

Content determination using X-ray fluorescence spectrometry



Overview

Since its commercialization in the 1950s, X-ray fluorescence (XRF) spectrometry has become the dominant elemental technique of choice for determining low parts-per-million (ppm) to percentage concentration levels in solid samples, including metals, alloys, ores, rocks, soils . Since its commercialization in the 1950s, X-ray fluorescence (XRF) spectrometry has become the dominant elemental technique of choice for determining low parts-per-million (ppm) to percentage concentration levels in solid samples, including metals, alloys, ores, rocks, soils . In this context, this research aimed to compare the performance of different predictive models, including a simple linear regression (RS), multiple linear regression (MLR), partial least-squares regression (PLS), and random forest (RF) models for the prediction of Ca and K in agricultural soils. RS. X-ray fluorescence is a non-destructive analytical technique used to determine a material's elemental composition. Major, minor and trace elements can be qualitatively and quantitatively determined in various kinds of samples: metals, alloys, glasses, cements, minerals, rocks, ores, polymers s well as environmental and biological materials.



Article Content

X-ray fluorescence spectrometry for environmental analysis: Basic ...

This review describes the basic principles, instrumentation and advances in the application of X-ray fluorescence instrumentation to the environmental sciences research topics,

X-Ray Fluorescence Spectrometry: Current Status and ...

Abstract This review covers characteristics and potential applications of various versions of the X-ray fluorescence (XRF) spectrometry for analyzing both liquid and solid samples. Particular

Unified method for the determination of chemical composition in ...

The aim of the article is to show that determination of the main chemical composition with Wavelength Dispersive X-ray Fluorescence Spectrometry method does not require the use of

Analysis of Total Soil Nutrient Content with X-ray Fluorescence ...

X-ray fluorescence spectroscopy (XRF) is an analytical technique used to analyze the total content of chemical elements (e.g., Ca, K, Fe, Ti, Si, Al, etc.) present in solid and liquid samples .

Estimation of metal elements content in soil using x-ray fluorescence ...

In this paper, we propose to use XRF as a quantitative tool through more accurate models, thereby saving time and simplifying the heavy metal detection process. Soil heavy metal

Determination of various elements in geochemical exploration

In this study, an improved methodology for limiting the effect of particle size on the outcomes of wavelength dispersive X-ray fluorescence (XRF) spectroscopy geochemical analysis

X-Ray Fluorescence (XRF): Theory, Practice and Applications

Discover how X-ray fluorescence (XRF) works, from its principles to real-world applications in elemental analysis, including EDXRF and WDXRF technologies.

Quantification in X-Ray Fluorescence Spectrometry

is a versatile tool in many analytical problems. Major, minor and trace elements can be qualitatively and quantitatively determined in various kinds of samples: metals, alloys, glasses, cements, minerals,

(PDF) X-ray Fluorescence Spectrometry

A rapid, simple technique combining disk solid-phase extraction and handheld X-ray fluorescence (XRF) spectrometry was developed for the on-site determination of As, Se, and Cr (VI) in...

Solid Sample Preparations and Applications for X-Ray Fluorescence ...

X-ray fluorescence (XRF) spectrometry is routinely employed for the simple and convenient determination of the content of the major and minor elements composing solid and

Indirect determination of beryllium by X-ray fluorescence spectrometry ...

A method for determination of beryllium by X-ray fluorescence spectrometry using a stoichiometric complex with cobalt was developed.

Total reflection X-ray fluorescence spectrometric determination of ...

A total reflection X-ray fluorescence (TXRF) method in conjugation with dispersive liquid-liquid micro-extraction (DLLME) was developed for the determinati

Determination of Chlorine in Reference Material of Marine Sediments

This study presents a method for the determination of chlorine content in reference materials (RM) of pelagic sediments (clays and silts) from the SDO and OOPE series using X-ray

Full article: X-ray fluorescence (XRF) in the investigation of the ...

Abstract X-ray fluorescence (XRF) spectrometry is a well-known, well-established and widely applied technique in the determination of many major elemental compositions of earth materials. XRF

Quantitative analysis of Cu, Zn, and Pb elements in ores by X-ray ...

Precise determination of heavy metal element concentrations in ores is vital for sustainable resource utilization, environmental protection, and industrial applications. X-ray

Evaluation of different quantification modes for a simple and reliable ...

In view of the large number of soil analyses in environmental studies dealing with metal contamination, the use of simple, fast, sustainable and cost-effec

Energy dispersive X-ray fluorescence quantitative analysis of ...

In this work, we address the collection and preparation of biological samples for Energy Dispersive X-Ray Fluorescence (EDXRF) analysis, and present a model for the quantification of

Determination of trace and minor elements in Slovenian honey by total ...

Total reflection X-ray fluorescence spectroscopy (TXRF) was used to determine the content of a number of elements present in honey. TXRF has several advantages: it is a rapid, non

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