

Vapor Deposition Apparatus: Automated, intuitive matrix deposition device for high-quality MALDI-MSI samples

To optimise the sample preparation process in matrix-assisted laser desorption/ionization mass spectrometry imaging (MALDI-MSI), scientists at TU Wien have developed a technology that automates the matrix deposition step, ensuring a streamlined production of high-quality samples. The device has significant technological and practical advantages over previously reported or currently available solutions, and a prototype has already been built.

BACKGROUND

MALDI-MSI is an important research tool for detecting, quantifying, and mapping of various analytes and biomolecules in cells and biological tissues. For example, peptides, proteins, lipids, and other organic compounds can be detected directly in thin histological samples without labelling. MALDI-MSI is extensively used in numerous industries, but its analytical potential is still in its infancy. The sample preparation procedure, especially the matrix deposition step, plays a critical role for the quality of MALDI-MSI results.

TECHNOLOGY



The intuitive matrix deposition device developed at TU Wien ensures the production of high-quality samples. The technology streamlines the MALDI-MSI sample preparation workflow and provides multiple technological and practical benefits.

FIGURE (left): Scientist holding a Petri dish in a laboratory. (Photo by Drew Hays on Unsplash)

BENEFITS

- Automated, intuitive process
 - Decreased training need for operators
 - Quicker sample preparation
 - Improved homogeneity of the crystal layer
 - Improved reproducibility
- Flexibility — properties such as thickness, size of crystals of the analyte layer can be tailored according to the desired end-use
- Increased user safety due to minimised contact to vapours

REFERENCE:
M001/2022

APPLICATION AREAS:

- (Bio)medical research
- Omics
- Material sciences
- Forensics
- Environmental science

DEVELOPMENT STATUS:
TRL 5

KEYWORDS:

- MALDI-MSI
- Sample preparation

IPR:

PCT application filed

OPTIONS:

- License agreement
- R&D collaboration

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