

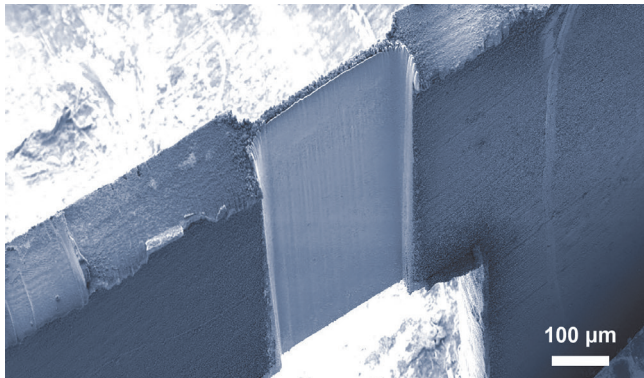
microPREP™

High-Throughput Laser Based Microdiagnostics Sample Preparation



All-New Instrument for Laser Based Sample Preparation

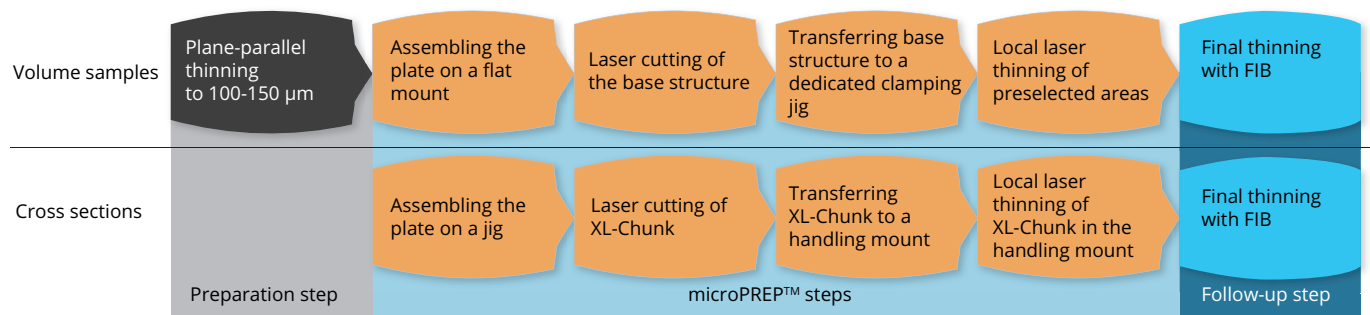
3D-Micromac's all-new microPREP™ is the first instrument to enable fast, clean, and efficient laser ablation available for the preparation of samples for microstructure diagnostics and failure analysis. microPREP™ provides key benefits of micromachining using ultrashort pulsed lasers, particularly low structural damage, high power densities and targeted precision on the micron scale. Thus microPREP™ is up for laser cutting and local laser thinning in semiconductors, metals, ceramics, as well as compounds.



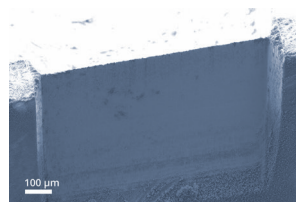
Benefits of microPREP™

- Shorter time to sample: up to 10 000 times faster than FIB
- Analysis-adopted sample geometry
- Minimized risk of sample loss
- Recipe-driven GUI for sample geometries and materials
- Reduced FIB capacity requirements
- Enhanced efficiency of existing (TEM) analysis tools
- Custom recipes and fixtures on request
- Meets the essential requirements of the SEMI S2/S8

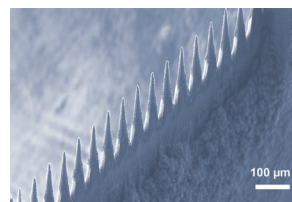
Process-flows



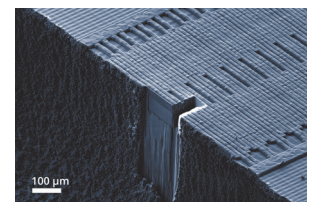
Examples of Application



Large-area, plane parallel thinning



Pillar array in silicon after automated milling

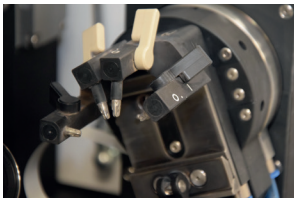


Gentle processing of hetero systems

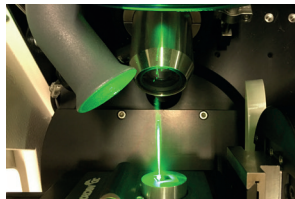
microPREP™ - System Description

microPREP™ is suited for

- Fast sample preparation of metals and semiconductors, ceramics and compound materials
- High accuracy target preparation of ± 0.003 mm
- Marking for sample track and trace (DMC, QR code, plain text, etc.)
- Increasing the workflow throughput of FIB and broad ion beam tools
- TEM, X-SEM, XRM, APT, and micromechanical testing



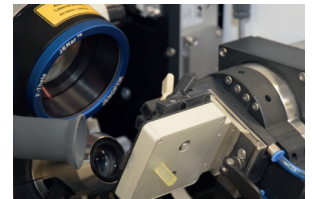
Air jet for particle removing while laser machining



Contour cutting fixture



Sample fixtures with dovetail guide



Working setup

Workpiece size	<ul style="list-style-type: none"> • Contour holder 25 x 25 x 0.1 - 1 mm³, volume samples on request • XL-Chunk™ holder 25 x 25 x 10 mm³
Alignment	<ul style="list-style-type: none"> • Manual work piece alignment with optical measurement system
Positioning	<ul style="list-style-type: none"> • Process accuracy ± 0.003 mm (XY) • Customized motion concept
Sample fixtures	<ul style="list-style-type: none"> • Special fixtures with force setting, optional adjusted for each material and sample thickness • Contour cutting 25 x 25 x 0,5 mm³
Processes	<ul style="list-style-type: none"> • Contour cutting • Laser thinning • XL-Chunk cutting
Laser unit	<ul style="list-style-type: none"> • Integrated pulsed DPSS laser source • Galvanometer scanner • Power measurement on workpiece level
Software microMMI	<ul style="list-style-type: none"> • Software driven workflow • Intuitive menu guided touch screen operation • Recipe based process control • Multiple user concept by different user levels • Integrated data and sample management
Safety	<ul style="list-style-type: none"> • Laser class 1 housing with integrated control panel • Integrated exhaust system
Dimensions	<ul style="list-style-type: none"> • Desktop system: 825 x 760 x 420 mm³ (L x W x H), approx. 135 kg
Consumables	<ul style="list-style-type: none"> • Compressed air or inert gases: 25 l/min (6 - 10 bar)
Electrical connection	<ul style="list-style-type: none"> • 230 V, 50/60 Hz, 8 A • 110 V, 50/60 Hz, 16 A
Options	<ul style="list-style-type: none"> • Upgradable as stand-alone system • Cross-section preparation/XL-Chunk™ • Various sample fixtures for different tasks and analysis techniques



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Changes in accordance to technical progress are reserved.