

Bruker **Daltonics**



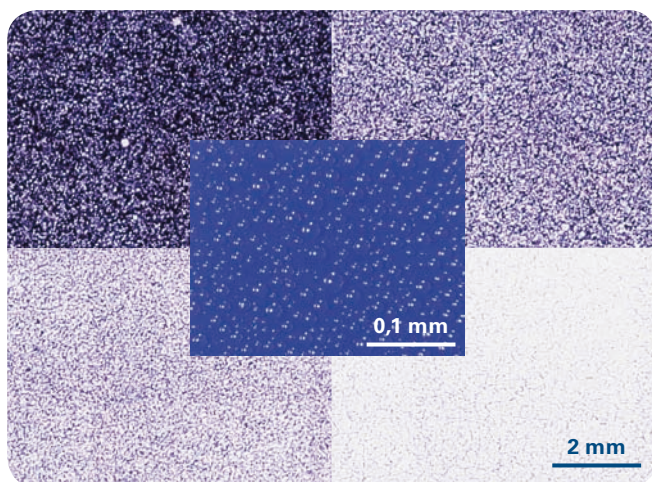
ImagePrep

- Comprehensive and Reliable Tissue Sample Preparation for MALDI Imaging

think forward

MALDI-TOF MS

Fully-automated Matrix Preparation



Density of MALDI matrix layer as a function of the number of spray cycles (10–70 cycles). Center: Droplet Distribution of a single spray cycle.

“Push-button” matrix application

The ImagePrep is a Matrix Deposition Device for MALDI Imaging in Biomarker Discovery, Drug Imaging and Pathology Research. The device provides highly reproducible sample preparations for MALDI Imaging in a fully automated, push-button process. At the same time, it enables excellent spectra quality at high image resolution of 50 micron.

New technology: vibrational vaporization

In the ImagePrep station, a matrix aerosol is created by vibrational vaporization under controlled conditions that is gently deposited onto tissue sections. An average droplet size of $\sim 20 \mu\text{m}$ is generated, all droplet diameters are $< 50 \mu\text{m}$.

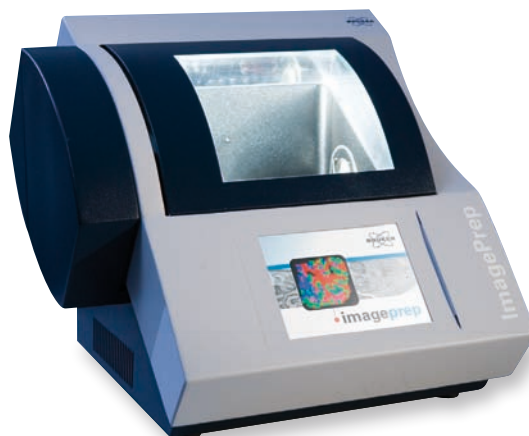
Reproducibility and quality control

An optical sensor monitors the light scattered from matrix crystals to control all relevant preparation parameters in real-time: deposition periods and intervals, matrix layer thickness, wetness, drying rate, etc.. During the wetting period the scattered light intensity fades while drying increases the intensity due to crystal formation. At complete dryness the signal is a direct measure of the thickness of the matrix layer – unique and advanced technology, that has been patented recently*.

* Patented Matrix-Preparation

The intellectual property rights of the ImagePrep station comprise apparatus as well as methods for spray coating of tissue samples with MALDI matrix (DE 10 2006 019 530 B4, GB 2 437 623 A, US 2007/0278400 A1).

Furthermore, the optical sensor integrated in the ImagePrep station and the general method for online monitoring and controlling the matrix-preparation are protected by patents or patent applications (DE 10 2006 059 695 B3, GB 2 446 251 A, US 2008/0142703 A1).



ImagePrep station

● High Quality MALDI Imaging Data

Acquire high quality spectra

Typically, tissue images are obtained that combine an unmatched high spectrum quality with many peptide/protein signals and a high spatial resolution. A lateral resolution of 50 μm was observed in an Alzheimer rat model, identical to the spot raster used. This result suggests that even higher resolutions can be achieved.

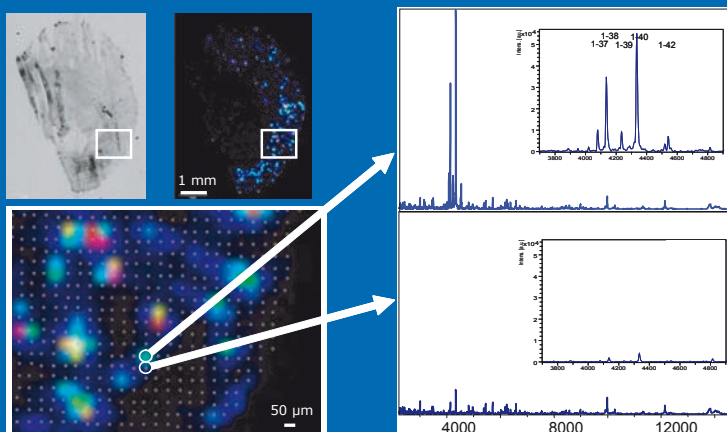
ImagePrep completes Bruker Daltonics MALDI Molecular Imager suite

The ImagePrep station completes the MALDI Imaging solution from Bruker Daltonics consisting of a high performance MALDI-TOF/TOF system with 200 Hz smartbeam™ laser technology and PAN™ mass resolution, an electrically conductive glass slide assembly, the most advanced flexImaging software delivering full integration from data acquisition to image analysis and ClassImaging for tissue classification.

Brilliant preparations, excellent results

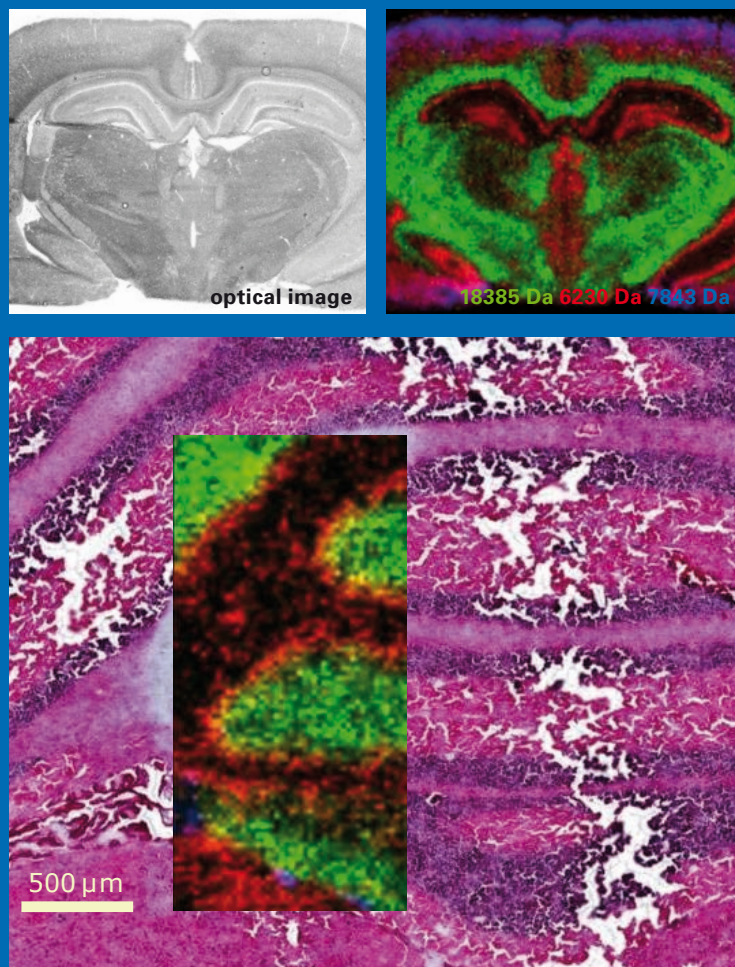
- The ImagePrep station operates in a fully automated process
- Highly reproducible preparations are achieved by the sophisticated QC process
- A lateral resolution of 50 μm is achieved
- ImagePrep enables an unmatched high spectra quality
- Easy push-button operation for walk-up users

High resolution molecular images



Amyloid plaques in rat brain: Spectra taken 50 μm next to a plaque (bottom right) do not show significant amyloid peptides (top right).

Mass image and mass spectrum



Top: Coronal section of rat cerebellum: Optical image and MALDI image of three masses simultaneously. Bottom: 25 μm lateral resolution of lipids acquired in reflectron mode. The small measured area perfectly aligns with H&E stained sample (sample stained after measurement)

Technical Specifications



Spray device for comprehensive and reliable tissue sample preparation for Imaging MALDI

- High spatial resolution 50µm and high spectra quality at the same time
- Patented sensor control enables active real-time process control and ultimate reproducibility
- Matrix aerosol generation with patented vibrational vaporization in a controlled atmosphere
- Low (ml) matrix consumption
- AutoPrep mode: Push-button operation and predefined methods for standard usecases
- Expert mode with full method development capabilities
- Compact size
- Easy-to-clean Teflon coated spray chamber

For research use only.
Not for use in diagnostic procedures.



Read more:

TN-18: A New Device for Automated MALDI Imaging High Performance Sample Preparation

MT-89: Advances in Molecular Histology with the MALDI Molecular Imager

MT-91: High Quality MALDI Imaging of Proteins and Peptides in Small Rodent Organ Tissues

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