

NEX CG II

Enhanced Elemental Analysis by X-ray Fluorescence

Next-generation Cartesian Geometry EDXRF Analyzer



Rigaku

Applied Rigaku Technologies



Enhanced Elemental Analysis for Industrial Quality Control to Advanced Research Applications



Energy dispersive X-ray fluorescence (EDXRF) is a routinely used analytical technique for the qualitative and quantitative determination of major and minor atomic elements in a wide variety of sample types. This measurement technique offers an unparalleled level of versatility derived from its ability to provide rapid, non-destructive, multi-element analyses — from low parts-per-million (ppm) levels to high weight percent (wt%) concentrations.

As a multi-element, multi-purpose EDXRF spectrometer, the powerful second-generation NEX CG II delivers rapid qualitative and quantitative elemental analyses and addresses the needs for many applications. Rigaku NEX CG II is ideal for measuring ultra-low and trace element concentrations up to percent levels. It provides non-destructive analysis of sodium (Na) to uranium (U) in almost any matrix — from oils and liquids to solids, metals, polymers, powders, pastes, coatings, and thin films. Especially well-suited for semi-quantitative determination of elemental content in complete unknowns, NEX CG II serves many industries, from research and development to industrial and in-plant quality assurance.

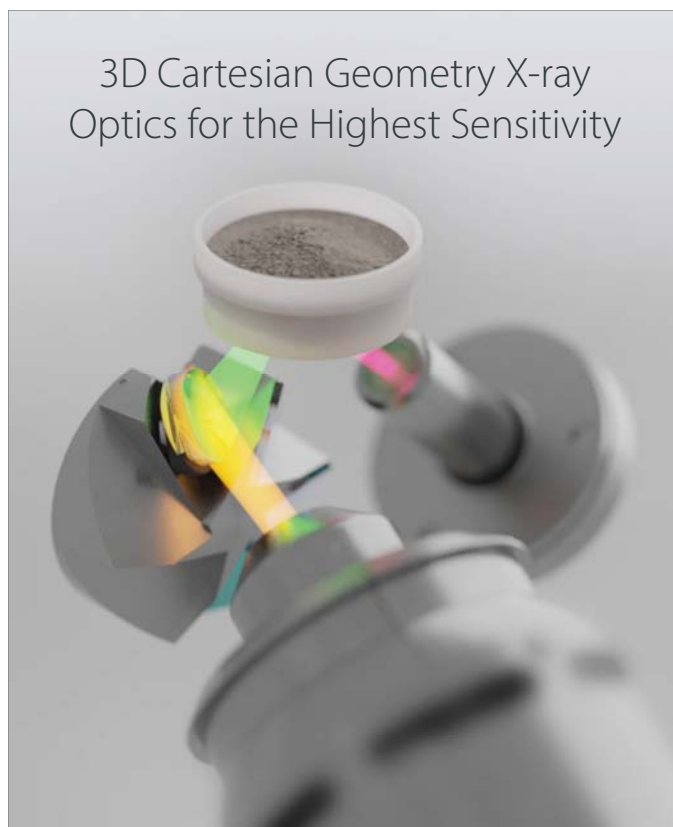
Unique Close-coupled Cartesian Geometry Optical Kernel for a New Level of Analytical Sensitivity

NEX CG II builds on NEX CG's legacy of using Cartesian Geometry and secondary targets for trace level sensitivity. NEX CG II features a unique three-dimensional (3D) close-coupled Cartesian Geometry optical kernel that dramatically increases the peak-to-background ratio. This results in a spectrometer capable of trace element analysis — even in challenging sample types.

Unlike conventional EDXRF spectrometers, NEX CG II is an indirect excitation system using secondary targets rather than tube filters. Monochromatic and polarized excitation from secondary targets vastly improves detection limits for elements in highly scattering matrices like water, hydrocarbons, and biological materials. Secondary target excitation in full 90° Cartesian Geometry eliminates background noise. As a result, NEX CG II brings a new level of analytical sensitivity to XRF technology.

NEX CG II achieves this superior analytical power with a 50 kV 50 W end-window palladium-anode X-ray tube, five secondary targets covering the complete elemental range sodium through uranium (Na – U), and a large-area high-throughput silicon drift detector (SDD).

Users can achieve the lowest limits of detection and easily manage complex applications like testing agricultural soils, and plant materials, analyzing finished animal feeds, measuring waste oils, environmental monitoring, and many others.



When the X-ray tube, secondary target, sample, and detector are aligned in 90° Cartesian Geometry, measurements have no background.

Key Advantages & Features

- Non-destructive elemental analysis for sodium (Na) to uranium (U)
- Rapid elemental analyses of solids, liquids, powders, coatings, and thin films
- Indirect excitation for exceptionally low detection limits
- High-power 50 kV, 50 W X-ray tube
- Large-area high-throughput silicon drift detector (SDD)
- Analysis in air, helium, or vacuum
- Powerful and easy to use QuantEZ® software with multilingual user interface
- Advanced RPF-SQX Fundamental Parameters software featuring Scattering FP
- Rigaku Profile Fitting (RPF) advanced algorithm for peak deconvolution
- Various automatic sample changers accommodating up to 52 mm samples
- Low cost of ownership backed by a 2-year warranty



✓ Analyze Sodium (Na) to Uranium (U)

Exceptional versatility. Measure most elements from parts-per-million (ppm) levels to wt% in solids, liquids, powders, coatings, and thin films.

✓ Indirect Excitation for Exceptionally Low Detection Limits

Unique three-dimensional (3D) close-coupled Cartesian Geometry (CG) optical kernel employs monochromatic and polarized excitation from secondary targets to remove background, resulting in exceptionally low detection limits.

✓ Large-area High-throughput SDD

The silicon drift detector (SDD) delivers superior peak shape and resolution while supplying high-count rates for the lowest possible detection limits.

✓ High-power 50 kV, 50 W X-ray Tube

The close-coupled end-window palladium-anode X-ray tube is shuttered for maximum flux stability.

✓ Automated Sample Handling

Obtain high-throughput measurements with various autosampler options, accommodating 32, 40, and 52 mm samples.

✓ Analyze Non-uniform Samples

The optional 10-position 40 mm automatic sample changer with spinner achieves superior results for inhomogeneous samples.

✓ Measure Large Samples

The large sample chamber accommodates samples up to 32.5 cm in diameter and 7.5 cm tall for direct analysis.

✓ PPB-level Aqueous Analysis

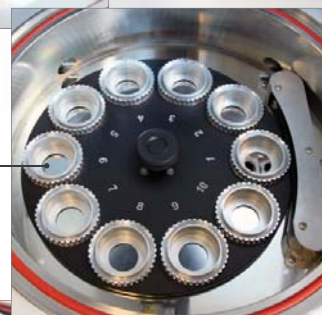
Quantify trace elements in aqueous samples down to parts-per-billion (ppb) concentration levels with Ultra Carry® sample carrier.

✓ Detector Protection

The aperture window and the 15-position 32 mm and 10-position 40 mm sample trays are specially designed to protect the detector from spills and leaks.

✓ Analysis Under Vacuum, Helium, or Air

Control atmospheric parameters with measurements made in air, helium for enhanced light element sensitivity, or under vacuum, delivering superior light element sensitivity for non-volatile samples. The optional vacuum system comes with a high-capacity pump and vacuum sensor, and the helium purging unit is specially designed to reduce helium consumption.



Multi-element, Multi-purpose EDXRF Analyzer

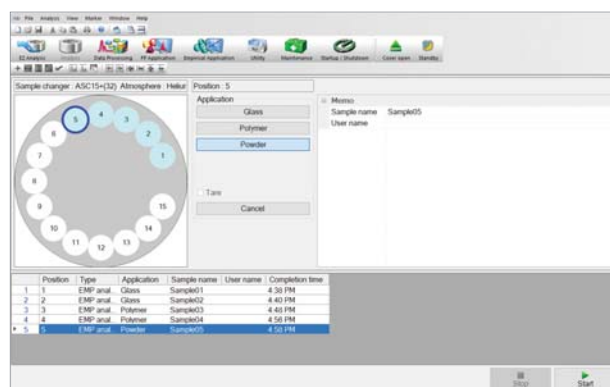
✓ Advanced Fundamental Parameters Software

RPF-SQX, featuring Rigaku Profile Fitting technology and Scattering FP, allows semi-quantitative analysis of almost all sample types without standards — and rigorous quantitative analysis with standards.



✓ QuantEZ® for Simple Routine Operation

NEX CG II is easy to use with QuantEZ, a powerful PC-based software providing intuitive instrument control with simple menu navigation and a customizable EZ Analysis interface. Users can maximize their time and productivity with simplified routine operations and create their own methods using a simple flow bar wizard. Users select the sample position on the computer screen and enter a sample name. Next, select the application method (i.e., calibration) and click the "Start" button to initiate the analysis.



Legacy of Innovation

The design and development of NEX CG II are backed by years of Rigaku innovation and EDXRF experience. The NEX CG is historically significant in that it was the first Rigaku EDXRF spectrometer featuring full 90° Cartesian Geometry and indirect excitation offered by Applied Rigaku Technologies. When introduced to the market, the versatility, flexibility, and sensitivity gave and continues to provide many users superior analytical power to solve their analytical needs. With a commitment to build better products driven by customer feedback, NEX CG II brings a new level of analytical sensitivity and usability to XRF technology.

NEX CG II is easy to use for non-technical operators yet powerful enough for expert use in commercial labs and R&D facilities. The new superior analytical power of NEX CG II pushes the boundaries of EDXRF with its unique and improved close-coupled Cartesian Geometry (CG) optical kernel, smaller footprint, and various new hardware upgrades. With the addition of a high-power X-ray tube, a high-performance large-area silicon drift detector, and Rigaku's advanced RPF-SQX Fundamental Parameters software, NEX CG II delivers the most sensitive EDXRF measurements in the industry.

First-generation NEX CG



Second-generation NEX CG II

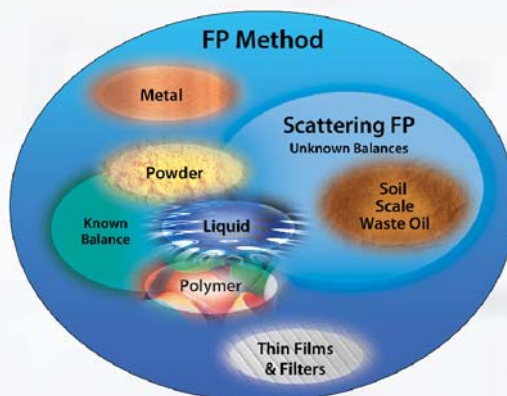


Advanced Fundamental Parameters Software

The capabilities and features of Rigaku software are the results of decades of XRF software development at Rigaku. Rigaku software is developed to be both extraordinarily powerful and extremely easy to use.

Advanced qualitative and quantitative analysis is powered by Rigaku's RPF-SQX Fundamental Parameters (FP) software, featuring Rigaku Profile Fitting (RPF) technology and Scattering FP. This robust integrated software allows semi-quantitative analysis of almost all sample types without standards — and rigorous quantitative analysis with standards. Rigaku's Scattering FP method automatically estimates the concentration of unmeasurable low atomic number elements (hydrogen to fluorine) and provides appropriate corrections.

Calibration standards can be expensive and difficult to obtain for many applications. With RPF-SQX, the number of required standards is greatly reduced, significantly lowering the cost of ownership and reducing workload requirements for running routine analyses.



Specifications

General

Indirect excitation energy dispersive X-ray fluorescence (EDXRF)
Analytical range Na to U
PPM to % levels

Excitation

X-ray tube, end-window type with Pd anode
50 W max power
50 kV max voltage
Five standard polarization and secondary targets for optimum excitation

Detection

Large-area high-throughput silicon drift detector (SDD)
Peltier electronic cooling
Digital pulse processor
Automated or user configurable shaping times for optimum analytical performance

Sample chamber

Large 32.5 cm diameter x 7.5 cm deep sample chamber allows for various sample sizes

Environmental conditions

Ambient temperature 18 – 28°C (65 – 82°F)
Relative humidity ≤75%
Vibration undetectable by human
Free from corrosive gas, dust and particles
Pollution degree 2

Software

QuantEZ® software for control of spectrometer functions and data analysis
Simple flow bar wizard to create your own methods
Empirical calibration with overlap and matrix compensation
Data export to USB or Ethernet
Multi-language (English, Chinese, French, Japanese, Portuguese, Italian, Spanish, German, and Russian)

Warranty



Our Guarantee

Applied Rigaku Technologies offers a 2-year warranty on all EDXRF spectrometers it produces. This industry-leading manufacturer's warranty shows our commitment to quality and displays our dedication to maximizing uptime for our customer's processes and applications.

Options

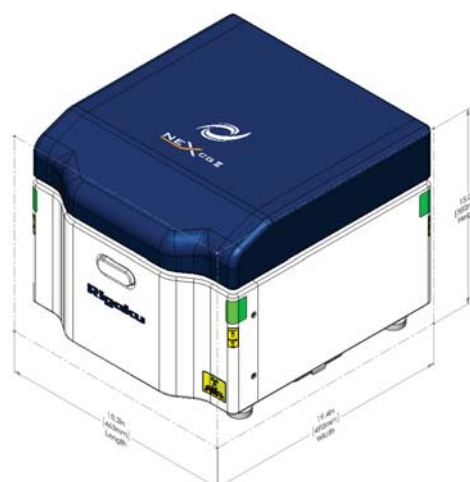
15-position automatic sample changer (32 mm samples)	
10-position automatic sample changer (40 mm samples)	
10-position automatic sample changer with sample spinner (40 mm samples)	
9-position automatic sample changer (52 mm samples)	
Helium purge	
Vacuum system	
RPF-SQX Fundamental Parameters software	Qualitative and quantitative analysis Matching Library for augmentation of FP Automatic spectral overlap deconvolution
Material ID software	
IQ/OQ instrument validation	
SureDI support for 21 CFR Part 11 compliance	
LIMS	
Ultra Carry® for trace analysis of aqueous solutions	
Uninterruptible power supply (UPS)	
Computer	External PC, desktop or notebook Microsoft® Windows® operating system Keyboard, mouse, and LCD monitor (desktop)

Spectrometer data

Single phase AC	100 – 240 V, 3.8 – 1.6 A (50/60 Hz)
Overvoltage category II	
Two fuses	250 V, 6.3 A
Dimensions	46.3 (W) x 49.2 (D) x 38.2 (H) cm (18.2 x 19.4 x 15.0 in)
Weight	Approximately 65 kg (143 lbs)

Backed by Rigaku

Since its inception in 1951, Rigaku has been at the forefront of analytical and industrial instrumentation technology. With hundreds of major innovations to their credit, the Rigaku group of companies are world leaders in the field of analytical X-ray instrumentation. Rigaku employs over 1,500 people worldwide in operations based in Japan, the U.S., Europe, South America, and China.



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