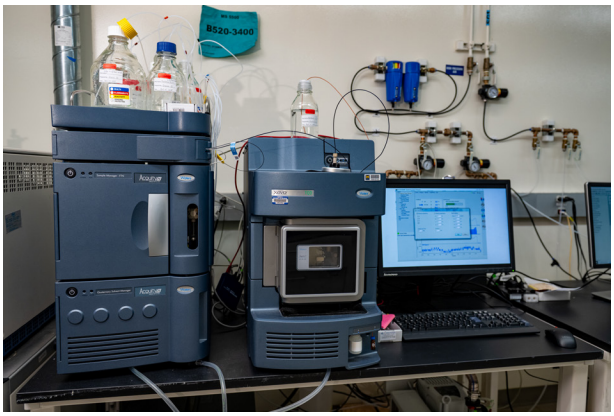
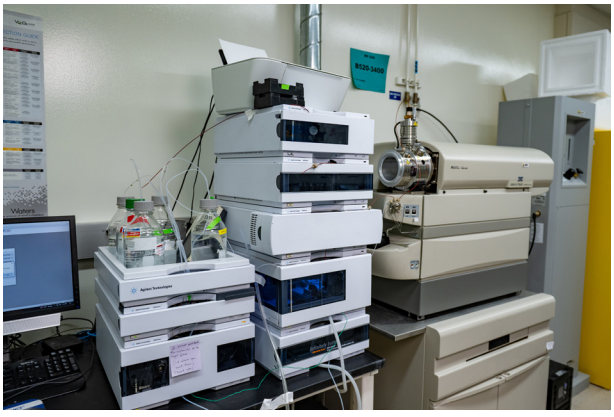
COLLEGE OF
PHARMACY

UNIVERSITY OF MICHIGAN

Mass Spectrometers and Other Equipment

Several considerations go in to the selection of the right instrument to support your sample analyses. For one, it's not just the molecular mass (m) but also the charge (z) or the m/z ratio that determines the measurement range. We will help identify the right instrument to serve your need.



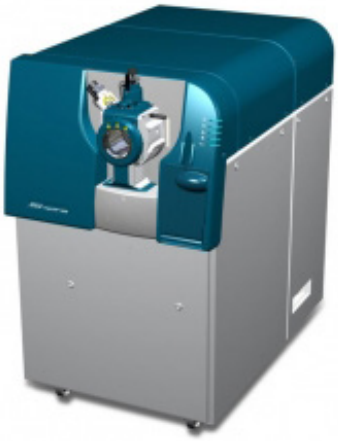


Thermo Orbitrap ID-X Tribrid MS Coupled With MassTech AP-MALDI for MS Imaging

Thermo Orbitrap IDX Tribid (a combination of a quadrupole, an ion trap, and an Orbitrap) MS is a high resolution mass spectrometer with a mass range of 50 to 2000 m/z, mass resolution up to 500,000 at FWHM, mass accuracy <5 ppm, and scan speed of up to 40 Hz. In combination with Orbitrap ID-X Tribrid Mass Spectrometer supporting the Thermo Scientific Aquire X intelligent MSn data acquisition strategy, Compound Discovery software offering a full suite of advanced software tools for known-parent and unknown compound identification. Mass Frontier 8.0 software can be used to capture more low-abundance analytes through streamlined data analysis and mass spectral prediction tools.

The AP-MALDI (ng) source (MassTech Inc) equipped with a 10 kHz 355 nm Nd:YAG laser is an Ultra High Resolution (UHR) MALDI which allows for a focused laser spot less than 10 µm in diameter. It is an add-on MALDI source that can be coupled to the Thermo ID-X and Sciex 6600+ mass spectrometer. This instrumentation could perform MALDI-imaging mass spectrometry (MALDI-MSI) of lipids, peptides, drugs, metabolites to visualize their localization on a tissue section. Combination of high mass accuracy and high mass resolution of the Mass spec and AP-MALDI focused laser spot of 10 µm allow us to generate mass spectral images of different biomolecules distributed within a thin tissue section with spatial resolution (20-100 µm).

Sciex 6600plus Triple-TOF Coupled with MassTech AP-MALDI for MS Imaging



SCIEX TripleTOF® 6600+ is a high resolution mass spectrometer with TripleTOF technology, delivering high performance and reproducibility. This mass spectrometer can achieve mass resolution up to 30,000 at FWHM, scan speed up to 100 Hz, and the TOF mass range of 5 to 40,000 m/z. The combination of AP-MALDI source and TripleTOF® 6600+ could perform MALDI-imaging mass spectrometry (MALDI-MSI) of lipids, peptides, drugs, metabolites, etc to visualize their localization on a tissue section. Advantage of this equipment is its high throughput. Fast scanning of tissue sections is possible by the 100 Hz high scan speed of TripleTOF® 6600+ and 10 kHz laser of AP-MALDI source.

Sciex X500R QTOF HPLC separations with Quantitative Time-of-Flight technologies

High resolution mass spectrometer (HR-MS) appropriate for Food, Environmental, Forensic applications. Includes an All-in-One HR-MS library ermits rapid interrogation of MS/MS spectra against a library of 2200 compounds. The simple, balanced hardware design combined with the new SCIEX OS software user interface.
Mass Range TOF - Up to 40 kDa. Precursor ion selection: 5-2250 m/z.
Mass Accuracy- Less than 2 ppm RMS over 12 hours of LC-MS
Ionization Sources - Turbo V ion source with Twin Sprayer ESI Probe
TOF-MS Resolution and Speed - ≥ 42,000 (FWHM), and up to 100 Hz.

AB Sciex 5500 Qtrap coupled with Shimadzu 20A UFLC

Bench top hybrid triple quadrupole-linear accelerator trap mass spectrometer designed for LC-MS/MS analyses. Predominantly for ultra-sensitive, low-recovery quantification of drugs from tissue, plasma, and in vitro samples, as well as metabolite identification with Information-Dependent Acquisition techniques. Scan types: Full scan MS and selected ion for both Q1 and Q3, product ion scan, precursor ion scan, neutral loss or gain scan, multiple reaction monitoring (MRM), enhanced MS scan, enhanced product ion scan, enhanced resolution scan, MS scan, MRM3 scan, and TripleTrap scan modes

AB Sciex 4500 Qtrap coupled with Shimadzu 20A UFLC

Robustness and performance for the application of contaminant analysis, drug monitoring research, peptide quantitation, drug discovery and development.
Mass range: Triple quadrupole: 5 – 2,000 Da. linear ion trap: 50 - 2,000 Da
Polarity switching: 50 msec in MRM and Scheduled MRM™ modes
Linear ion trap scan speed: 20,000 Da/sec
Scan types: Q1 MS, Q3 MS, product ion, precursor ion, neutral loss or gain, MRM, EMS, EPI, ER, MS3, MRM3, TripleTrap™ Scanning

Waters Xevo TQD Triple Quadrupole MS coupled with Waters UPLC

Xevo TQD features T-Wave collision cell technology to provide the very best high-speed MRM and valuable, information-rich acquisition mode known as RADAR. The system incorporates Intellistart Technology, for automated system optimization and status monitoring. Ensuring that the highest quality data for chemical detection.

Mass range: 2 – 2,048 Da.
Polarity switching: 20 ms to switch between positive and negative ion mode scan speed: up to10,000 Da/sec

Scan types: Full scan MS, product ion, precursor ion, neutral loss or gain, SIR, MRM, RADAR.

AB Sciex 4000 Qtrap coupled with Shimadzu 20A UFLC

Robustness and performance for the application of contaminant analysis, drug monitoring research, peptide quantitation, drug discovery and development. Sensitive detection up to 12,000 FWHM resolution.

AB Sciex 3200 Qtrap coupled with Agilent 1200 HPLC

This system performs Multiple Reaction Monitoring (MRM) scans, resulting in high quantitative sensitivity for clinical studies.

Thermo
Vanquish

Thermo
Ultimate 3000

Shimadzu
LC20A (4)

Waters
Acquity H-class

Agilent
1200 HPLC

Tissue Processing Instruments

Thermo DNA120
SpeedVac concentrators

Thermo Legend
X1R centrifuge

Eppendorf
centrifuges 5424R

HTX TM-Sprayer

Leica cm1950 cryostat

Precellys Evolution
homogenizer