

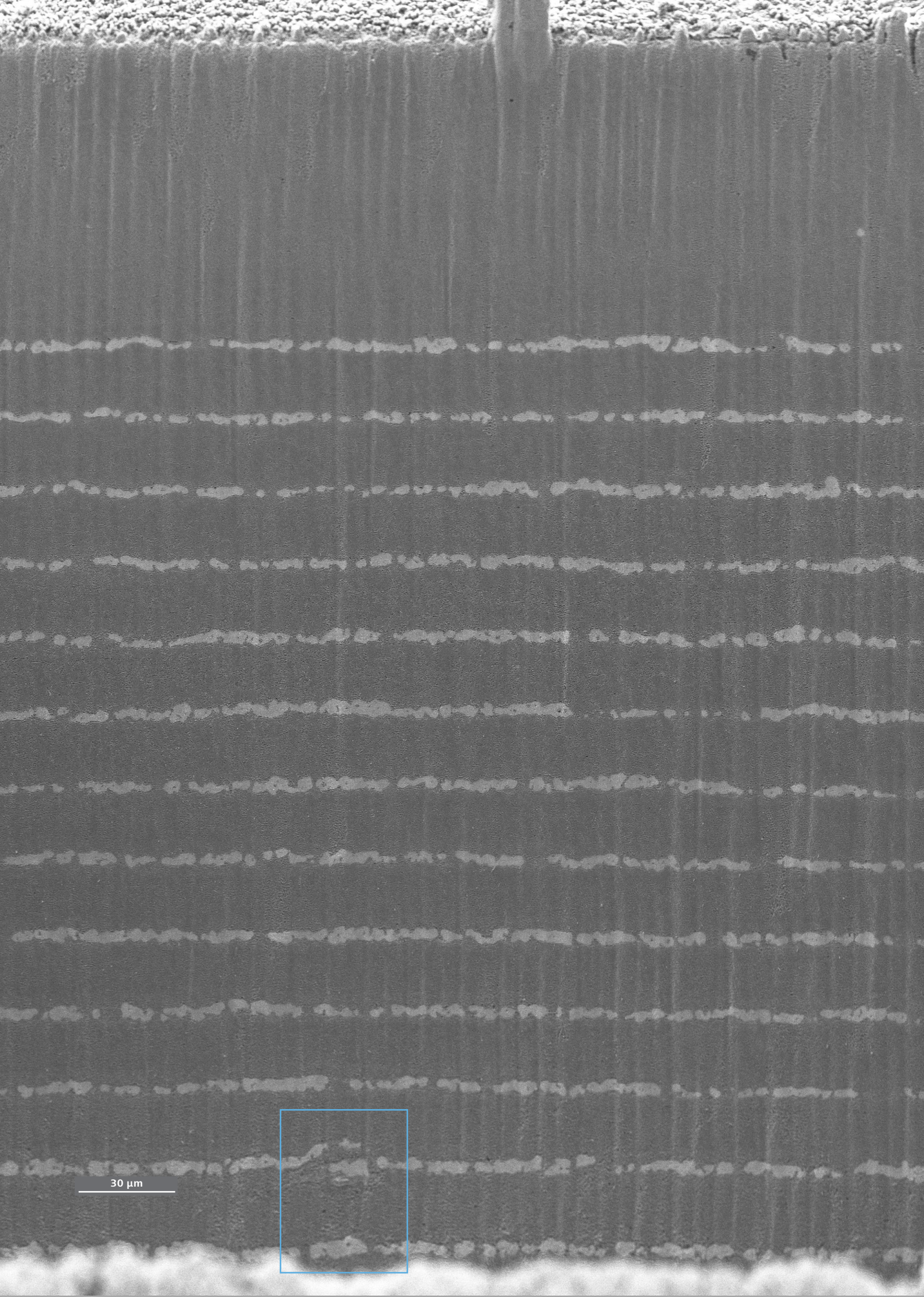
Embrace the Diversity of Air-Free Workflows.



ZEISS Uniport protect

Customizable Inert Shuttle Solution for
High-Throughput Air-Free Sample Handling

ZEISS



30 μm

Customize the Inert Shuttle Solution for Your Experiment.

Materials development in energy storage, display technology, and corrosion science involves handling materials that readily react with ambient oxygen and moisture. Preserving the original chemistry and morphology of these materials is essential for accurate root-cause analysis of performance and the advancement of materials development.

Electron microscopy offers insights into the micro- and nanostructure of materials. However, to analyze air-sensitive samples effectively, an air-free handling system is required outside the glovebox.

This system must reliably accommodate various sample sizes and shapes, maintain an inert atmosphere during transfer, and seamlessly integrate with existing lab equipment like gloveboxes, ion polishers, and electron microscopes. With such a solution, researchers are able to build the infrastructure they need. Moreover, they are able to confidently prepare and analyze their samples, ensuring observations reflect the material itself, free from artefacts caused by air exposure.

Transform Your Lab's Capabilities with a State-of-the-Art Inert Shuttle System

The inert shuttle solution ZEISS Uniport protect connects inert gloveboxes and ion polisher systems with ZEISS electron microscopes. It ensures full microscope functionality while maintaining the integrity of these sensitive materials. By integrating with various supporting equipment researchers may already have, it supports a holistic approach to investigate air-sensitive samples.

The three main components are:

- a shuttle for the inert transfer
- a glovebox interface kit for secure connectivity
- an airlock extension to maintain an inert atmosphere during transitions.

All-ceramic multilayer solid state battery, defect in copper current collector (highlighted by light blue frame), SEM image, SESI detector, cross-sectioning and imaging done with ZEISS Crossbeam laser, result of an inert multi-modal workflow connecting X-ray microscopy and focused ion beam scanning electron microscopy.

Inert Transfer

How Does It Work?

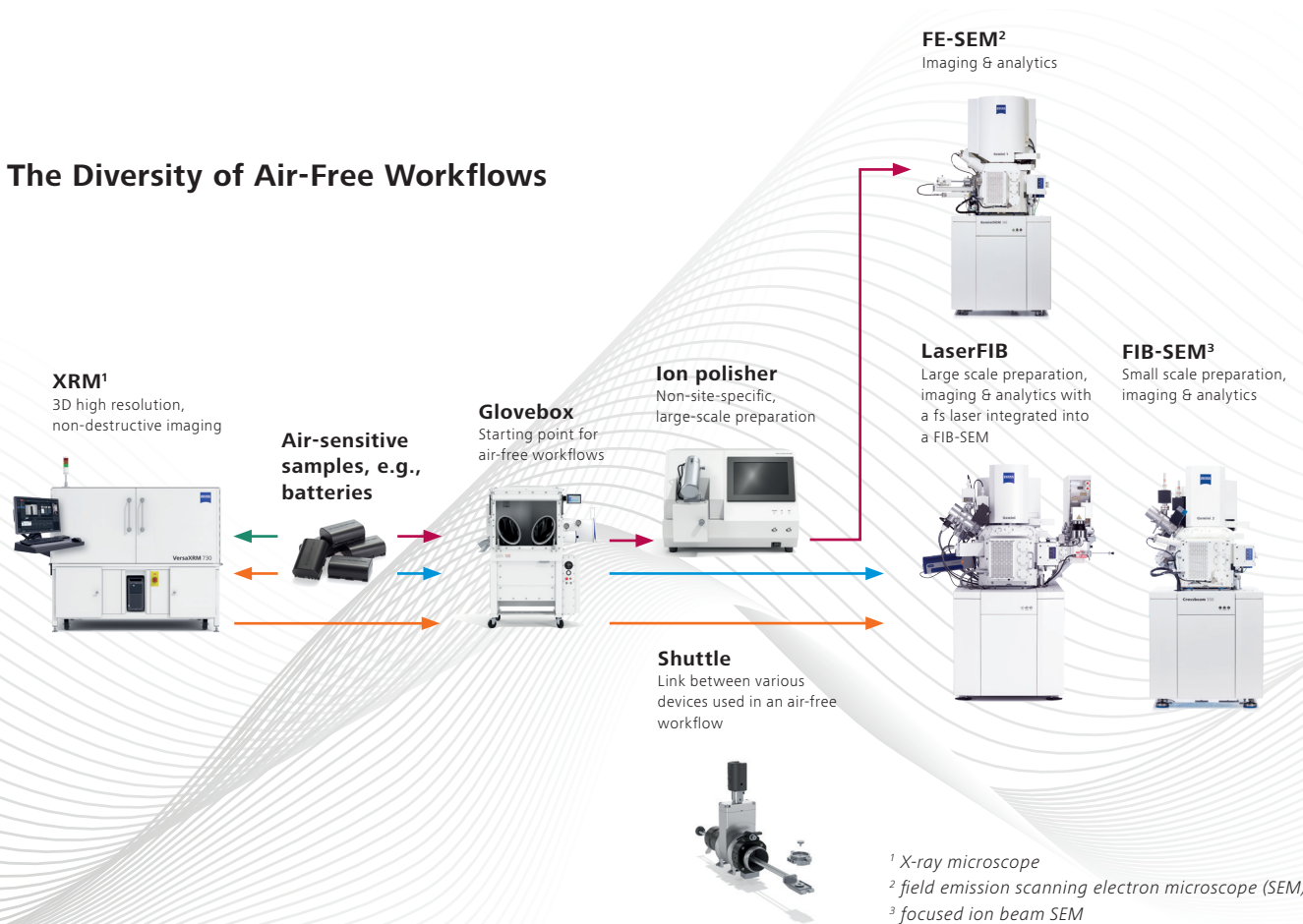
Inert workflows require sample integrity throughout the experiment and typically begin in a glovebox under an argon atmosphere. Workflows might span over X-ray and electron microscopy techniques enabling imaging and chemical characterization. By combining electron microscopy with cross-section preparation, materials researchers are able to evaluate critical features of their samples. Cross-section methods are either non-site-specific, like ion polishing systems, or site-specific, using tools like femtosecond lasers and FIB-SEM (focused ion beam scanning electron microscope).

ZEISS Uniport protect is a system of components designed to link ZEISS electron microscopes with commonly used inert gloveboxes and ion polisher systems.

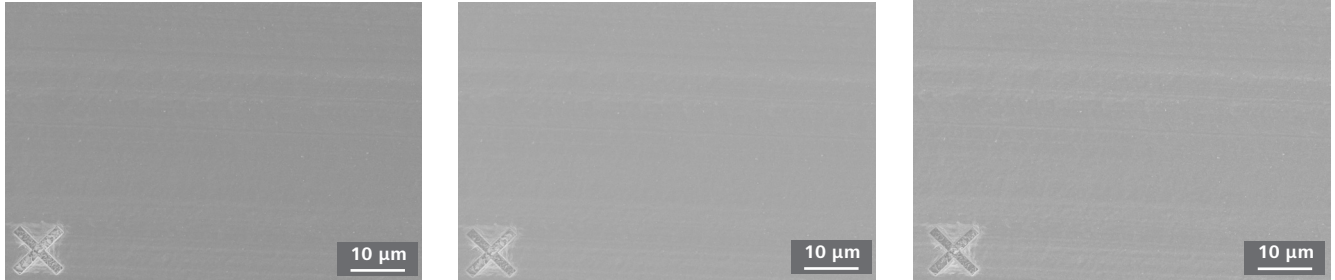
Maintain full microscope functionality and integrate with the equipment that you may already have.

- Different kits with various combinations of these components are available to serve the variety of your workflows.
- These kits account for the size or number of samples, as well as connections to non-site-specific or site-specific preparation.

The Diversity of Air-Free Workflows



Reliable Sample Integrity. Simple Handling. Customizability.



Lithium surface in ZEISS Uniport protect transfer shuttle in vacuum: (left) no idle time in the transfer shuttle, (center) after 10 min idle in the transfer shuttle, (right) after 1 hour idle in the transfer shuttle. The sample remains clean with extended idle time, demonstrating the robustness of the shuttle.

Highlights From Glovebox to Microscope

Reliable Streamlined Workflows

Benefit from a straightforward inert transfer solution that enables the sample integrity to be kept over the complete workflow. You will work under an uninterrupted argon atmosphere, the most common, cost-effective gas for inert workflows.

Simple Handling for a Multitude of Samples

Multiple samples, large samples, small samples: Discover the different kits handling either complete sample holders or single stubs that even fit to the ZEISS LaserFIB airlock. No electronics are involved, only vacuum valves. This design makes your system fail-safe and ensures consistent performance during sample transfers.

Simple Interface

Experience hassle-free operation with a straightforward interface that connects easily to diverse gloveboxes, ion polishers, and ZEISS FE-SEMs, FIB-SEMs and LaserFIBs.

Site-Specific, Large Area Preparation

Benefit from being able to use ZEISS Crossbeam laser, the LaserFIB for large area sample preparation. The inert shuttle solution enables an easy entry.

Save Shuttling Time

Shuttle one or even several samples in just one go: The small size of the inert shuttle or the transfer unit enables shuttling specimens in and out of your glovebox within a couple of minutes. This lets you save time of up to a factor of 15 compared to the half hour common when using the large airlocks of commercial gloveboxes under argon.

Customizability

Naturally correlate your existing lab equipment with ZEISS microscopes: An open interface gives you access to the most commonly used flanges. Perform a multitude of workflows from glovebox to ion polisher to ZEISS XRM, SEM or FIB-SEM. You are not restricted to a closed, proprietary system binding you to pre-defined interfaces from one supplier.

Ergonomic Design

Designed with user comfort in mind, the ergonomic layout facilitates easy handling. The side entry to the airlock chamber is a smart way of connecting. It ensures a direct connection to your existing or new ZEISS EMs. Moreover, you don't lose access to SEM chamber ports, so you can freely equip your microscope with additional accessories.

Your Flexible Choice of Components

System Information

Kits

Uniport 80 basic kit	Inert transfer kit to use with the 80 mm airlock, includes one Uniport sample holder and manipulator to open the holder inside the airlock compatible with ZEISS GeminiSEM, ZEISS Sigma, ZEISS Crossbeam*
Uniport 80 protect kit	Inert transfer kit to use with the 80 mm airlock, includes extension chamber with one Uniport shuttle for standard sample holders and an interface for glovebox transfer compatible with ZEISS GeminiSEM, ZEISS Sigma, ZEISS Crossbeam
Uniport laser basic kit	Inert transfer kit includes one Uniport laser sample holder and manipulator to open the holder inside the airlock compatible with ZEISS Crossbeam laser (ZEISS LaserFIB)*
Uniport laser protect kit	Inert transfer kit includes one Uniport shuttle for standard laser sample holders and an interface for glovebox transfer compatible with ZEISS Crossbeam laser (ZEISS LaserFIB)*

Technical Specifications

Shuttle time	< 1 min vacuum transfer < 2 min transfer in argon
Sample sizes basic kits	Uniport sample holder holds one stub, diameter ≤ 30 mm or 4 standard stubs tilted by 54° Uniport laser sample holder holds one stub, diameter <20 mm
Sample sizes protect kits	Standard sample holders (width \times depth: 56 mm \times 48 mm) with up to 11 stubs Flat samples (≤ 5 mm) with a diameter of up to 44 mm and up to 25 mm diameter at 15 mm height
Upgrades	Compatible with all ZEISS FE-SEMs and FIB-SEMs with 80 mm airlock
Installation requirements	Access from the front of the SEM Glovebox needs 60 mm hole for ISO-KF50 mounting

* Possible configurations may vary in different regions. For more information, please contact your local sales representative.

Encapsulated holder and transfer unit of basic kit.



Connection unit for glovebox transfer with Uniport protect.



Basic kit



Scan the QR code and watch the animation



Protect kit



Scan the QR code and watch the animation





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