Inductively Coupled Plasma Mass Spectrometer

ICPINS-2030

Special features of ICPMS-2030

- 1. Mini-Torch Plasma reduce running costs by 60%.
- 2. ICPMS-2030 LA-ICP-MS software simplifies operation.



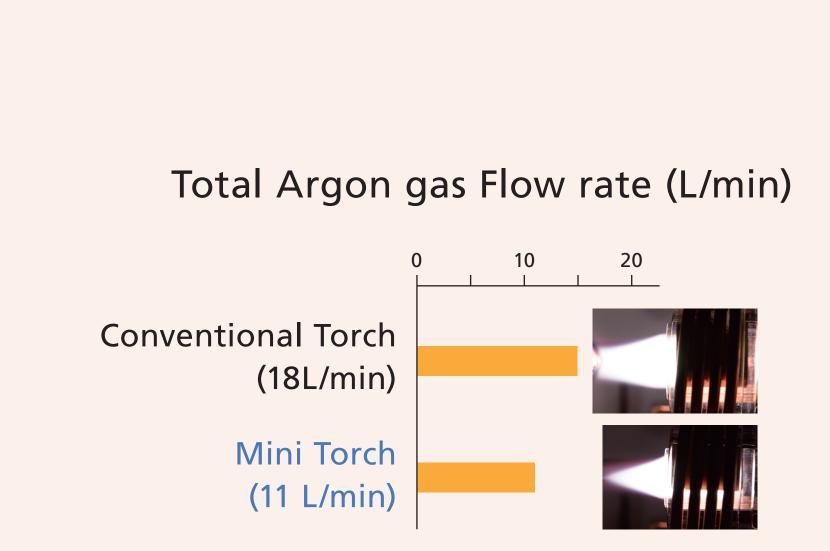
► 1. Mini-Torch Plasma reduce running costs by 60%.

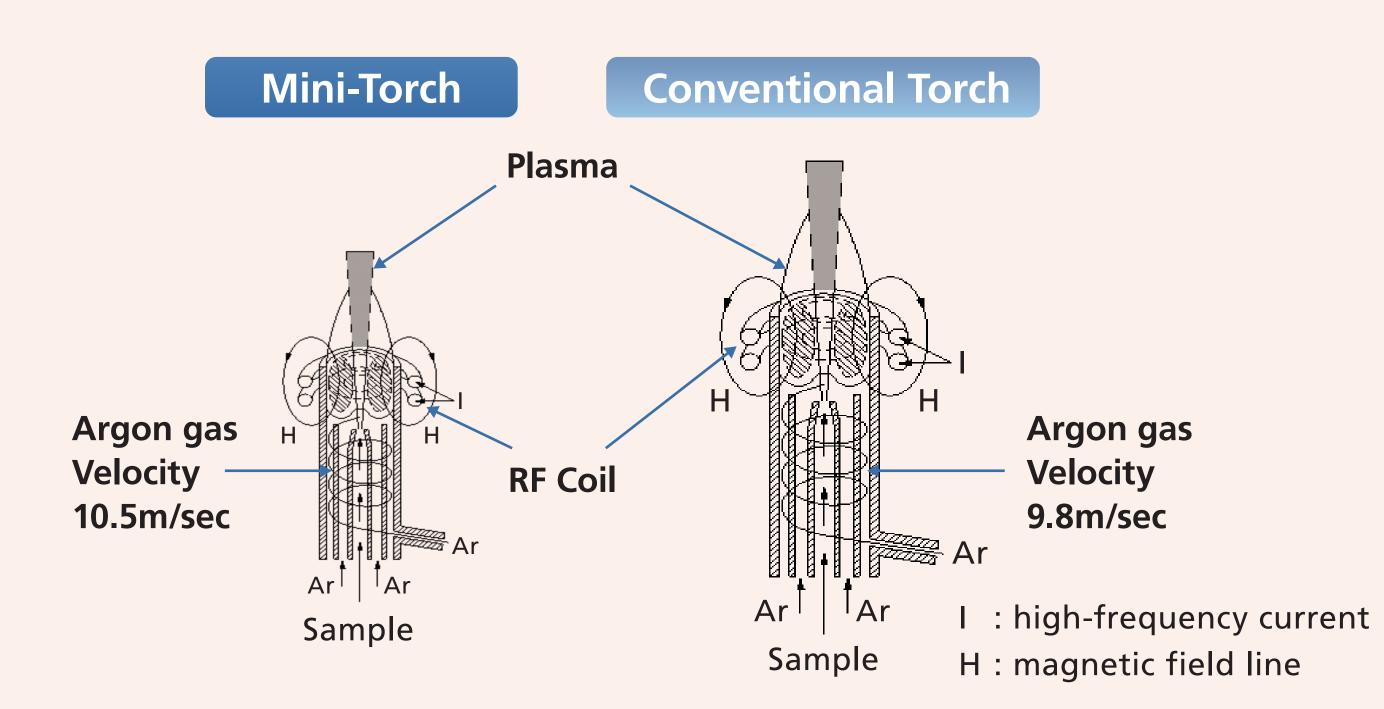
Acquisition of imaging by LA-ICP-MS requires long time, and the cost of Argon gas was an issue.

- ICPMS -2030 adopts Mini-Torch plasma.
- Mini-Torch plasma reduces Argon gas consumption to 60% of conventional instrument.

What is Mini-Torch Plasma?

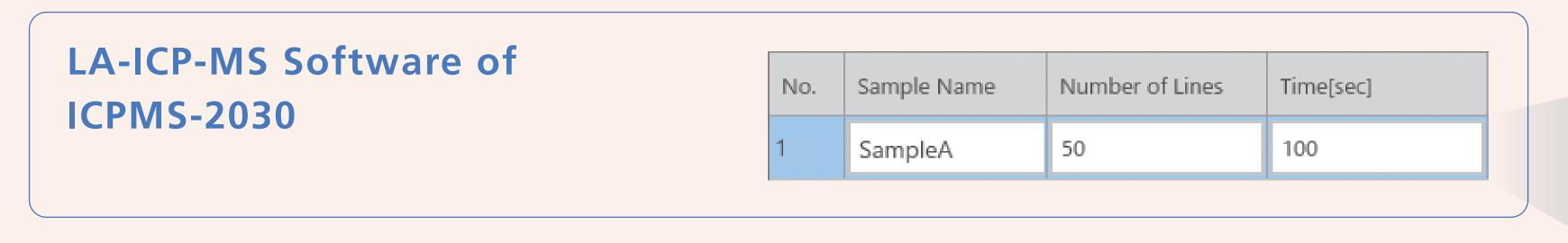
- Size down of the plasma torch diameter
- Argon gas consumption is reduced to 11L/min (Conventional:18L/min)
- Argon gas velocity of Mini-Torch 10.5 m/sec (Conventional torch 9.8m/sec)
- Since the electron density of the conventional plasma and the mini-torch plasma is almost equal, there is no difference in the plasma temperature.



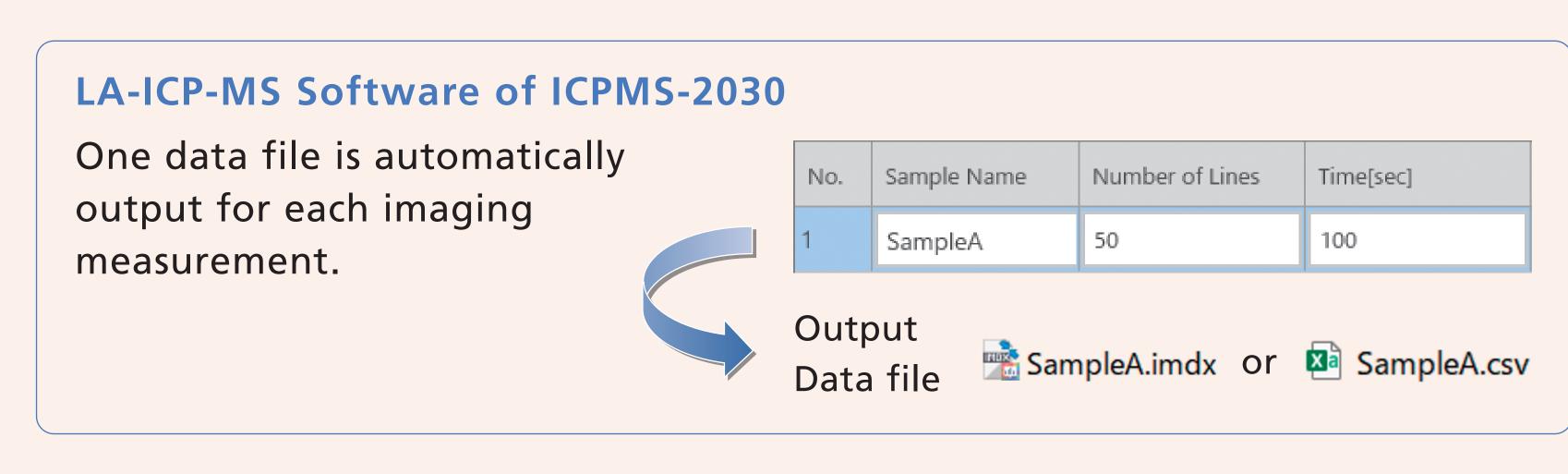


> 2. LA-ICP-MS software simplifies operation.

Register one imaging area with one sample name



• The imaging data for one sample is automatically output as one file.

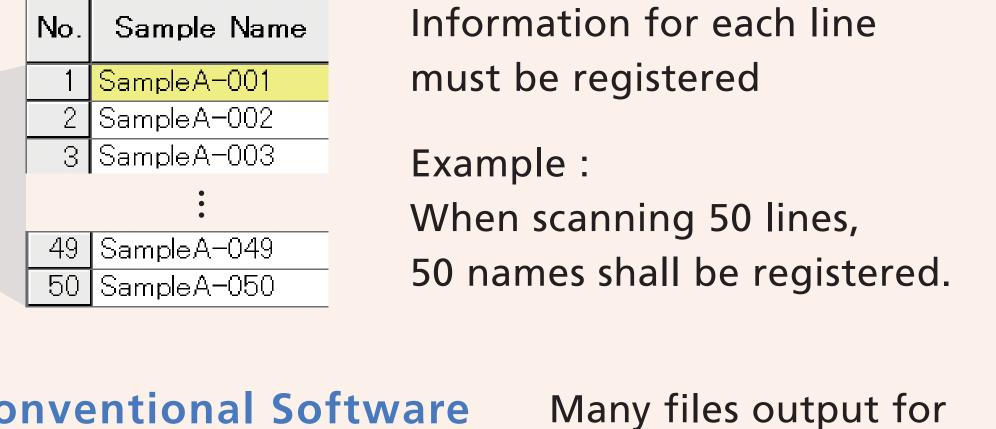


 The imaging data can be immediately analyzed by IMAGEREVEAL™ MS Software.

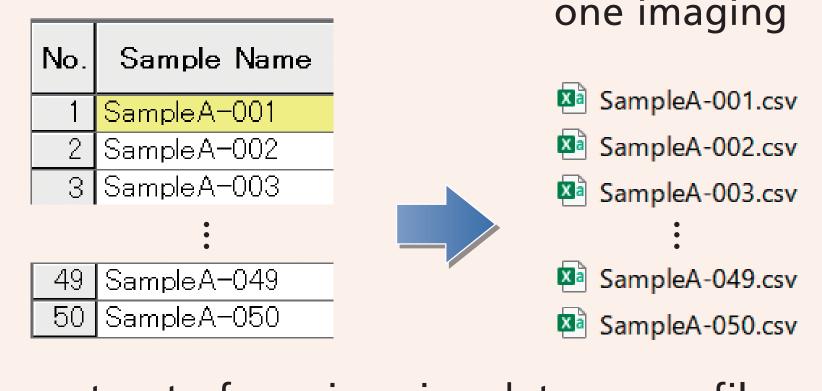
LA-ICP-MS Software of ICPMS-2030

The LA-ICP-MS imaging data is output in a format that can be read by the IMAGEREVEAL™ MS Ver.1.2 multimodal software. No need to data convert.

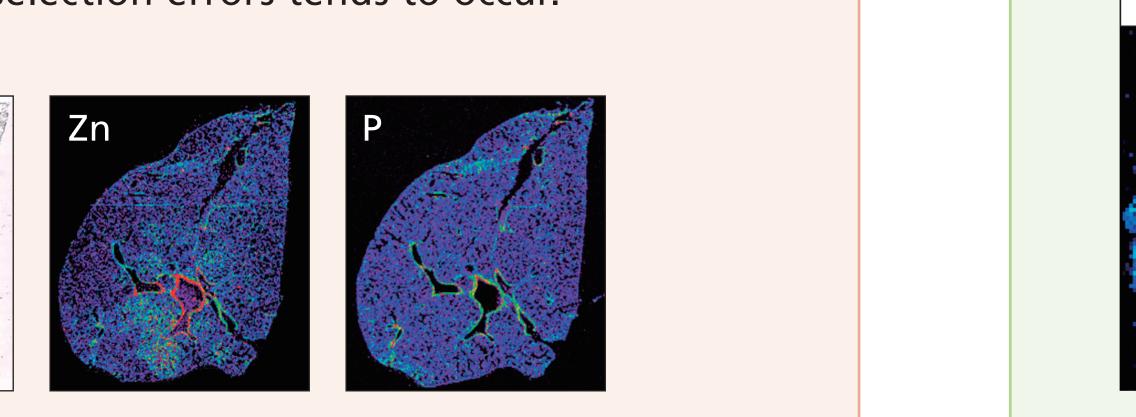
Conventional Software



one imaging



For out put of one imaging data, many files are output, and selection errors tends to occur.



SampleA-002.csv

Shimadzu Multimodal Imaging System

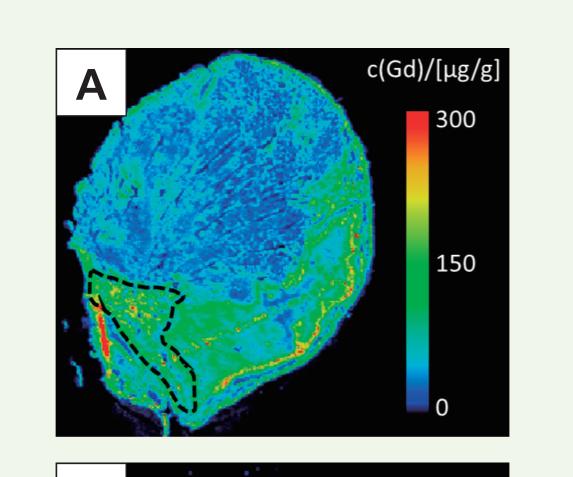
New knowledge can be obtained by integrally analyzing the imaging information of multiple devices using a multimodal imaging system.



Molecular imaging by MALDI-MS and elemental imaging by LA-ICP-MS enable new aspects of sample evaluation.

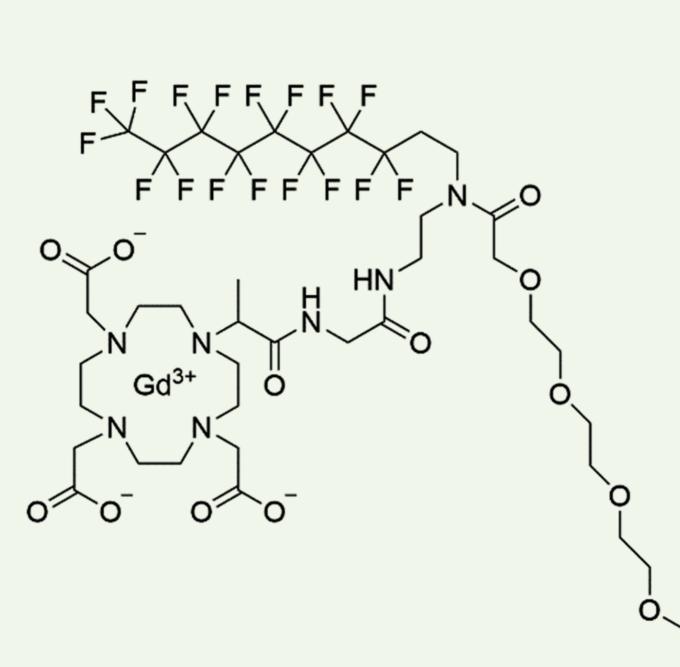
- The quantitative properties of ICP-MS make it possible to visualize the concentration distribution of elements in biological samples.
- The data obtained by both methods can be analyzed using IMAGEREVEAL™ MS.

Complementary bioimaging of Gadofluorine P (contrast agent for MRI) in myocardial infraction in mice.



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- Gadofluorine P was administered to a myocardial infarction model mouse and the distribution of Gadofluorine P in mouse cardiac tissue was observed.
- (A): Gadolinium concentration distribution imaging in contrast agents by LA-ICP-MS.
- (B): Imaging of protonated ligand of Gadofluorine P by iMScope (m/z 1168.39).
- Combining these two imaging techniques enabled visualization of gadolinium contrast medium distributed in the cardiac tissue of the myocardial infarction model mouse



Structure of Gadofluorine P

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Imaging Mass Microscope

iMScope QT

Special features of iMScope QT

- 1. Combined Analysis.
- 2. High spatial resolution and High mass accuracy.
- 3. Allowing for analysis of a wide area and high Speed.

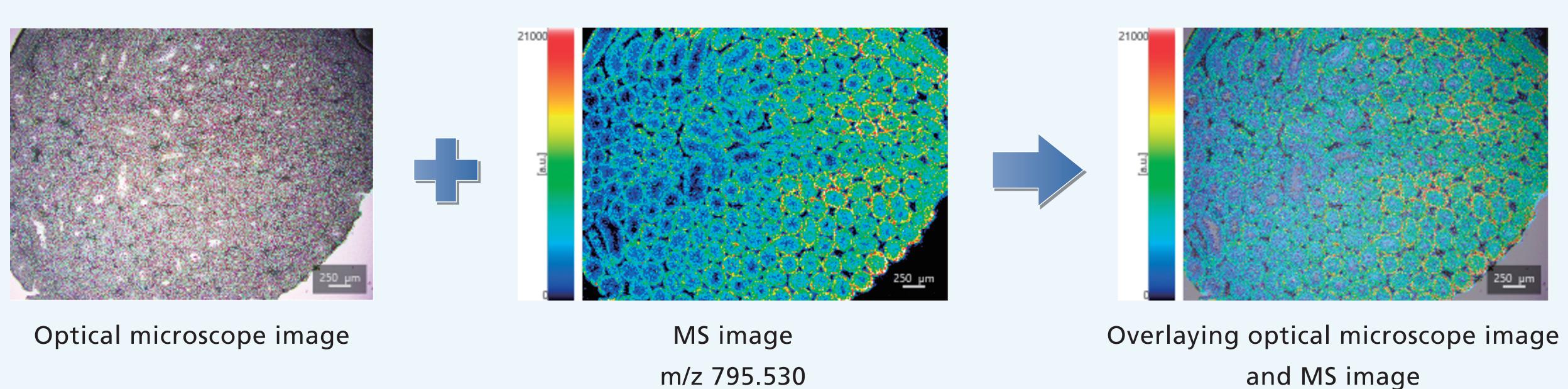


▶ 1. Combined Analysis

- Fusion of MS images with optical microscope images.

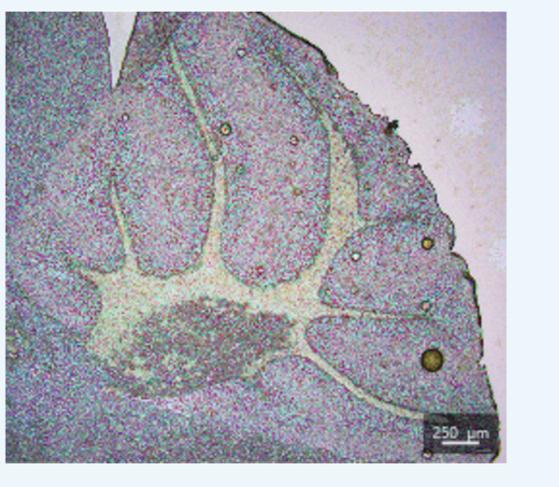
• The mass spectrometer is equipped with an optical microscope. (exclusive to Shimadzu) Data analysis can match the optical microscope images to the MS images

Mouse testis

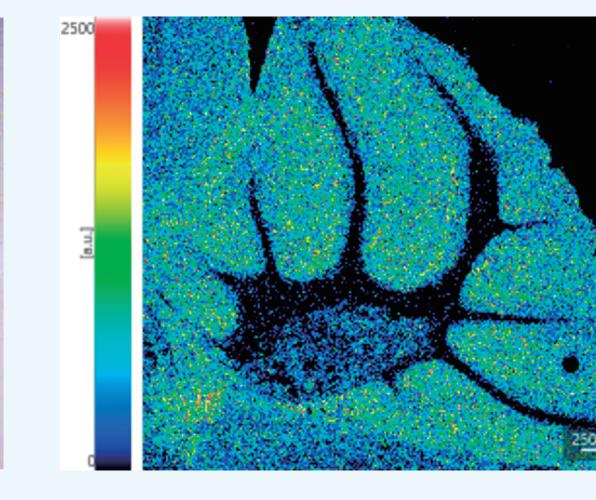


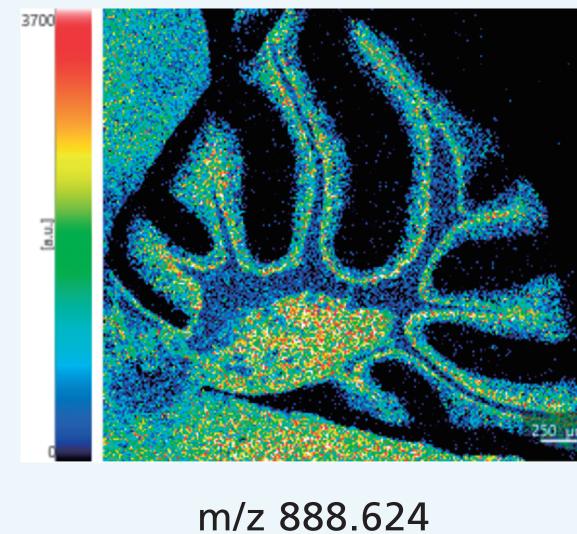
> 2. High spatial resolution and High mass accuracy.

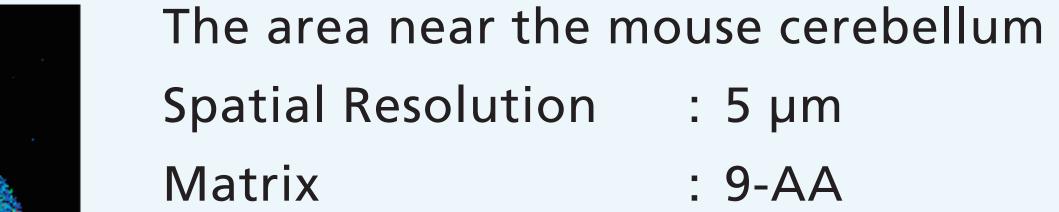
- Analysis with a high spatial resolution of 5 μm.
- High precision temperature control system enables stable mass accuracy



Optical microscope image





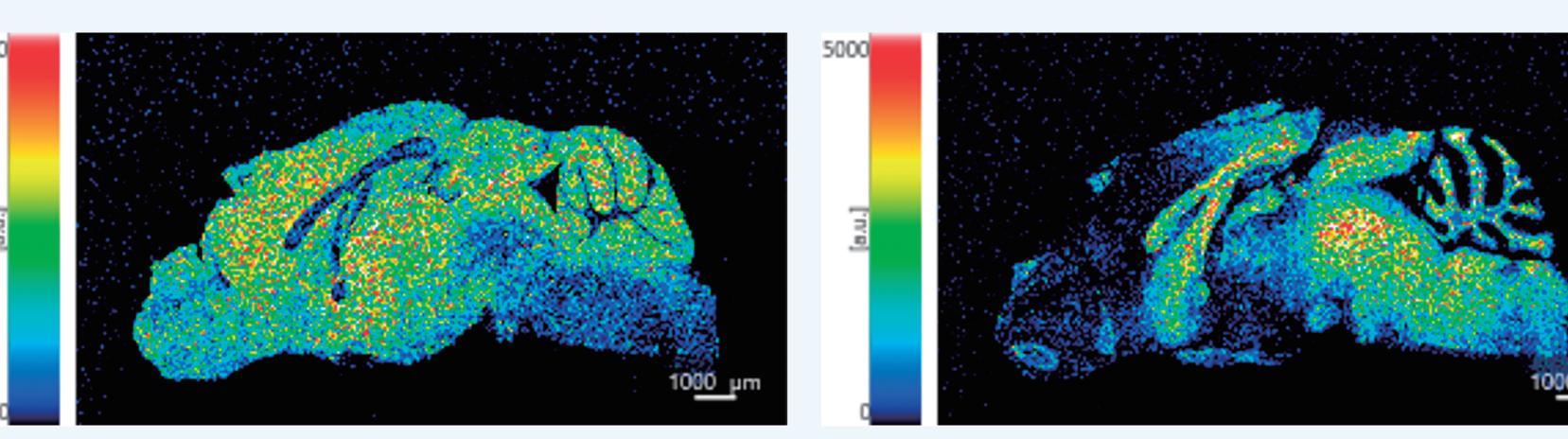


Measurement region: 662×595 (393,890pix)

> 3. Allowing for analysis of a Wide area and High speed.

m/z 885.549

• Wide area such as whole mouse brain can be analyzed at high speed with high spatial resolution.



Whole mouse brain (17mm×9.4mm) Matrix : 9-AA

Spatial resolution : 15 µm Measurement region: 1126×624 (702,624pix)

: around 6 hours Measurement time

m/z 885.549 m/z 888.624