufacturing processes increasingly require the high spatial resolution of transmission electron microscope (TEM) analysis for CD control, defect analysis, process development, process monitoring and more. FEI’s TEMLink™ lamella extraction tool rapidly extracts TEM lamella samples from standard semiconductor or data storage wafers and places them onto standard TEM grids for ex-situ examination in TEM or STEM microscopes.

Flexible User Friendly Platform
The TEMLink comes in two configurations, with and without an EFEM load port. The TEMLink 150 automatically loads 300 mm semiconductor wafers from FOUPs via an industry standard EFEM load port. The TEMLink 100 configuration accepts manually loaded data storage wafers.

Wizard Guided User Interface
The TEMLink’s Windows®-based graphical user interface guides the user step by step through the extraction process with an easy to use wizard-style format. The system can import wafer maps directly from the IC3D™ database used by the Certus-3D or CLM-3D Dual Beam tool that prepared the lamella. The TEMLink automatically aligns both the wafer and grid, making the overall extraction operation a quick and straightforward task. Users with no prior lamella extraction experience can be trained for successful operation in a matter of hours. The wizard then guides the operator through the extraction process, quickly and accurately navigating to the lamella sites, including fine manipulation of the probe for final lift out of the lamella. Video from the integrated optical microscope provides real time feedback for monitoring and controlling the entire process from the initial automated grid and wafer alignment to the final, precise lamella placements on the TEM grid. After the lamellae are extracted, grid locations are exported in a standard XML formatted report that can be imported and read on external TEM tools.

• Extraction of TEM lamella from any standard semiconductor or data storage wafer to 3 mm TEM grids

• Compatible with FEI MultiLoader™ transport system for hands-free lamella handling

• Accommodates 200 mm, 300 mm semiconductor wafers and 100 mm, 125 mm, 150 mm, and 200 mm data storage wafers

• Tightly integrated with FEI CLM-3D™ DualBeam™, Certus™ DualBeam, and FEI CD-STEM™ tools

• Successful and simple lamella extraction via a user-friendly wizard interface for operators of any training level

• Rapid probe replacement

• EFEM option for autoloading from industry standard FOUPs

• Throughput up to 20 lamella per hour
Rapid TEM Lamella Preparation

TEM lamellae created in place by FIB milling are very small and difficult to transfer manually from the wafer to a TEM grid. Automated transfer using the TEMLink tool dramatically improves the speed and reliability of the transfer process. The user friendly, wizard based interface quickly and easily guides operators at any skill level through the process with throughputs as high as 20 transfers per hour. Used in conjunction with automated, FIB based lamella preparation, the TEMLink tool can dramatically reduce time to data from the days or weeks typical of manual preparation techniques to as little as an hour.

Specifications

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<tr>
<td>Extraction Throughput</td>
<td>up to 20 lamella/hour (based on 1 wafer)</td>
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<td>Probe Lifetime</td>
<td>&gt; 150 lamella (use case dependent)</td>
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Key Options

- EFEM autoloader: Automatic loading of 300 mm wafers from industry standard FOUPs (TEMLink 150)

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