

Spectrometry Market Assessment, By Type [Molecular Spectrometry, Mass Spectrometry, Atomic Spectrometry], By Product [Instruments, Consumables, Services], By Application [Proteomics, Metabolomics, Pharmaceutical Analysis, Forensic Analysis, Others], By End-user [Government and Academic Institutions, Pharmaceutical and Biotechnology Companies, Others], By Region, Opportunities and Forecast, 2018-2032F

Market Report | 2025-02-19 | 236 pages | Market Xcel - Markets and Data

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Report description:

Global spectrometry market is projected to witness a CAGR of 7.86% during the forecast period 2025-2032, growing from USD 21.14 billion in 2024 to USD 38.72 billion in 2032. Mass spectrometry is considered one of the major tools supporting the development of precision medicine, which uses a patient's phenotypic and genotypic information to establish customized treatment plans. Thus propelling the requirement for mass spectrometry to resolve challenging analytical requirements and support personalized patient management. The rising requirement for precision medicine to improve health outcomes and transform healthcare by accounting for individual variables such as lifestyle, genes, and environment is boosting the global spectrometry market demand. Furthermore, the market's growth is bolstered by the rapid expansion of the biotechnology and pharmaceutical industries, increasing demand for spectrometry for clinical applications, and rising investments in research and development activities.

Additionally, increasing research activities to determine the potential applications and advantages of various spectrometry techniques also supports the market's expansion. For instance, scientists across the globe are studying various techniques, including liquid chromatography coupled with mass spectrometry, to improve blood analysis, diagnosis, and treatment of cancer among patients. This technique is gaining popularity in various clinical laboratories due to its high accuracy and sensitivity in

analyzing small molecules such as hormones and vitamins. New possibilities for this technology emerging as a potential solution for analyzing large molecules, including proteins, are also opening various opportunities for cancer diagnostics. Furthermore, the rising applications of spectrometry across a wide range of industries, including forensic analysis and food testing, are also bolstering the market's demand. The food industry is increasingly deploying spectrometry to test food products for allergens and pesticides and ensure the food products' quality before their release. In forensic investigations, the technique is increasingly used to analyze trace evidence and provide a precise indication of the substances found at crime scenes. Technological Advancements Support Market Expansion

The rising efforts of various institutions to bolster the development and availability of advanced spectrometry technologies are one of the major drivers of the global spectrometry market. For instance, Jinan University's all-in-one optical fiber miniaturized spectrometer does not require a resonant gas cell to realize a parts-per-billion-level detection limit for trace gas sensing. The spectrometer can analyze sub-nanoliter-sized samples in milliseconds. With its low volume sample requirement, high sensitivity, and small footprint, the fiber spectrometer can deliver laboratory-level precision and is beneficial for various applications across biomedical diagnostics, industrial process control, and environmental monitoring. The availability of such advanced technologies allows the detection of trace elements in an effective manner, aiding a wide range of industries in analyzing the environmental agents, materials and chemicals, and pharmaceutical products.

Rapid Growth of Pharmaceutical and Biotechnology Sectors Boosts Market Demand

The rapid expansion of the biotechnology and pharmaceutical industries due to the growing burden of various diseases and disorders is augmenting the requirement for spectrometry. Additionally, the rising investments by pharmaceutical and biotech companies towards product innovations and expansion of their global presence are encouraging them to focus on research activities, bolstering the requirement for various scientific equipment and thus providing lucrative growth opportunities to the market. According to the European Federation of Pharmaceutical Industries and Associations (EFPIA), in 2023, approximately USD 52,079 million was invested in research and development by the pharmaceutical industry in Europe. Thus augmenting the requirement for spectrometry technologies for research applications such as peptide and protein analysis, diagnostics, therapeutic drug monitoring, and metabolomics, among others. Additionally, mass spectrometry plays a crucial role in ensuring the safety and quality of the drugs as well as their adherence to regulatory compliances. This technology also allows the detection of impurities, identification of compounds, metabolite profiling, structural elucidation, and stability testing, among others.

Government and Academic Institutions Account for a Significant Share of the Market

Rising investments in research and development activities propel product requirements from different government and academic institutions. Academic and government institutions deploy spectrometry techniques to complete research studies; due to the rising focus on research activities, the market is expected to witness an increased demand in the coming years. Various academic institutions are also developing novel mass spectrometry technologies to allow for efficient analysis of the samples. For instance, in September 2024, Brown University announced that a team of researchers had developed a new mass spectrometry technology that can significantly reduce the loss of samples and aid in conducting efficient and accurate protein analysis. One of the major drawbacks of deploying mass spectrometry is the significant loss of samples even before the sample analysis is initiated. This hampers the technology's potential, reduces the sensitivity and accuracy of the analysis, and complicates the sample preparation process. The team of researchers has developed a novel method to transfer ions that are analyzed by mass spectrometers that significantly reduces the loss of sample and ensures that almost all of it remains preserved. North America Region Holds Major Market Share

The growth of the North America spectrometry market can be attributed to the rising cases of chronic diseases, the strong presence of leading market players, the well-established healthcare infrastructure, and the increasing investments in research and development activities. The rising investment in the biotechnology industry is also supporting the market's growth in the region. The United States Department of Energy (DOE) is committed to deploying biomanufacturing and biotechnology in order to improve the lives of the American population. The DOE is making significant investments to ensure the translation of scientific discoveries into technologies that have commercial applications. Additionally, rising government policies and initiatives to support and promote technological advancements and research and development activities further bolster the spectrometry market's growth in North America. Such initiatives encourage partnerships and collaborations between leading market players and research institutions.

Meanwhile, the Asia-Pacific is expected to observe significant growth over the forecast period. This growth can be attributed to the rising requirement for food safety analysis and environmental testing in the region and technological advancements in molecular and mass spectrometry. Additionally, the market's growth is also expected to be supported by the rising initiatives by various governments in the region to enhance the healthcare sector.

Future Market Scenario (2025-2032F)

- As per the global spectrometry market analysis, the market is expected to witness significant growth in the coming years due to the rapid expansion of the biotechnology sector, growing requirements for precision medicine, rising investments towards research and development activities, and increasing innovations in spectrometry technologies.

-[Due to the growing burden of chronic and infectious diseases, the requirement for spectrometry is expected to increase significantly in the pharmaceutical sector. The World Health Organization estimates that approximately 35 million new cancer cases will be reported in 2050.

-[Increasing emphasis on innovations in spectrometry technologies, such as the integration of high-resolution technologies and artificial intelligence for enhancing analytical capabilities, are expected to increase the deployment of the technology across a wide range of industries and support the expansion of the spectrometry market.

- The increasing stringency posed by various governing and regulatory bodies towards various medical products and technologies is anticipated to propel the requirement for different testing solutions, augmenting the market's demand. Additionally, the growing emphasis on environmental monitoring is also expected to boost the requirement for spectrometry devices. Key Players Landscape and Outlook

The key players in the market are actively working on expanding their global presence by engaging in partnerships and collaborations and increasingly investing in the launch of novel products and technologies. For instance, in January 2024, the Shimadzu Corporation introduced their ICPMS-2040/2050 series of inductively coupled plasma mass spectrometers that feature a high-performance quadrupole mass filter, an advanced mini-torch system, and enhanced resolution. The series is ideal for analyzing concentrations of inorganic elements and is used in various industries such as chemicals and materials, pharmaceuticals, clinical, environmental, and food, among others.

In June 2023, Thermo Fisher Scientific Inc. and Seer, Inc. announced an expanded collaboration to ensure broader access to the companies' technologies. Under the partnership, the Thermo Scientific Orbitrap Astral mass spectrometer and Seer's Proteograph XT Assay Kit were combined to deliver advanced scale and depth in complex biological samples, supporting genomics and translational researchers in performing population scale studies. The exceptional scalability of the Seer Proteograph XT Assay and the performance and speed offered by the Orbitrap Astral mass spectrometer showcase the effects of mass spectrometry in the proteomics industry for improving clinical outcomes by uncovering novel biological insights.

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