

What can a spectrometer analyze



AI Overview

Spectrometers are analytical instruments used to measure the interaction of light with matter, enabling chemical, elemental, and material analysis across various industries.

Types of Spectrometers

1. UV/Vis Spectrophotometers: These devices measure light absorption in the ultraviolet and visible spectrum to determine chemical composition, purity, and color of substances such as solvents, plastics, and biological samples. They are compact, fast, and user-friendly, often featuring intuitive software and open sample compartments for easy handling (METTLER TOLEDO) . 2. X-Ray Fluorescence (XRF) Spectrometers: XRF spectrometers are used for elemental analysis of metals, minerals, and other materials. They provide rapid, non-destructive measurements with high precision, suitable for laboratory and field applications . 3. Atomic Absorption Spectrometers (AAS): AAS instruments measure the concentration of specific elements by detecting light absorbed by atoms in a sample. They are widely used in environmental, pharmaceutical, and industrial testing . 4. Inductively Coupled Plasma (ICP) Spectrometers: ICP spectrometers offer high sensitivity for multi-element analysis, ideal for research, mining, and petrochemical applications. They can handle complex matrices and provide accurate quantitative results . 5. Educational and Portable Spectrometers: Devices like Vernier's Go Direct SpectroVis Plus and UV-VIS spectrophotometers are designed for teaching and fieldwork. They are compact, battery-powered, and compatible with software for data collection and analysis on multiple platforms

Article Content

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Spectroscopy Introduction

Spectroscopy is a technique that uses the interaction of energy with a sample to perform an analysis. This is how it works.

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What Is A Spectrometer?

A spectrometer is a common tool used by various scientists to determine information about

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Spectrometers – Real-World Applications – pmac

Another advantage is the broad application of XRF spectrometers. In addition to gold and precious metals, they can

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Spectroscopy: A Measurement Powerhouse | NIST

Spectroscopy. It may not be a household term, but it is one of the most popular and powerful measurement

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Spectroscopy

Historically, spectroscopy originated as the study of the wavelength dependence of the absorption by gas phase matter of visible light

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Spectroscopy 101 – Introduction

More specifically, spectroscopy involves analyzing spectra: the detailed patterns of colors (wavelengths) that materials

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Spectrometer Basics

Spectroscopy is a quiet revolution that has substantially changed and affected the way we interact with and better understand our

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What is a spectrometer, and why are they so useful in science?

Spectroscopy is the detailed analysis of a light signal by wavelength. Ordinary color images break up light into 3 channels (red,

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What is a Spectrometer and How Does it Work?

Spectrometers are powerful instruments used to analyze the properties of light and matter,

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What is a Spectrometer and How Does it Work?

Spectrometers can analyze gases, liquids, and solids, providing crucial information on their

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What is a Spectrometer & its Benefits? | Spectrecology

What Are the Benefits of Spectrometers? There are benefits unique to each type of optical spectrometer:

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What is a Spectrometer? Types and Uses

Spectrometers, various analyzes, and measurement values for recognized or unrecognized materials can be performed directly on

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What Is A Spectrometer?

spectrometer is a scientific instrument used to measure and analyze the properties of light. By dispersing

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Spectrochemical analysis | Chemistry, Atomic Absorption & Emission ...

Other spectrochemical methods useful in elemental analysis are atomic absorption spectrometry and atomic fluorescence

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10: Introduction to Spectroscopy

A spectrometer can separate the component colors coming either directly from an emission source or from the light transmitted

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How Does a Spectrometer Work? An In-Depth Guide

A spectrometer works by shining light onto a sample and analyzing the light that interacts with the material. This

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Mass spectrometry

Schematics of a simple mass spectrometer with sector type mass analyzer. This one is for the

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The Ultimate Guide to Spectrophotometers: Principles, Uses, and ...

A spectrophotometer measures the absorbance or transmittance of light through a sample to analyze chemical

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Optical spectrometer

A spectrometer is used in spectroscopy for producing spectral lines and measuring their wavelengths and intensities. Spectrometers

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Spectrophotometry: Uses, Advantages & Applications

Spectrophotometry is used in chemistry for quantitative analysis and in biochemistry for studying enzyme

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How Do Spectrometers Work? Types and Real-World Uses

Spectrometers split light to reveal chemical fingerprints. Learn how they work, the main types, and where they're used in science and

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What is a Spectrometer and How Does It Work

What is a Spectrometer Definition A spectrometer is a scientific instrument that separates and measures the different

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Spectrometer

Spectrometers are used in astronomy to analyze the chemical composition of stars and planets, and spectrometers gather data on

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10.1: Overview of Spectroscopy

This chapter explores the interaction of electromagnetic radiation with matter, particularly in the context of spectroscopy. It covers the

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Spectrometer

Strictly speaking, a spectrometer is any instrument used to view and analyze a range (or a spectrum) of a given characteristic for a

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Spectrometers - Visual Encyclopedia of Chemical Engineering

Spectrometers use light wavelengths to investigate the chemical composition of a sample. Atomic spectrometers use an analytical

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What is a Spectrometer and How Does it Work?

Forensic Science: In forensic science, spectrometers help analyze evidence such as drugs,

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