FRINDEL OPTICS

Elemental Bias of Spectrometer

Elemental Bias of Spectrometer

A modified bias-method for the determination of spectrometer

The results of quantitative surface analysis by means of X-ray photoelectron spectroscopy show a marked influence of the spectrometer function of the instrument employed. For an instrument

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Uncertainty of the Results of Electron Probe Microanalysis using a

In this paper, we presented a detailed study on the effect of electron beam diameter, spectral overlapping, and element assay sequence on quantitative uncertainties of electron probe

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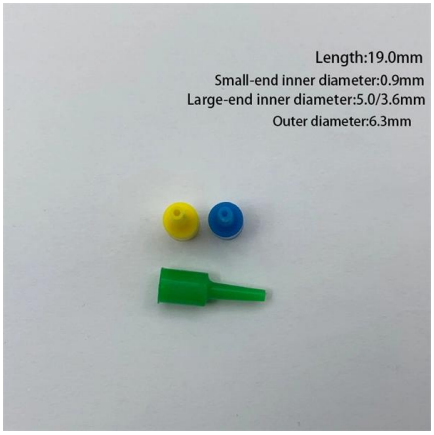

Spectrophotometric Errors

In the working curve at the left we see the departure from linearity above A=1.0. In the graph on the right we see that the "best" range in which to use a Spectronic 20 lies between A=0.1

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Paradigms in isotope dilution mass spectrometry for elemental

Isotope dilution mass spectrometry currently stands out as the method providing results with unchallenged precision and accuracy in elemental speciation. However, recent history of isotope

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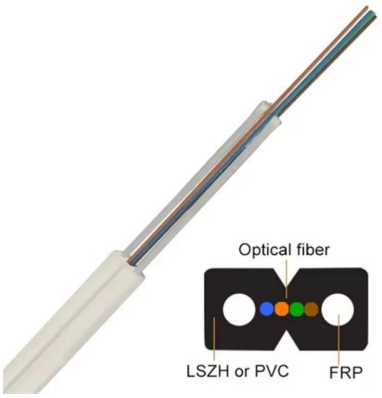

A critical review of isotopic fractionation and interference correction

One could calculate the mass bias correction factor by using two interference-free isotopes of element B (j and k) to determine the isotopic fractionation behavior of the element B

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1: Elemental Analysis

1.6: ICP-MS for Trace Metal Analysis Inductively coupled plasma mass spectroscopy (ICP-MS) is an analytical technique for determining trace multi-elemental and

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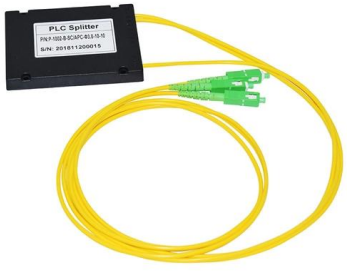

GE The Germanium Spectrometer

Outline Germanium spectrometers are the highest resolution gamma-ray detectors in existence, and they are used extensively for both basic research and applied physics. The energy of gamma or beta

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Calibration and correction of LA-ICP-MS and LA-MC-ICP-MS

1. Introduction In 1984, the first commercial inductively coupled plasma mass spectrometry (ICP-MS) appeared, soon after that, Gray (1985) analyzed the elemental and Pb isotopic

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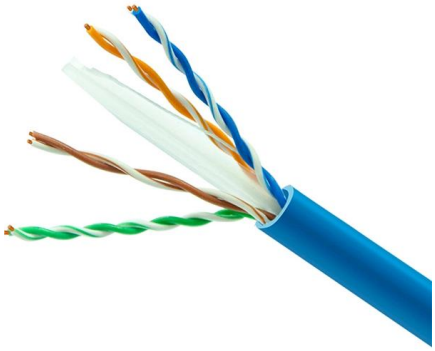

Detection and Correction of Biased Results of Individual Analytes in

We have developed a graphical method based on the net analytical signal concept to detect bias in the predicted results of individual analytes in test samples. When an interference, or

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Interpretation of Noble Metal and Transition Metal XANES

X-ray Absorption Spectroscopy XAS measures the energy dependence of the x-ray absorption coefficient u(E) above the absorption edge of a particular element. u(E) is measured in one of two ways:

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Evaluating Spectral Signals to Identify Spectral Error

Accordingly, spectra of pure water and blank air were measured with the spectrometer used in the above mentioned experiment (6500-A, see below), and

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Elemental quantification using electron energy-loss spectroscopy with

Accurate elemental quantification by electron energy loss spectroscopy at 20 keV. Electron beam damage in electron microscopes is becoming more and more problematic in material

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The Basics of Elemental Analysis with XRF - Q& A

The Basics of Elemental Analysis with XRF - Q& A by Lieven Kempenaers, Tuesday, 7th January 2020 X-ray fluorescence spectroscopy (XRF) is a powerful analytical technique that provides

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Isotope Dilution Mass Spectroscopy

Isotope dilution mass spectrometry (IDMS) is defined as an analytical technique that modifies the natural isotope composition of elements or compounds by adding an enriched isotope or isotopically labeled

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Automatic and Quantitative Measurement of Spectrometer Aberrations

We demonstrate the measurement of geometric aberrations and distortions in EELS within a monochromated scanning transmission electron microscope (STEM). To better understand the

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Energy Dispersive X-Ray Spectrometry

What is Energy Dispersive Spectrometry? Electron beam microanalysis is a powerful analytical technique, capable of performing elemental analysis of microvolumes,

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Assessing Accuracy

However, it is important to differentiate (again) between the random bias (precision) and systematic bias (accuracy). We would question whether any statistical technique can answer the

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Assessing Bias in Experiment Design for Large Scale

Biases detected in this study are caused by experimental protocols, like HPLC washing, sample freeze/thaw cycles, run order, and date. The fact that these are

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X-Ray Photoelectron Spectroscopy (XPS) and Auger Electron Spectroscopy

X-ray photoelectron spectroscopy (XPS), also known as electron spectroscopy for chemical analysis (ESCA), and Auger electron spectroscopy (AES) are widely used materials characterization

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Montreal, August 19, 2008

Elemental Analyser Isotope Ratio Mass Spectrometry (EA-IRMS) was employed as the primary reference method to assign ?-values for pure steroid starting materials due to the low uncertainty

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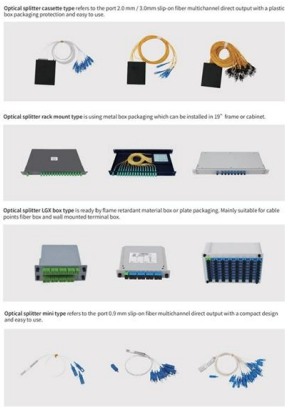

Error Analysis in Atomic Spectroscopy: A Step-by-Step Guide

Discover how to improve the accuracy and reliability of your atomic spectroscopy results by following a step-by-step guide to error analysis and mitigation.

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Analysis of Errors in Spectrophotometers: Causes, Solutions, and

However, even sophisticated double-monochromator spectrophotometers provide a narrow spectral band rather than pure monochromatic light. This band contains a range of wavelengths

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Improvement in Signal Response of In-depth Elemental Profiles in

The amount of the bias current would change the characteristics of the plasma for atomic emission spectrometry. When higher bias current flows, the resulting plasma extended in the whole area of the

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(PDF) Spectroscopy and Spectrophotometry: Principles

These techniques based on the simple principle that the amount of specific radiation i.e. ray or light (photon) absorbed or reflected by the sample

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Sample-Specific Prediction Error Measures in Spectroscopy

In this paper, we discuss the influence of variance and bias on sample-specific prediction errors in multivariate calibration. We compare theoretical formulae with results obtained on experimental data.

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Errors in Spectrophotometry

The bias stems from the improper calibration of spectrophotometer modules and scales, the improper functioning of modules, improper cells, stray light and scattering, as well as deviations in the

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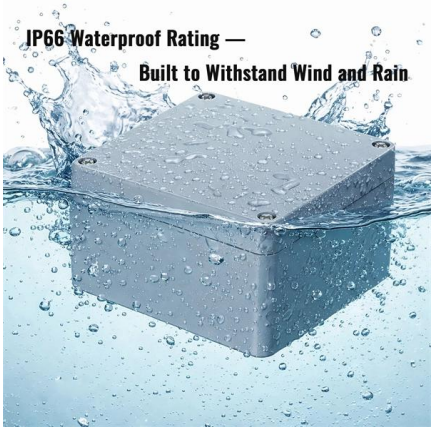

Evaluating Spectral Signals to Identify Spectral Error

Since the precision and accuracy level of a chemometric model is highly influenced by the quality of the raw spectral data, it is very important to evaluate the

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