

Article Overview

High-performance spectrometers typically range from \$200,000 to over \$2,500,000 depending on type, resolution, and application.

Mass Spectrometers

High-performance mass spectrometers, used in proteomics, metabolomics, and advanced life sciences research, vary widely in price:

- o Time-of-Flight (TOF) Mass Spectrometers: High-resolution and fast data acquisition, ideal for complex sample analysis, typically cost \$200,000 to \$500,000 for premium models .
- o Orbitrap Mass Spectrometers: High-resolution systems for advanced research, ranging from \$400,000 to over \$1,000,000, offering exceptional accuracy .
- o Fourier Transform Ion Cyclotron Resonance (FT-ICR): Ultra-high-resolution instruments for top-tier research, often exceeding \$1.5 million .
- o Triple Quadrupole (Triple Quad) Analyzers: Used in LC-MS and GC-MS workflows for targeted applications, priced between \$75,000 and \$1,000,000 depending on performance . Used mass spectrometers can be significantly cheaper, with prices ranging from \$10,000 to \$1,500,000 depending on type and condition .

Optical and Other Spectrometers

High-performance optical spectrometers, such as UV-VIS, NIR, fluorescence, and Raman systems, are widely used in material analysis, environmental testing, and industrial applications:

- o Laboratory-grade optical spectrometers typically start around \$5,000 to \$50,000 for standard models, while advanced research-grade systems can exceed \$100,000 .
- o Specialized instruments like FT-NIR analyzers or XRF spectrometers for elemental analysis may cost \$50,000 to \$150,000 depending on throughput and sensitivity .

Factors Affecting Price

- o Resolution and Sensitivity: Higher resolution and sensitivity increase cost, especially for Orbitrap, TOF, and FT-ICR systems .
- o Application Requirements: Proteomics, metabolomics, and regulatory-compliant testing require more advanced instruments.
- o Brand and Manufacturer: Thermo Scientific, SCIEX, and Agilent offer premium systems with varying pricing structures .
- o New vs. Used: Used instruments can reduce initial costs but may require maintenance or upgrades .

Cost of a High-Quality Spectrometer

o Accessories and Software: Integration with LC/GC systems, data processing software, and sample handling modules can add to the total cost . High-performance spectrometers are a significant investment, and selecting the right system depends on the specific analytical needs, throughput, and precision requirements of your laboratory or research project.

Buy and sell, new and used infrared spectrophotometers. LabX is your online marketplace for new and

This buyer's guide for spectrometers provides technical background, comparison of major types, selection criteria, and an overview

Price Range: \$8,900 - \$10,800 USD. Best For: Budget-conscious labs needing precise

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To ensure low cost, miniaturized spectrometers must demonstrate a path toward high-volume manufacturing. This

Mass spectrometers provide accurate analysis and quality control across various fields. Using high-quality equipment speeds up the

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What is the difference between a Q-TOF and a Triple Quadrupole mass spectrometer? Q-TOF instruments offer

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Explore optical spectrometers, systems, and components for spectroscopy, detection, and analysis. Ideal

How much does a mass spectrometer cost? The typical price of a new mass spectrometer varies dramatically depending on the model.

For example, a spectrometer can be used to identify materials or molecules. This buying guide will focus

Discover high-precision spectrometers for accurate light analysis. Explore portable, compact designs with wide wavelength ranges

Cost of a High-Quality Spectrometer

While they may seem like minor additions, they can significantly increase the cost of the overall system, especially if

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