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Mass Spectrometry Market: Current Analysis and Forecast (2025-2033)

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Abstracts

Mass spectrometry is an analytical instrument that can determine the mass-to-charge ratio (m/z) of one or more molecules in a sample. Measurements can also be employed to determine the precise molecular weight of the sample components, if desired. Mass spectrometers are generally capable of identifying unknown compounds through the determination of molecular weight, quantifying known compounds, and determining molecular structure and chemical properties. Every mass spectrometer consists of at least these three components: an Ionization Source, a Mass Analyzer, and an Ion Detection System.

The mass spectrometry market is set to show a growth rate of about 7.42% during the forecast period (2025- 2033F). The expansion in the market is due to the use of mass spectrometers in environmental testing samples for analytes such as PFAS and microplastics in environmental analysis, which will grow. The pharmaceutical sector's investment in more budget on research and development and government regulation on drug safety will boost demand for mass spectrometers. Greater investments in energy exploration and climate research will drive demand for mass spectrometers. In addition, the sensitive qualitative and quantitative requirements for food and beverage analysis are likely to boost demand in the mass spectrometry market. For instance, in May 2024, Shimadzu Scientific Instruments announced the new LCMS RX series of triple quadrupole mass spectrometry instruments. These advanced systems are supported by integrated hardware and software technologies to ensure reliable and robust results at lower operating costs, even under the most challenging and dynamic laboratory environments.

Based on product category, the market is segmented into instruments, consumables & services. Among these, the instruments segment holds a larger

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share of the mass spectrometry industry owing to the availability of a large number of companies providing various types of mass spectrometry instruments. The prominent market players provide a large variety of instruments that can be utilized for different applications.

For instance, in December 2024, Roche announced that it had received CE mark approval for its cobas® Mass Spec solution, including the cobas® i 601 analyser and the first Ionify® reagent pack of four assays for steroid hormones.

Based on technology, the market is segmented into quadrupole liquid chromatography-mass spectrometry, gas chromatography-mass spectrometry (GC-MS), Fourier transform-mass spectrometry (FT-MS), time-of-flight mass spectrometry (TOFMS), matrix-assisted laser desorption/ionization-time-of-flight mass spectrometry (MALDI-TOF), magnetic sector mass spectrometry, and others. Among these, quadrupole liquid chromatography-mass spectrometry held the largest share in the market due to the numerous benefits provided by the technique. Manufacturers are coming up with sophisticated instruments to meet these regulations, which demand more precise and trustworthy data for drug testing and safety evaluations. However, the Fourier Transform - Mass Spectrometry (FT-MS) is the most rapidly growing segment and is anticipated to develop at a substantial CAGR during the forecast period. The pharmaceutical and biotechnology industries' growth is a key driver for FT-MS. Researchers need sophisticated mass spectrometry methods to examine large biomolecules such as proteins and nucleic acids, and hence, the demand for FT-MS is increasing in drug development and biomarker discovery.

For instance, in June 2023, Agilent Technologies Inc. announced two new liquid chromatography mass spectrometry systems (LC-MS), the Agilent 6495D LC/TQ and the Agilent Revident LC/Q-TOF.

Based on the application, the market is segmented into proteomics, metabolomics, glycomics, and others. Among these, the proteomics segment held the largest share in the market. Mass spectrometry-proteomics research is an advanced method for quantitative protein profiling and the investigation of protein-protein interactions. Additionally, mass spectrometry allows for thorough investigations of protein expression, post-translational modifications, and interactions, which are critical to enhance biological processes.

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For instance, in February 2025, Bruker enhanced single-cell proteomics and immuno-peptidomics performance; unveiled new proteomics software and applications for better biological insights at US HUPO. The new AIP enables highly efficient ion transfer from the collision cell to the orthogonal acceleration region of the TOF analyzer of the timsTOF Ultra 2 mass spectrometer.

Based on the end-user category, the market is segmented into government & academic institutions, pharmaceutical & biotechnology companies, and others. Among these, the pharmaceutical & biotechnology companies segment held the largest share in the market, owing to the widespread use of protein sequencing with mass spectrometry in the pharmaceutical sector for drug development and discovery activities. In addition, a surge in collaborations among major players of proteomics for strengthening research on biopharma and precision medicine is fueling segment growth. For instance, in June 2024, Bruker Corporation announced a majority investment in RECIPE Chemicals + Instruments GmbH. RECIPE is a leading European provider of vendor-agnostic therapeutic drug monitoring (TDM) and other clinical in vitro diagnostic kits for LC-MS/MS, HPLC, and ICP-MS assays.

For a better understanding of the market adoption of mass spectrometry, the market is analyzed based on its worldwide presence in countries such as North America (U.S., Canada, and the Rest of North America), Europe (Germany, U.K., France, Spain, Italy, Rest of Europe), Asia-Pacific (China, Japan, India, Rest of Asia-Pacific), and Rest of World. Among these, the North American mass spectrometry market is moving forward due to the presence of dominant market players, well-established research institutions, pharma companies, and research organizations, along with strong R&D funding opportunities for biotechnology and drug discovery & development. Besides, rising government support also propels the growth of the market. The US, for instance, is an incubator of innovation and investment opportunities for life sciences, which has huge demand for premium mass spectrometry systems. In addition, North America is underpinned by a robust academia and research ecosystem that encourages mass spectrometry technology development and uptake. The region's aggressive pursuit of environmental monitoring and food safety also drives the need for mass spectrometry solutions in these industries. Although other areas such as Europe and Asia Pacific are growing at high rates, North America's mature infrastructure, heavy investment, and position at the forefront

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of scientific innovation continue to cement its leadership in the mass spectrometry market.

For instance, in June 2024, Thermo Fisher Scientific announced the release of a new mass spectrometry platform, in addition to several updates to existing products at the American Society for Mass Spectrometry (ASMS) conference in Anaheim, California. The new mass spectrometer, called the Stellar, combines fast throughput, high sensitivity, and ease of use to allow researchers to advance their translational omics research and make breakthrough discoveries more efficiently.

Some major players running in the market include Thermo Fisher Scientific Inc., Agilent Technologies, Inc., AMETEK, Inc., Advion, Inc., Bruker Corporation, JEOL Ltd., KORE TECHNOLOGY, LECO Corporation, MKS Instruments, and Waters Corporation.

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