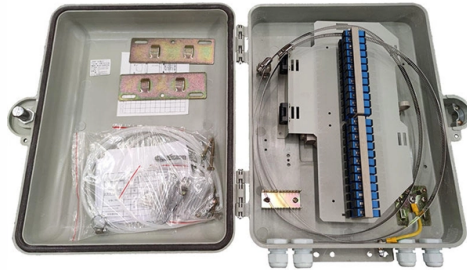


Basic Structure and Price of a Spectrometer



AI Overview

A spectrometer typically consists of a light source, entrance slit, dispersive element (prism or diffraction grating), sample holder, detector, and readout system, with prices ranging from a few thousand to over \$50,000 depending on type and features.

Basic Structure

A spectrometer is designed to measure light properties across specific wavelengths. The main components include:

- **Light Source:** Provides the initial beam of light, which can be a tungsten lamp, deuterium lamp, or laser depending on the wavelength range required .
- **Entrance Slit:** Controls the amount of light entering the spectrometer, affecting both resolution and intensity .
- **Dispersive Element (Monochromator):** A prism or diffraction grating separates light into its constituent wavelengths, allowing precise measurement of specific spectral regions .
- **Sample Holder:** Positions the material under study in the path of the light beam, enabling absorption, transmission, or emission analysis .
- **Detector:** Measures the intensity of light after interaction with the sample and converts it into an electrical signal .
- **Readout/Output System:** Processes the detector signal and displays the results, often as a spectrum graph or numerical data . Optional components may include filters to block higher-order light and mirrors or lenses to route light efficiently withi...

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Spectrometers have a wide range of applications and uses. Broadly speaking, an optical spectrometer consists of an entrance slit, a

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The Structure of a Spectrophotometer

The monochromatic light that leaves the spectrometer is split into two beams before it enters the sample compartment. A

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Spectrometers

Spectrometers are devices for separating spectral components and measuring them. They can use diffraction gratings or prisms,

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With the spectrophotometer, we measure a color (wavelength) using an artificial source instead of the sun, and a detector and a

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Spectrometer Basics

Spectroscopy is a scientific measurement technique that investigates and quantifies the interaction of a light source with matter.

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Spectrometer

A spectrometer is any instrument used to view and analyze a range (or a spectrum) of a given characteristic for a substance (e.g., a

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Spectrometer

Spectrometer is a broad term often used to describe instruments that measure a continuous variable of a phenomenon where the

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While component types and devices vary from brand to brand, the core principle of how a spectrophotometer works stays largely the

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Spectrometer

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