

## **Analytical Instrumentation - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)**

Market Report | 2025-06-01 | 144 pages | Mordor Intelligence

### **AVAILABLE LICENSES:**

- Single User License \$4750.00
- Team License (1-7 Users) \$5250.00
- Site License \$6500.00
- Corporate License \$8750.00

### **Report description:**

Analytical Instrumentation Market Analysis

The analytical instrumentation market is valued at USD 55.29 billion in 2025 and is projected to reach USD 76.87 billion by 2030, reflecting a 6.81% CAGR and signaling robust expansion in high-precision measurement tools. Increasing regulatory oversight in pharmaceuticals and environmental monitoring, rapid semiconductor node shrinkage below 3 nm, and the convergence of artificial intelligence with laboratory hardware are boosting adoption across every major end-user group. Vendors are intensifying investments in real-time release testing solutions for continuous pharmaceutical manufacturing, ultra-trace spectrometry platforms for PFAS control, and multi-omics mass spectrometry to support biologics pipelines. Simultaneously, helium supply volatility is reshaping gas chromatography workflows, while persistent talent shortages in analytical chemistry elevate outsourcing costs and nudge buyers toward automation. Together, these forces are sustaining pricing power and fueling incremental upgrades in the analytical instrumentation market.

Global Analytical Instrumentation Market Trends and Insights

Rising Adoption of Hyphenated Techniques for Biologics QA/QC

Growing demand for complex biologics is encouraging manufacturers to replace single-dimension methods with hyphenated liquid chromatography-mass spectrometry platforms. Nearly 78% of biopharmaceutical plants now deploy at least one hyphenated workflow in quality operations, up from 2023 levels, enabling multi-attribute monitoring of critical quality attributes and trimming

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

batch rejection rates by 15%. Enhanced system integration allows real-time profiling of post-translational modifications, accelerating scale-up and release schedules. These gains are pushing capital budgets toward high-resolution LC-MS/MS and reinforcing supplier investments in automated data pipelines.

#### Stringent Global Limits on PFAS and Micro-plastics Boosting Ultra-Trace Spectrometry

Parts-per-trillion limits in the 2024 U.S. drinking-water rule and parallel European directives are forcing laboratories to add next-generation high-resolution mass spectrometers and Raman or FTIR microscopes capable of identifying particles down to 1  $\mu$ m. Environmental labs increased capital outlays for such systems by 34% in 2024 alone, a trend likely to continue as ultrashort-chain PFAS detection becomes compulsory. Market leaders now bundle automated sample preparation that extends run-time intervals and lowers detection thresholds, thereby strengthening recurring consumables revenue.

#### High Total Cost of Ownership for High-Resolution MS

Pricing for flagship mass spectrometers ranges between USD 500,000 and USD 1.5 million, yet five-year operating expenses often exceed purchase price because of service contracts, infrastructure retrofits, and specialized consumables. Emerging-market labs face 30% to 45% higher TCO due to tariffs and limited local service capacity. These barriers delay adoption in water-quality and food-safety settings even as regulations tighten, prompting vendors to roll out streamlined "value-engineered" models and shared-service hubs.

Other drivers and restraints analyzed in the detailed report include:

Shift Toward Real-Time Release Testing in Pharma Production / Semiconductor Node Shrinkage Less than 3 nm Requiring Ultra-Sensitive Surface Analysis / Shortage of Skilled Analytical Chemists Elevating Outsourcing Costs /

For complete list of drivers and restraints, kindly check the Table Of Contents.

#### Segment Analysis

Chromatography systems generated USD 15.48 billion in revenue and commanded 28% of analytical instrumentation market share in 2024. AI-enabled calibration routines now boost throughput by up to 70% while predictive algorithms flag maintenance needs, supporting sustained upgrades in both HPLC and gas chromatograph. In environmental labs, the need to profile PFAS has revived demand for advanced column chemistries and tandem detectors. Mass spectrometry, meanwhile, represents the fastest-expanding product family, slated for 7.1% CAGR through 2030 as ion-mobility innovations such as parallel accumulation with mobility-aligned fragmentation quintuple sample throughput and push sensitivity ceilings.

The analytical instrumentation market size for mass spectrometers is benefiting from cross-industry uptake—clinical proteomics, food authenticity, and battery materials all require deeper molecular insight. Triple-quadrupole and Q-TOF configurations account for the bulk of new installations owing to their balance between speed and resolution. Supplier roadmaps center on ultrahigh-field Orbitrap and timsTOF architectures that couple hardware advances with cloud-based deconvolution platforms, trimming data-processing times and freeing scarce analyst hours. Molecular spectroscopy remains a core revenue pillar for routine QA/QC, though Raman is gaining ground in pharmaceutical continuous manufacturing, where in-line probes verify blend uniformity in real time.

High-performance and ultra-high-performance liquid chromatography systems commanded 56% of this category, valued at USD 8.67 billion, as their reproducibility and matrix tolerance make them indispensable for potency, impurity, and stability testing. Artificial-intelligence plug-ins now automate gradient design, mobile-phase selection, and fault prediction, boosting sample

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

throughput by up to 70% while reducing column waste. Microfluidic chip columns are entering proteomic workflows, delivering sub-minute separations that synchronize with fast-scanning mass spectrometers and support data-rich multi-omics studies.

Supercritical-fluid chromatography is projected to advance at 7.3% CAGR through 2030, the quickest cadence within liquid-phase separations. Its use of CO<sub>2</sub> and minimal co-solvent meets green-chemistry targets and lowers per-sample solvent cost, creating attractive payback in chiral drug screening and impurity isolation. Gas chromatography remains vital for volatile analyses, yet helium scarcity elevates operating expenses, accelerating migration to hydrogen carriers and micro-channel alternatives. Ion chromatography is back in focus as regulators tighten ionic-contaminant limits in drinking water and industrial effluent, prompting utilities to add automated inline suppressor systems that can handle 24/7 monitoring.

The Analytical Instrumentation Market Report is Segmented by Product Type (Chromatography Instruments, Molecular Spectroscopy, Elemental Spectroscopy, Mass Spectrometry, and More), End-User Industry (Pharmaceuticals and Biopharmaceuticals, Clinical and Diagnostics Laboratories, Environmental Testing Laboratories, Chemical and Petrochemical, and More), and Geography. The Market Forecasts are Provided in Terms of Value (USD).

### Geography Analysis

North America generated USD 19.35 billion in 2024, equivalent to 35% of the analytical instrumentation market. Demand is anchored in FDA-driven real-time release testing, EPA-mandated parts-per-trillion PFAS limits, and a USD 52 billion CHIPS Act outlay that funds new fabs, each specifying sub-nanometer metrology. Laboratories adopt hydrogen-ready gas chromatographs and low-dead-volume HPLC pumps to mitigate helium costs and solvent waste, illustrating an appetite for greener workflows.

Asia-Pacific is forecast to deliver a 7.6% CAGR, reflecting pharmaceutical manufacturing scale-ups in China and India, plus advanced logic and memory production in Taiwan and South Korea. Regional governments tighten water-quality and industrial-emission standards, encouraging state-owned labs to tender multi-year procurement contracts for ICP-MS, LC-MS/MS, and handheld Raman. The analytical instrumentation market size allocated to semiconductor QA/QC in Asia-Pacific is projected to outgrow every other vertical as foundries race for gate-all-around transistors and high-bandwidth memory.

Europe maintains a robust, regulation-driven posture. The European Green Deal funds nationwide PFAS monitoring, circular-economy research, and solvent-free chromatography pilots. Pharmaceutical hubs in Germany, Ireland, and Switzerland integrate continuous-manufacturing lines that embed PAT analytics. Meanwhile, South America and the Middle East and Africa record steady but smaller gains as refineries, agro-exporters, and mining firms modernize labs to meet international trade certifications. High TCO remains a hurdle, so distributors increasingly promote lease-to-own and pay-per-sample schemes that lower entry barriers for first-time buyers.

### List of Companies Covered in this Report:

Agilent Technologies, Inc. / Thermo Fisher Scientific Inc. / Shimadzu Corporation / Danaher Corporation (SCIEX, Leica Microsystems) / Bruker Corporation / Waters Corporation / PerkinElmer Inc. / Metrohm AG / Mettler Toledo International Inc. / Malvern Panalytical Ltd. (Spectris) / Hitachi High-Tech Corporation / HORIBA, Ltd. / JEOL Ltd. / Anton Paar GmbH / Bio-Rad Laboratories, Inc. / ZEISS Group / Oxford Instruments plc / Nikon Instruments Inc. / Rigaku Corporation / LECO Corporation / Sartorius AG / Merck KGaA (MilliporeSigma) /

### Additional Benefits:

<ul> The market estimate (ME) sheet in Excel format /  
3 months of analyst support / </ul>

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

## **Table of Contents:**

### 1 INTRODUCTION

#### 1.1 Study Assumptions and Market Definition

#### 1.2 Scope of the Study

### 2 RESEARCH METHODOLOGY

### 3 EXECUTIVE SUMMARY

### 4 MARKET LANDSCAPE

#### 4.1 Market Overview

#### 4.2 Market Drivers

##### 4.2.1 Rising Adoption of Hyphenated Techniques for Biologics QA/QC

##### 4.2.2 Stringent Global Limits on PFAS and Micro-plastics Boosting Ultra-Trace Spectrometry

##### 4.2.3 Shift Toward Real-Time Release Testing (RTRT) in Pharma Production

##### 4.2.4 Semiconductor Node Shrinkage < 3 nm Requiring Ultra-Sensitive Surface Analysis

##### 4.2.5 Expansion of Renewable Aviation Fuel Programs Driving Feedstock Certification

##### 4.2.6 In-Lab Analytics Surge for Battery Gigafactory Quality Assurance

#### 4.3 Market Restraints

##### 4.3.1 High Total Cost of Ownership of High-Resolution MS in Emerging Markets

##### 4.3.2 Shortage of Skilled Analytical Chemists Elevating Outsourcing Costs

##### 4.3.3 Helium Supply-Chain Volatility Impacting GC Operations

##### 4.3.4 Lengthy Validation Cycles for Novel Analytical Methods in Regulated Sectors

#### 4.4 Industry Ecosystem Analysis

#### 4.5 Regulatory Outlook

#### 4.6 Technological Outlook

#### 4.7 Porter's Five Forces Analysis

##### 4.7.1 Bargaining Power of Suppliers

##### 4.7.2 Bargaining Power of Buyers

##### 4.7.3 Threat of New Entrants

##### 4.7.4 Threat of Substitutes

##### 4.7.5 Degree of Competition

### 5 MARKET SIZE AND GROWTH FORECASTS (VALUES)

#### 5.1 By Product Type

##### 5.1.1 Chromatography Instruments

###### 5.1.1.1 Gas Chromatography (GC) Systems

###### 5.1.1.2 High-/Ultra-High-Performance Liquid Chromatography (HPLC/UHPLC)

###### 5.1.1.3 Ion Chromatography (IC) Systems

###### 5.1.1.4 Supercritical Fluid Chromatography (SFC) Systems

##### 5.1.2 Molecular Spectroscopy

###### 5.1.2.1 UV-Visible Spectrometers

###### 5.1.2.2 Fourier Transform Infrared (FT-IR) Spectrometers

###### 5.1.2.3 Near-Infrared (NIR) Spectrometers

###### 5.1.2.4 Raman Spectrometers

###### 5.1.2.5 Fluorescence Spectrometers

##### 5.1.3 Elemental Spectroscopy

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 5.1.3.1 Atomic Absorption Spectrometers (AAS)
- 5.1.3.2 ICP-Optical Emission Spectrometers (ICP-OES)
- 5.1.3.3 ICP-Mass Spectrometers (ICP-MS)
- 5.1.3.4 X-Ray Fluorescence (XRF) Spectrometers
- 5.1.4 Mass Spectrometry
  - 5.1.4.1 Single Quadrupole MS Systems
  - 5.1.4.2 Triple Quadrupole MS Systems
  - 5.1.4.3 Quadrupole-Time-of-Flight (Q-TOF) MS Systems
  - 5.1.4.4 Orbitrap and FT-MS Systems
  - 5.1.4.5 MALDI-TOF MS Systems
- 5.1.5 Analytical Microscopes and Imaging Systems
  - 5.1.5.1 Scanning Electron Microscopes (SEM)
  - 5.1.5.2 Transmission Electron Microscopes (TEM)
  - 5.1.5.3 Atomic Force Microscopes (AFM)
  - 5.1.5.4 Confocal and Optical Microscopes
- 5.1.6 Surface, Thermal and Particle Characterisation Instruments
  - 5.1.6.1 X-Ray Diffraction (XRD) Systems
  - 5.1.6.2 Thermal Analysis Instruments (DSC, TGA, etc.)
  - 5.1.6.3 Particle Size and Zeta Potential Analysers
- 5.1.7 Consumables and Accessories
- 5.1.8 Data Management Software and Services
- 5.2 By End-User Industry
  - 5.2.1 Pharmaceuticals and Biopharmaceuticals
    - 5.2.1.1 Drug Discovery and Development
    - 5.2.1.2 Manufacturing QA/QC
  - 5.2.2 Clinical and Diagnostics Laboratories
  - 5.2.3 Environmental Testing Laboratories
  - 5.2.4 Food and Beverage Testing
  - 5.2.5 Chemical and Petrochemical
  - 5.2.6 Oil and Gas (Upstream, Midstream, Downstream)
  - 5.2.7 Materials Science and Metallurgy
  - 5.2.8 Semiconductor and Electronics
  - 5.2.9 Academic and Government Research Institutes
  - 5.2.10 Forensic and Security
  - 5.2.11 Water and Wastewater Utilities
- 5.3 By Geography
  - 5.3.1 North America
    - 5.3.1.1 United States
    - 5.3.1.2 Canada
    - 5.3.1.3 Mexico
  - 5.3.2 Europe
    - 5.3.2.1 Germany
    - 5.3.2.2 United Kingdom
    - 5.3.2.3 France
    - 5.3.2.4 Italy
    - 5.3.2.5 Spain
    - 5.3.2.6 Nordics

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

- 5.3.2.7 Rest of Europe
- 5.3.3 Asia-Pacific
  - 5.3.3.1 China
  - 5.3.3.2 Japan
  - 5.3.3.3 South Korea
  - 5.3.3.4 India
  - 5.3.3.5 South East Asia
  - 5.3.3.6 Australia
  - 5.3.3.7 Rest of Asia-Pacific
- 5.3.4 South America
  - 5.3.4.1 Brazil
  - 5.3.4.2 Rest of South America
- 5.3.5 Middle East and Africa
  - 5.3.5.1 Middle East
    - 5.3.5.1.1 United Arab Emirates
    - 5.3.5.1.2 Saudi Arabia
    - 5.3.5.1.3 Rest of Middle East
  - 5.3.5.2 Africa
    - 5.3.5.2.1 South Africa
    - 5.3.5.2.2 Rest of Africa

## 6 COMPETITIVE LANDSCAPE

- 6.1 Market Concentration
- 6.2 Strategic Moves (M&A, Partnerships, Funding)
- 6.3 Market Share Analysis
- 6.4 Company Profiles (includes Global level Overview, Market level overview, Core Segments, Financials as available, Strategic Information, Market Rank/Share for key companies, Products and Services, and Recent Developments)
  - 6.4.1 Agilent Technologies, Inc.
  - 6.4.2 Thermo Fisher Scientific Inc.
  - 6.4.3 Shimadzu Corporation
  - 6.4.4 Danaher Corporation (SCIEX, Leica Microsystems)
  - 6.4.5 Bruker Corporation
  - 6.4.6 Waters Corporation
  - 6.4.7 PerkinElmer Inc.
  - 6.4.8 Metrohm AG
  - 6.4.9 Mettler Toledo International Inc.
  - 6.4.10 Malvern Panalytical Ltd. (Spectris)
  - 6.4.11 Hitachi High-Tech Corporation
  - 6.4.12 HORIBA, Ltd.
  - 6.4.13 JEOL Ltd.
  - 6.4.14 Anton Paar GmbH
  - 6.4.15 Bio-Rad Laboratories, Inc.
  - 6.4.16 ZEISS Group
  - 6.4.17 Oxford Instruments plc
  - 6.4.18 Nikon Instruments Inc.
  - 6.4.19 Rigaku Corporation
  - 6.4.20 LECO Corporation

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

6.4.21 Sartorius AG

6.4.22 Merck KGaA (MilliporeSigma)

## 7 MARKET OPPORTUNITIES AND FUTURE OUTLOOK

### 7.1 White-Space and Unmet-Need Assessment

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

**Analytical Instrumentation - Market Share Analysis, Industry Trends & Statistics,  
Growth Forecasts (2025 - 2030)**

Market Report | 2025-06-01 | 144 pages | Mordor Intelligence

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

**ORDER FORM:**

Select license	License	Price
	Single User License	\$4750.00
	Team License (1-7 Users)	\$5250.00
	Site License	\$6500.00
	Corporate License	\$8750.00
		VAT
		Total

\*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

\*\* VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>
Zip Code*	<input type="text"/>	Country*	<input type="text"/>
		Date	<input type="text" value="2026-02-26"/>
		Signature	

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com



**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

[www.scotts-international.com](http://www.scotts-international.com)