

Spectrometer for Laboratory Use



Article Overview

Laboratory spectrometers are essential instruments for analyzing light interactions with matter, enabling precise measurement of substance composition, concentration, and optical properties.

Overview

A spectrometer is an optical instrument that measures light intensity across different wavelengths to analyze the properties of a sample. It works by dispersing light through a prism or diffraction grating and detecting the resulting spectrum, which provides information about molecular structure, chemical composition, and optical characteristics. Spectrometers are widely used in chemistry, biology, environmental monitoring, materials science, and medical research.

Types of Laboratory Spectrometers

- **UV-Vis Spectrophotometers:** Operate using ultraviolet and visible light to measure absorbance and concentration of nucleic acids, proteins, and organic compounds. They are commonly used in biological and chemical research.
- **IR (Infrared) Spectrophotometers:** Measure absorption of infrared radiation to study molecular vibrations and chemical bonds, frequently applied in chemistry and pharmaceutical analysis.
- **Fluorescence Spectrophotometers:** Detect light emitted by excited molecules, offering high sensitivity for trace analysis in genetics, biomedical research, and pollutant detection.

Article Content

Spectrometers – Instrument Systems

Thanks to their versatility, array spectrometers are widely used in the lab. Their robust design and high optical throughput also

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Spectroscopy

Spectroscopy, primarily in the electromagnetic spectrum, is a fundamental exploratory tool in the fields of astronomy, chemistry,

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Spectrophotometer – Principle, Types, Uses and

In a laboratory setting, spectrometers can identify toxins in the bloodstream, contaminants,

Spectrometers for Chemical Analysis

Compact and digital spectrometers designed for use in the chemical industry that will optimize and simplify your spectrophotometric

Spectrophotometers & Analytical Equipment

USP Compliance of Pharmaceutical Labs Absorption spectroscopy is an important analytical chemistry

How to Choose the Right Spectrometer for You

Spectrometers are a great tool for helping your students explore important scientific concepts across a

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Online shopping for Spectrometers - Spectrometry from a great selection at Industrial & Scientific Store.

How to Use a Spectrometer From Setup to Data Analysis

This analytical capability makes spectrometers valuable tools across many fields, from identifying chemical compounds in a

An Overview of Spectroscopy Machine Development & Common

Spectroscopy is simply an analytical laboratory technique that identifies chemical substances. At a high level, medical

Spectrometer | Optical, Light & Wavelength | Britannica

As used in traditional laboratory analysis, a spectrometer includes a radiation source and detection and

Laboratory Spectrometer: Types, Uses & How to

Learn what a laboratory spectrometer is, how it's used in physics and chemistry labs, the

Trace Metal Analysis

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Spectrometers & Spectroscopy Equipment | Edmund

Whether you're building a custom solution or seeking a turnkey system, our spectrometers support UV-VIS

Laboratory Spectrometers & Spectrophotometers – MSE Supplies

Purpose: Spectrometers are used for broader spectral analysis, such as identifying substances or analyzing their chemical

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Spectrometers

Spectrometers: Spectrum Analysis Spectrometers are analytical instruments used to identify the characteristics of materials by

What is a Spectrometer and How Does it Work?

As technology continues to evolve, spectrometers will undoubtedly continue to advance,

Spectrophotometry: Uses, Advantages & Applications

Learn the spectrophotometry principle and its applications. Explore the uses, types, and advantages of

Spectrometer Basics

Spectrometers can and are used in all of the physical sciences; physics, chemistry, biology, astronomy, geology, metrology among

Raman spectrometers

Our portfolio of Raman spectroscopy instrumentation includes handheld Raman

Spectrophotometers

Widely used in biochemistry and molecular biology, they are invaluable for studying complex biological systems. Applications of

Spectrophotometers

Choose Hach portable or benchtop laboratory VIS or UV-VIS spectrophotometers in combination with

What is a Spectrometer? Types and Uses

A spectrometer is a powerful tool for various types of laboratory and scientific research. Its simple and robust design is easy to use

Spectrometers

With our spectrometers, data can be collected and analyzed using our LabQuest 2, LabQuest 3, or free Vernier Spectral Analysis ®

Spectrophotometers in the Lab: Uses & Applications

Discover what a spectrophotometer is, its principle, UV-Vis types, and key applications in

The Best Spectrophotometers: A Buyer's Review of

GEMINI (2025) Precise quantitative analysis remains the cornerstone of modern life science

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