

Detectors for fluorescence spectrophotometry



Article Overview

A fluorescence spectrophotometric detector measures the light emitted by a sample after excitation, providing highly sensitive and selective analysis of molecular interactions and concentrations.

Principle of Operation

A fluorescence spectrophotometric detector, also known as a fluorometer or spectrofluorometer, operates on the principle of fluorescence, a type of photoluminescence. When a molecule absorbs light of a specific wavelength (excitation), its electrons are promoted from the ground state to an excited singlet state. These electrons quickly return to the ground state, emitting light (fluorescence) in the process, typically within nanoseconds. The emitted light is measured to determine molecular properties, concentrations, or interactions.

Components

Key components of a fluorescence spectrophotometric detector include:

- Excitation light source: Often a xenon lamp or laser that provides a specific wavelength to excite the sample.
- Monochromators or filters: Select the desired excitation and emission wavelengths.
- Sample holder (cuvette or microplate): Contains the solution or material being analyzed....

Article Content

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In this Chapter we concentrate on the methods of fluorescence observation. Starting from introducing the definitions and explaining

Fluorescence Detection

Compounds containing functional groups with absorption bands can be detected by an absorbance detector, and only compounds

Fluorescence spectroscopy

Two general types of instruments exist: filter fluorometers that use filters to isolate the incident light and fluorescent light and

What Is a Fluorescence Spectrophotometer & How Does It Work?

Learn what a fluorescence spectrophotometer is and how it works by measuring light emission, not absorbance. Discover its

Fluorescence Spectroscopy (FL)

Looking for high-performing, simple-to-operate instruments that help your lab achieve fast, accurate results? Our latest fluorescence

Fluorescence Spectrophotometry - Principle, Parts, Advantages, Uses

In spectrofluorometer, the emitted fluorescence is measured usually at 90° angle to the incident light. This prevents

NanoDrop Microvolume Spectrophotometers and Fluorometers

Fluorescence detection NanoDrop Ultra FL and NanoDrop Ultra C FL instruments evaluate contaminated DNA/RNA samples using

Fluorescence Spectroscopy Instrumentation, Spectrofluorometers

For the highest levels of performance in fluorescence spectrophotometry and fluorescence spectroscopy instrumentation, look no

10.2: Fluorescence and Phosphorescence Instrumentation

Specific components Sources Wavelength Selectors Transducers Cells Instrument Standardization and Calibration The components

3.3: Instrumentation

Usually the detector is set at 90° to the incident beam and mirrors are placed around the sample cell 180° to the source and 180°

Instrumentation for Fluorescence Spectroscopy

The success of fluorescence experiments requires attention to experimental details and an understanding of the instrumentation.

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Starting from introducing the definitions and explaining fundamentals in fluorescence spectroscopy, the discussion proceeds to

Guide to Fluorescence spectroscopy instrumentation

Discover the essential components and configurations for effective fluorescence spectroscopy, from light sources to detectors and

Principles of fluorescence spectroscopy (3)

The fluorescence intensity is determined by dividing the value measured by the fluorescence detector by the reference light intensity.

Fluorescence Spectrophotometry

Fluorescence spectrophotometry is a class of techniques that assay the state of a biological system by studying its interactions with

Fluorescence Method Development Handbook

Fluorescence spectroscopy is the most sensitive optical detection technique used with high-performance liquid chromatography

What is Fluorescence Spectroscopy?

What is fluorescence spectroscopy and what advantages does this type of spectroscopy offer for analyzing fluorescence from a wide

Fluorescence Method Development Handbook

This handbook demonstrates how to optimize fluorescence detection using the Thermo Scientific™ Dionex™ UltiMate™ 3000

Contact Us

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