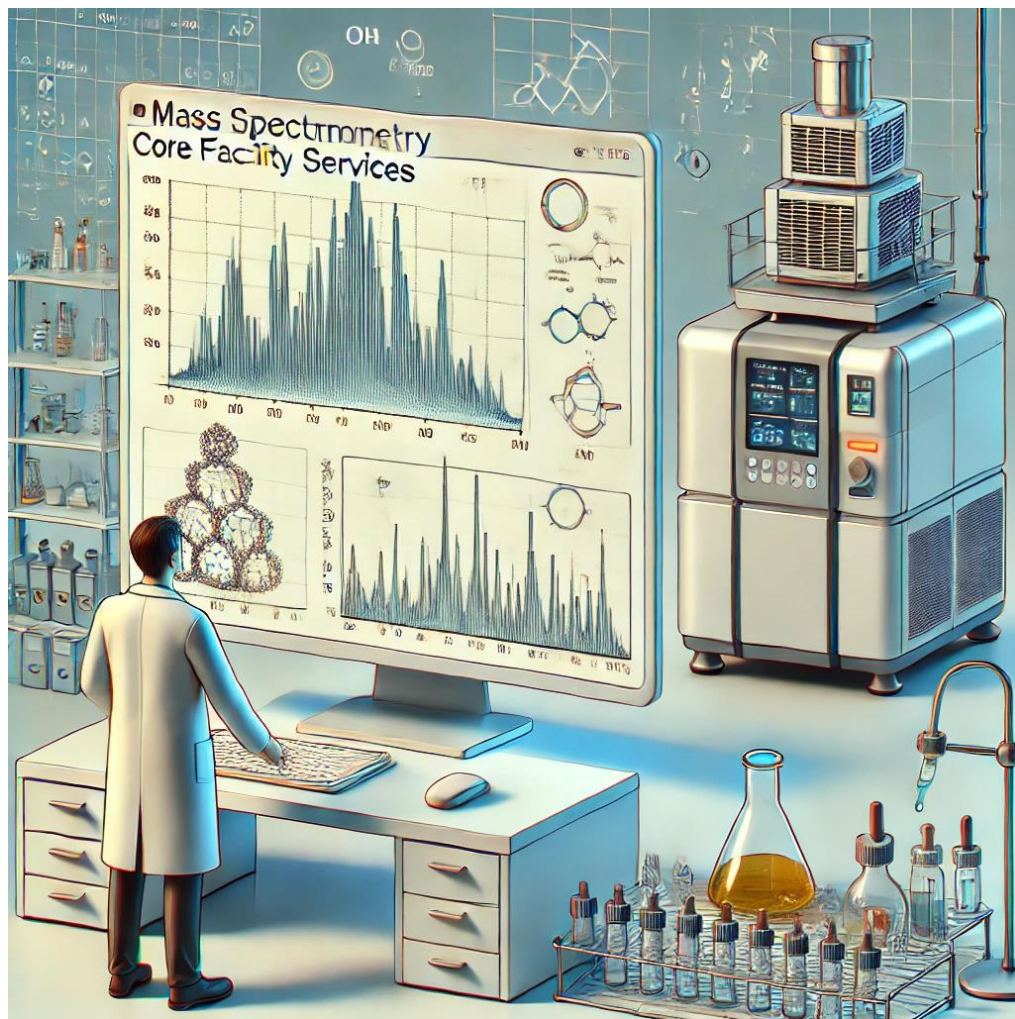




Mass spectra of molecules

Josef Cvačka



Agenda

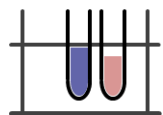
9:30 – 9:45 Services of CF Mass Spectrometry (Josef Cvačka)

9:45 – 10:15 Ionization methods used @ IOCB (Martin Svoboda)

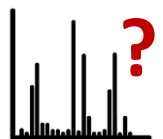
10:15 – 10:45 Sample analysis, tips and tricks (Edita Kofroňová)

Mass Spectrometry at IOCB

MS laboratory at IOCB since 1960s



Full service mode / Open-access



Consultations, education, training



Collaborations



Research



Usage of Mass Spectrometry Services

Mass spectrometry of molecules service for IOCB in the last 12 months:

>7500 requests from IOCB

236 users from **32** groups

Mass Spectrometry Services

- Mass spectra of molecules
- Quantitative analysis of small molecules
- Mass spectrometry imaging
- Lipid analysis and lipidomics
- On-demand mass spectrometry
- Open access GC/MS

Mass Spectrometry Services

- **Mass spectra of molecules**

- Quantitative analysis

- Mass spectrometry

- Lipid analysis and

- On-demand mass

- Open access GC

Nominal or high-resolution full-scan mass spectra are recorded using a variety of techniques that cover diverse ionization methods, such as **ESI, EI/CI, APCI, APPI, and MALDI**. This service is frequently used to confirm or determine the molecular weight and elemental composition of a **wide range of substances**, including organic, organometallic, and some inorganic compounds. Full-scan mass spectra of **intact biopolymers** like peptides, proteins, nucleic acid, and polysaccharides are acquired using MALDI.

Mass Spectrometry Services

- Mass spectra of molecules
- **Quantitative analysis of small molecules**

- Mass spectrometry
- Lipid analysis and metabolomics
- On-demand mass spectrometry
- Open access GC/MS

Targeted quantification of molecules up to approximately 2000 Da using **LC/MS** with a triple quadrupole instrument offers highly accurate and sensitive measurements. This method is ideal for the precise quantification of known substances, even at very low concentrations. For **GC/MS**, Q-TOF type instrument is used.

Mass Spectrometry Services

- Mass spectra of molecules
- Quantitative analysis of small molecules
- **Mass spectrometry imaging**
- Lipid analysis and metabolomics
- On-demand mass spectrometry
- Open access Geacoma

Mass spectrometry imaging allows for the **visualization of chemical species on surfaces**, most commonly on slices of biological tissue. Using **MALDI-TOF** technology, we investigate areas ranging from a few square millimeters to several square centimeters, with a resolution of 15 μm . The result is an image that shows the distribution of specific compounds within the sample.

Mass Spectrometry Services

Lipid **structural analysis** and **lipidomics** are services built on many years of expertise within our group. Lipidomic analysis involves lipid extraction from biological samples, followed by LC/MS and comprehensive data interpretation. This approach allows for the **comparison of relative lipid abundances** between different experimental conditions, such as wild type versus knockout.

- Mass spectra of
- Quantitative an
- Mass spectrom
- **Lipid analysis and lipidomics**
- On-demand mass spectrometry
- Open access GC/MS

Mass Spectrometry Services

- Mass spectra of molecules
- Quantitative analysis
- Mass spectrometry
- Lipid analysis and

In response to the needs of our colleagues, we offer **a range of additional measurements and analyses** using mass spectrometry. These include e.g., GC/MS analysis of mixtures, HPLC/MS analysis of mixtures, and structural analysis using tandem mass spectrometry.

- **On-demand mass spectrometry**
- Open access GC/MS

Mass Spectrometry Services

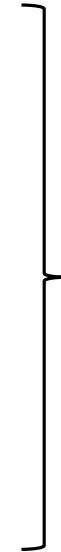
- Mass spectra of molecules
- Quantitative analysis of small molecules
- Mass spectrometry imaging
- Lipid analysis and metabolomics
- On-demand mass spectrometry

Gas chromatograph with quadrupole detector is offered to **trained users** for **self-service** measurements.

- **Open access GC/MS**

Mass Spectrometry Services

- Mass spectra of molecules
- Quantitative analysis of small molecules
- Mass spectrometry imaging
- Lipid analysis and lipidomics
- On-demand mass spectrometry
- Open access GC/MS



Full service mode



Costs: fully covered by IOCB

Acknowledgments in publications are welcome

People from Mass Spectrometry Services



Kvetoslava Kertisová
HRMS Orbitrap



Eva Slabá
HRMS Orbitrap



Kateřina Nováková
MALDI, HRMS Orbitrap



Edita Kofroňová
HRMS Orbitrap, MALDI



Martin Svoboda
GC/qTOF-MS, LC/MS



Karel Čížek
Quantitative analysis of small
molecules
(LC/QQQ-MS)

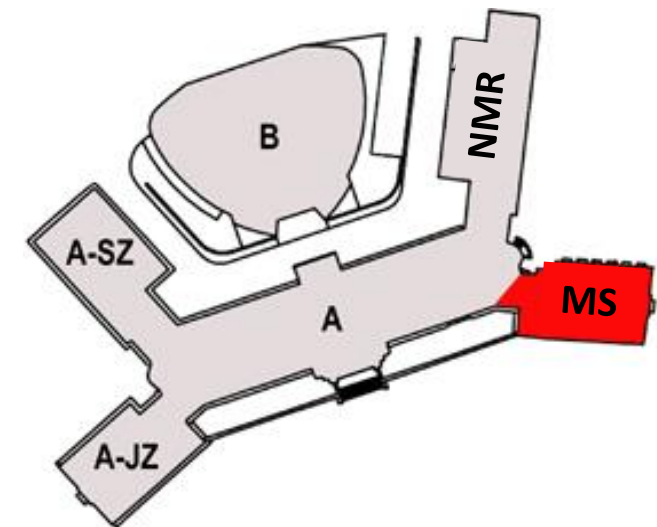


Vladimír Vrkoslav
Lipidomics
(Orbitrap, MALDI)
MS imaging (MALDI)
Open Access GC/MS



Štěpán Strnad
Lipidomics
(Orbitrap, MALDI)
MS imaging (MALDI)

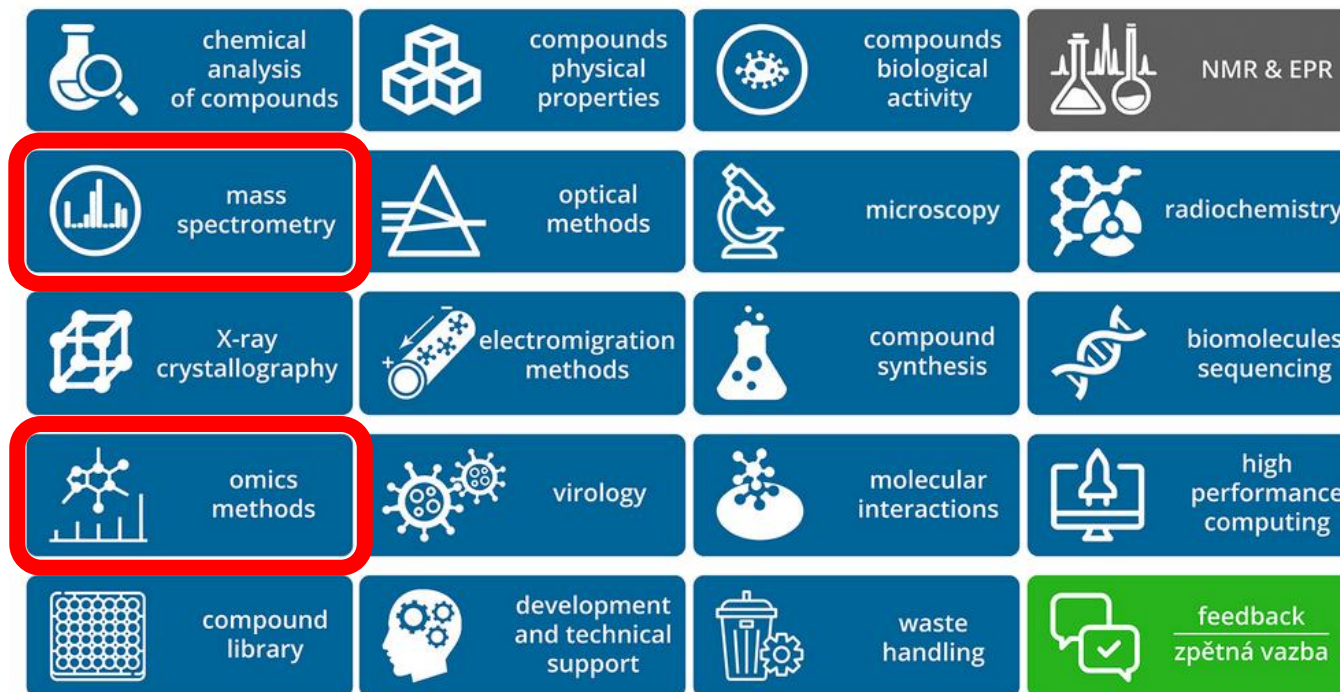
Building A
SE-wing
1st floor



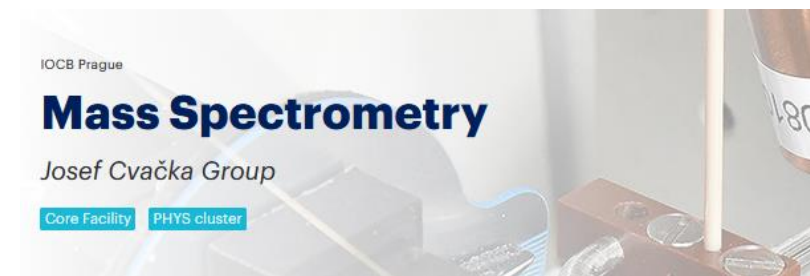
More Information



<https://intraweb.uochb.cas.cz/>

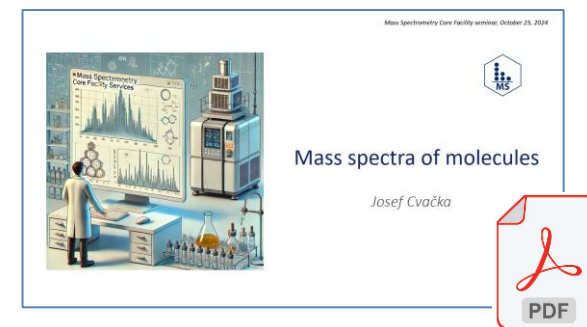


<https://ms.group.uochb.cz/en>



Feedback

Feedback form



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