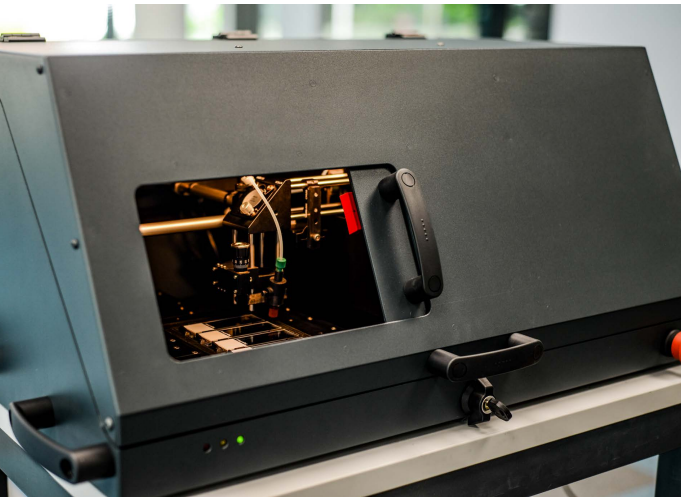
AMBIMASS
AMBIENT MASS-SPECTROMETRY SYSTEMS INTEGRATOR

AmbiSampler

Ambient Imaging Solution



Sample-preparation-free metabolic profiling of biological samples in seconds

Our platform, the **AmbiSampler** is capable of sampling biomaterial without the need for any sample preparation, costly reagents, or assay kits. The platform consists of a high throughput autosampler utilizing novel laser technology to aerosolize and analyse the samples.

The Mass Spectrometric analysis is performed by Ambient Laser Desorption Ionisation Mass Spectrometry, a novel ionization method capable of rapid profiling of biological materials. The platform can acquire thousands of molecular features in a single second using Mass Spectrometry.

BENEFITS

SAMPLE PREPARATION FREE WORKFLOW

Analysing samples with the **AmbiSampler** does not require any extensive extraction or sample preparation

RAPID METABOLOMICS

Untargeted metabolic, lipidomic and other profiling in seconds

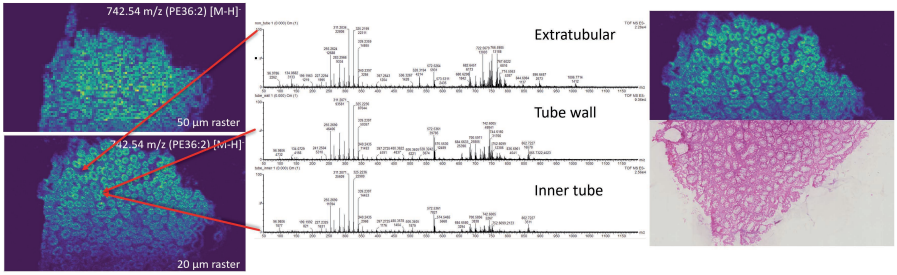
SINGLE-CELL ACCURACY

With advanced mid-IR laser technology, individual cells can be measured one at a time

Imaging Problems Addressed

The 2D-molecular profiling of complex biological material been a complex challenge for decades. The **AmbiSampler** addresses this by providing a novel solution for providing rich molecular information directly from samples. The technology and method are optimized for rapid and cost-effective untargeted molecular imaging of tissue samples at cellular resolution.

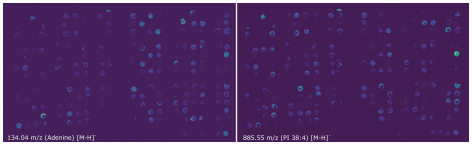
We also offer support in method development, offering to support your choice of application with novel sample processing methods or optimised workflows.

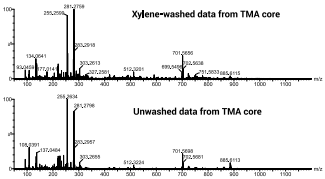


Tissue imaging experiment on a human colorectal adenoma cancer sample. The system can distinguish different cellular layers of the cancer tissue at high resolutions, providing a metabolic profile for individual tissue layers.

FFPE tissue imaging

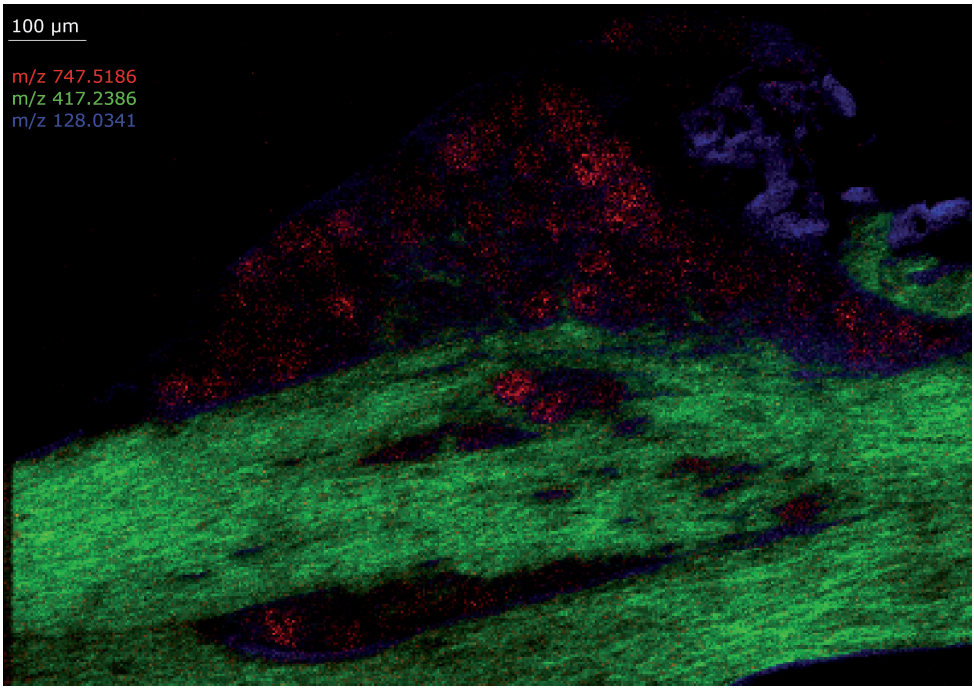
The imaging of Formalin-Fixed, Paraffin-Embedded tissues has been a long-standing challenge in the research and pathology community. Our platform offers a on the shelf, sample preparation-free (including deparaffinisation!) workflow for imaging FFPE tissues. The **AmbiSampler** platform empowers you to access the molecular content of vast FFPE tissue libraries.





Tissue imaging data from FFPE Tissue microarray (TMA) samples. Up to 200 tissue core biopsy punches were arranged and embedded in an array and imaged simultaneously in a single experiment. This method of FFPE tissue imaging enables the rapid characterisation of huge tissue libraries in a time efficient manner.

Consecutive sections were imaged using traditional Xylene washed and unwashed samples without significant differences in molecular coverage performance, demonstrating the sample-prep free profiling capabilities.



3-micron imaging of neural tissues using the High brightness laser ablation technology of a mouse spinal cord sample with neural subcellular features are observable on the images.

High Brightness-powered mass spectrometry imaging

Novel infrared laser technology: The high-resolution single-cell imaging system incorporates a novel high-brightness infrared source, purpose-designed for delivering peak ambient MSI performance. The pulse characteristics were optimised to deliver two orders of magnitude increase in sensitivity compared to nanosecond-pulsed commercially available lasers.

Unparalleled resolution: With the increased sensitivity provided by the high-brightness laser, high-resolution images can be acquired at single or even sub-cellular resolutions. No Matrix is needed for sample ionisation thus the images do not suffer from matrix-related imaging artifacts or blur effects. Currently no other ambient technology is capable of delivering the level of resolution the **AmbiSampler** platform can deliver.

Support

- **Continuous Support:** We are committed to providing warranty and ongoing assistance to ensure your instrument operates smoothly and efficiently.
- **Instrument Repairs:** Our team is ready to fix any issues with your instrument promptly, minimizing downtime and maintaining performance.
- **Parts Support:** We supply high-quality replacement parts to keep your instrument in top condition and extend its lifespan for a minimum period of five years after delivery.
- **Remote Support:** Take advantage of our remote support options for quick troubleshooting and technical guidance, no matter where you are.
- **Workflow and Method Development:** Our experts offer support for optimizing workflows and developing methods tailored to your specific needs and applications.

Commercialisation

Ambimass is pleased to offer long-term and reliable plans for the management of the **AmbiSampler** platform. Based on the experiences with the current proof of concept prototype, Ambimass is happy to consider the development of a custom designed system that will meet the appropriate standards required for commercialisation.

Technical Data

Modes of operation	Well Plate autosampler . High-resolution imaging
Sample type	96 – Well Plate Format . 384 – well plate format Microscope-slide mounted sections/samples
Duty cycle (96 well plate)	10 minutes/well plate 2 minutes/well plate (experimental imager mode)
Molecular Coverage	Polar metabolites, fatty acids, phospholipids, amino acids, nucleobases, simple carbohydrates, triglycerides, gangliosides
Compatible Mass Spectrometers	Waters Xevo G2-XS . Waters Xevo G3 Waters TQ-XS . Waters TQ-Absolute . Waters Xevo MRT
Laser	Glucoloop Ivy mid-IR laser . 2810 nm 2 nsec pulse width, 20 uJ/pulse energy . 1500 kHz operation mode
High brightness laser*	Custom-built laser source, 2940 nm ≈100 psec pulse widht, 500kHz operation mode Subcellular (>5 µm) ablation spot sizes
Laser Safety class	Class I laser-safe
Nominal Dimensions	520mm x 832mm x 467mm (l x w x h) fits a standard-sized biosafety cabinet
Fluidics	Cadent 3 Syringe pump . Integrated 3 operation-mode

**Custom setup required for high-resolution imaging*

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