

AP-MALDI UHR imaging on an Orbitrap Exploris 480 instrument

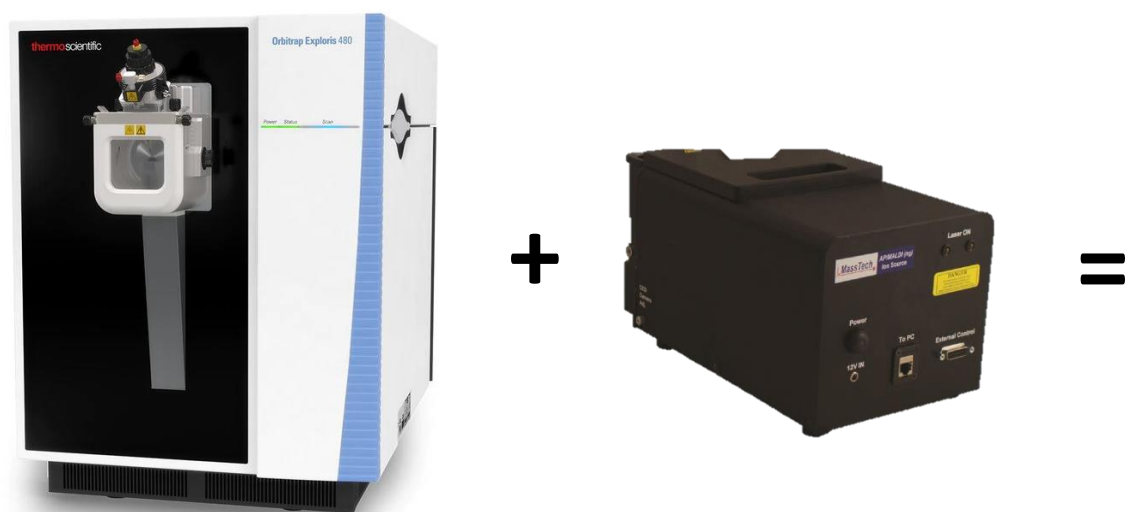
Gilles Frache

Materials Research and Technology Department, Luxembourg Institute of Science and Technology (LIST),
(MassTech European Application Lab)

INTRODUCTION

AP-MALDI UHR module is a flexible add-on compatible with Thermo LC/HRMS Orbitrap equipment including the latest generation tribrid and Exploris platforms. AP-MALDI UHR module is a flexible add-on for existing Thermo LC/HRMS equipment.

This Application Note presents a protocol for AP-MALDI imaging workflows based on the Exploris 480. Mouse brain samples were provided by Professor William J. Griffiths, Swansea University.



MassTech AP/MALDI UHR and Thermo Orbitrap Exploris 480



WORKFLOW

Sample Preparation:

- 1) 10-15 μm -cryosection of biological tissue
- 2) Matrix deposition with a **Suncollect sprayer (Sunchrom)**

Data Acquisition:

- 1) Definition of image parameters (mode, dimension, pixels) in *Target* (Control software)
→ Parameters are saved as .xml file
- 2) Molecular imaging using AP-MALDI UHR Source (MassTech) with Exploris 480 (Thermo) high resolution MS. → Data saved as .raw file

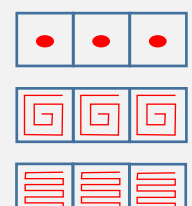

Data Handling:

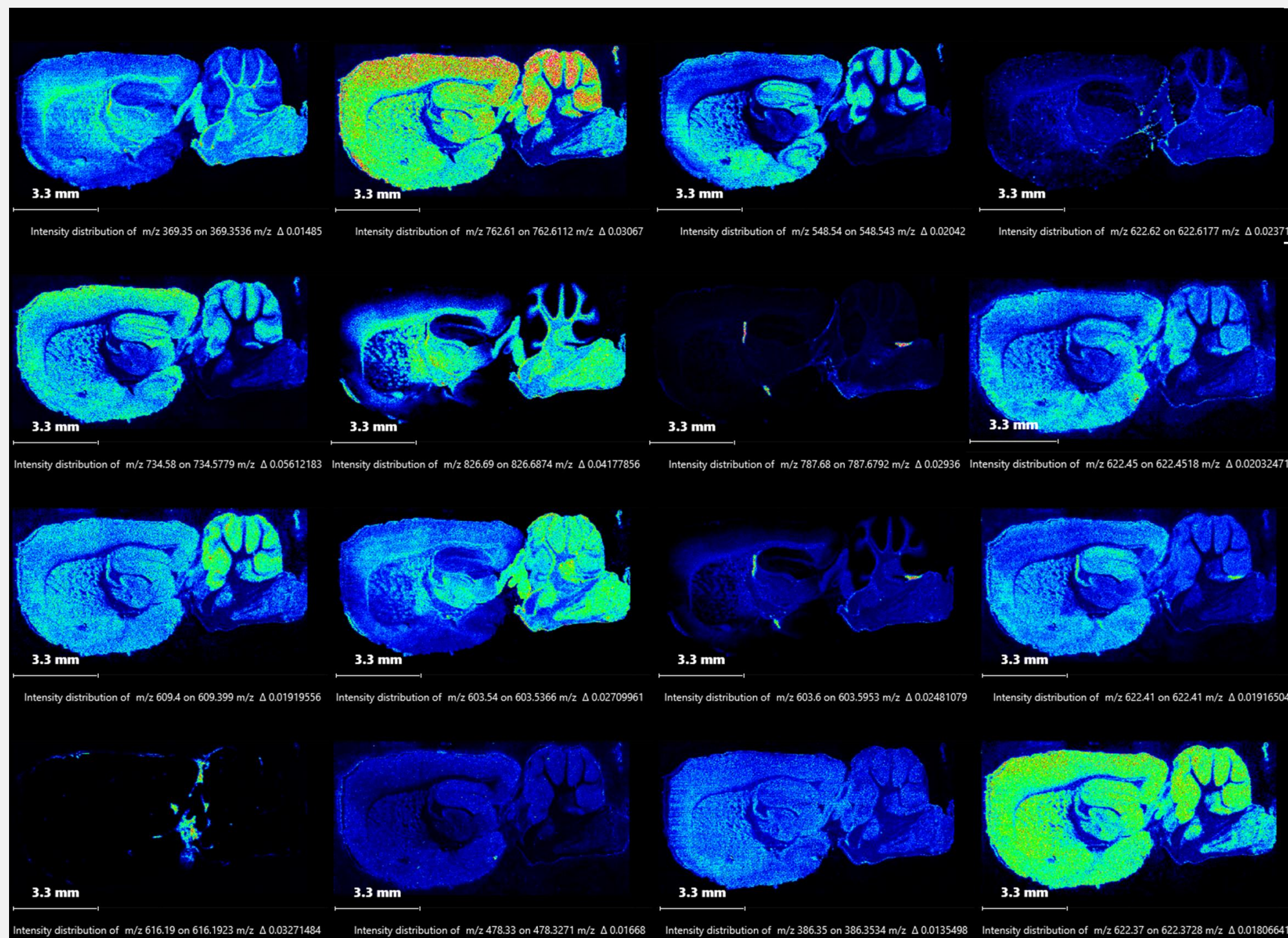
- 1) Data handling with ImageQuest (Thermo) using native files (xml and raw files) or **Multimaging (Imabiotech)**,
- 2) Conversion of xml and raw files into imzML file using MassTech imzML Converter
- 3) Data handling with Sproctroswiss Mozaic, MSI reader, LipoStarMSI, DataCube Explorer, SCILS, Metaspac...

KEY CHARACTERISTICS AND BENEFITS

- MALDI imaging capabilities down to less than 10-micron lateral resolution
- Switch from the AP-MALDI configuration to LCMS configuration within 2 minutes.
- Provides MALDI analysis and imaging capabilities to high-end LCMS instruments
- High repetition rate solid state laser (355 nm)

Available modes of operation

- Sequential MALDI analysis of multiple spot analysis using spiral or raster motion (OptiTOF 192 target plate) with tunable parameters
- MALDI imaging using **Pixel-Map**, with tunable in-pixel spiral or raster motion for multiplexed analysis (HRMS, SRM...).

- MALDI imaging using **Constant Speed Raster (CSR)** modes for increased pixel rate (MS dependent)




Masstech AP-MALDI UHR / Thermo Orbitrap Exploris 480, 580x300 pixels = 174000 high resolution mass spectra (60k@m/z200), 20 μ m per pixel

Conclusion:

MassTech AP-MALDI UHR provides imaging capabilities to existing LCMS instruments such as Thermo HRMS equipment. APMALDI/ESI swap is done within minutes. AP-MALDI HRMS images can be handled by **Multimaging (Imabiotech)** or alternative imzML-based software.

MassTech offers a range of analytical ionization sources, accessories and complete instruments for advanced analytical platforms. The AP-MALDI UHR is available worldwide exclusively from MassTech and authorized resellers, such as KR Analytical in Europe (www.kranalytical.co.uk).

To request further information, please contact:
sales@apmaldi.com

MassTech selected LIST as European Application Lab. www.list.lu

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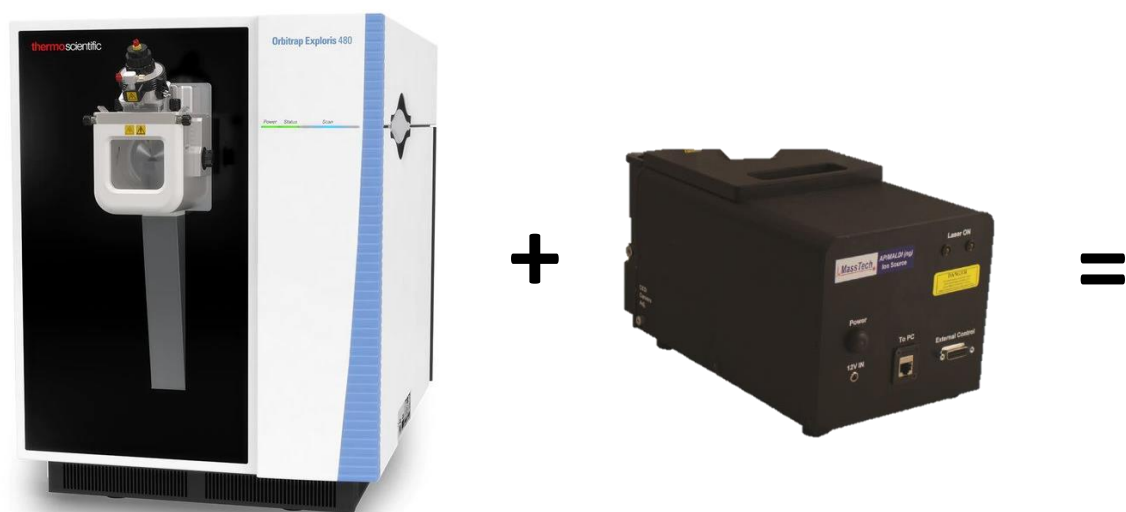
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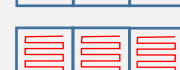

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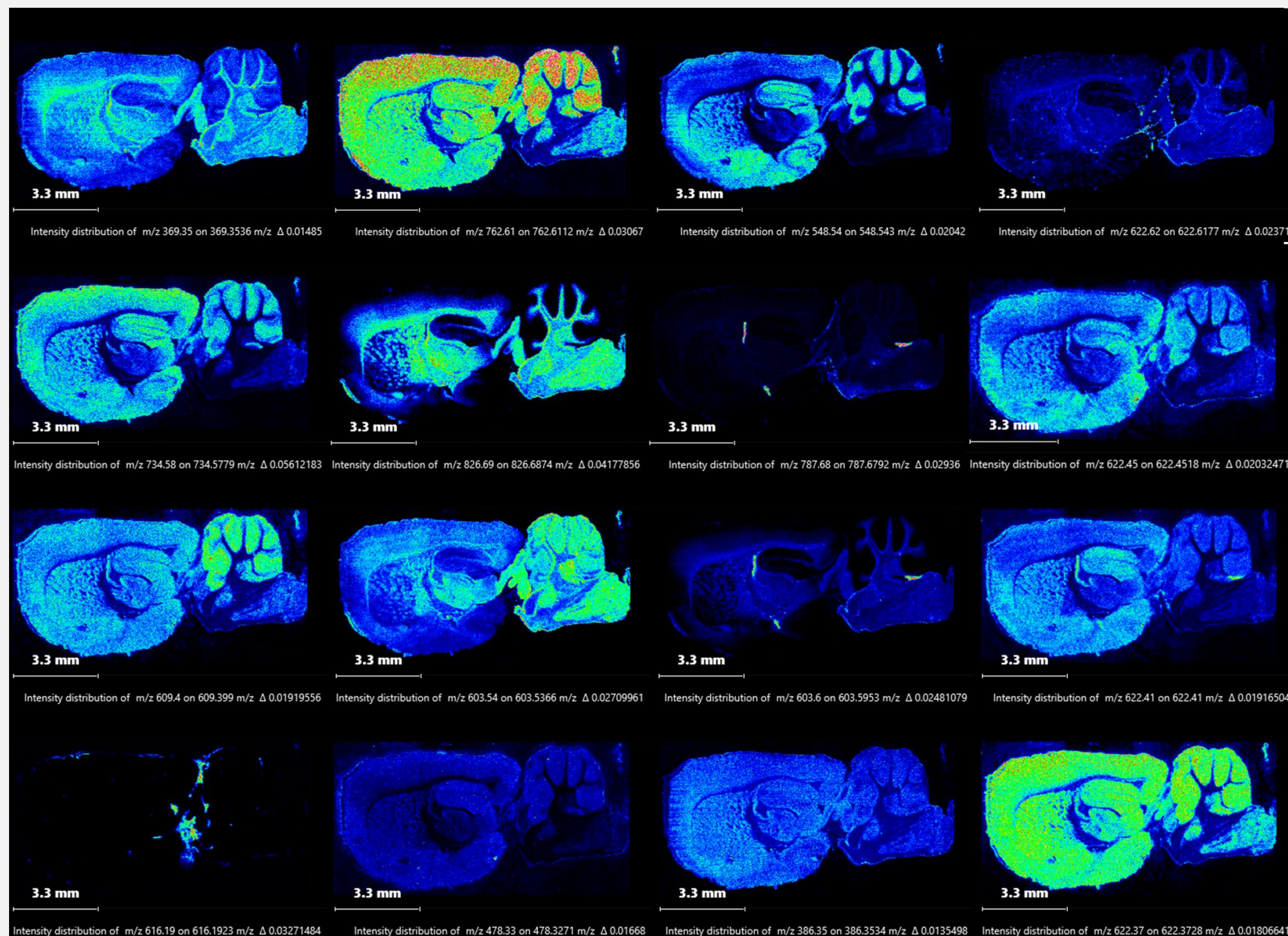
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KR Analytical Ltd provides technical solutions for the analytical chemistry and biochemistry laboratory in a wide variety of industries. The AP-MALDI UHR is available worldwide exclusively from MassTech and authorized resellers, such as KR Analytical in Europe

To request further information, please contact MassTech (sales@apmaldi.com) or KR analytical (info@kranalytical.co.uk)

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