

# Genius IF

Bench Top EDXRF Spectrometer  
with Secondary Target Excitation Mode



Light Elements Starting  
from Carbon

Detector Resolution  
Down to 123eV

Detection Levels from  
ppb to 100%

Fast and  
Non-Destructive  
Analytical Method

Direct and Secondary  
Targets Modes

- Non-destructive elemental analysis, C(6)-Fm(100), starting from Sub- PPM to 100% concentrations
- Unique patented geometry combines eight secondary targets and eight customizable tube filters for fast and accurate determination of trace and minor elements
- Silicon Drift Detector (SDD) enables extremely high count rate applications with excellent energy resolution, down to 125eV and optional light elements optimized detector
- Sample tray with 8/16 positions
- Strong analytical software package

# Genius IF Spectrometer

Xenometrix's Genius IF (Secondary Targets) EDXRF spectrometer offers a cost-effective solution in today's market of elemental analysis.

The analyzer provides a non-destructive qualitative and quantitative determination from Carbon(6) to Fermium(100), providing detection limits from sub-ppm to high weight percent concentrations.

The Genius IF has powerful components including:

- A fully integrated computer system
- A high resolution Silicon Drift Detector
- A powerful X-Ray tube with variable spot sizes, designed to accommodate samples of various sizes
- Eight secondary targets and eight customizable tube filters for fast and accurate determination of trace and minor elements

Genius IF can also operate in the classical direct excitation mode.

## Secondary Target

The Genius IF has a unique patented geometry combining eight secondary targets, with eight customizable tube filters used in direct excitation mode, to allow optimal excitation of all elements that can be detected in EDXRF.

The WAG (Wide Angle Geometry) patented secondary target technique provides the best results for major, minor and trace element analysis.

The X-ray tube excites the characteristic K lines of a secondary target (a pure metal) which are used to excite the sample "monochromatically".

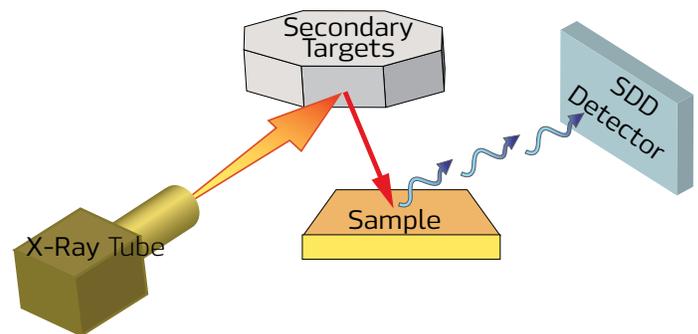
By using secondary targets, the detection limits for certain elements can be lowered even further.

These lower detection limits make the Genius IF suitable for a larger range of applications that had previously not been accessible to conventional EDXRF instruments, and turn this instrument into the most versatile elemental analyzer available.

The compact spectrometer fits comfortably on a traditional laboratory bench, or in its optional robust design - to a mobile laboratory. It also meets MIL 810E specifications for shock testing.

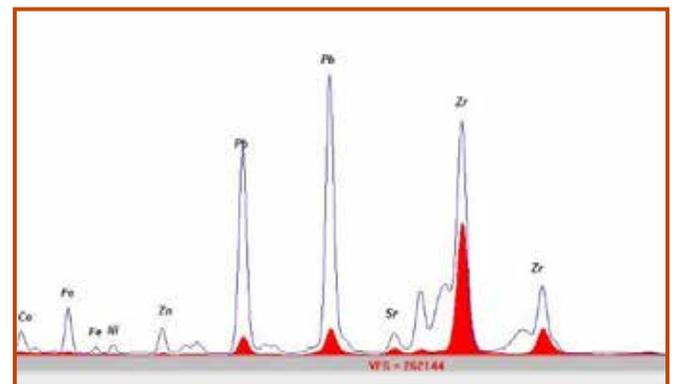
**Silicon Drift Detector(SDD):** the Silicon Drift Detector enables high count rates, improved resolution, down to 125eV and fast response time, in order to minimize operational down time.

**SDD LE:** Ultra-thin detector window provides superior



### Secondary target versus direct excitation mode (example):

The figure shows the much improved peak to background ratio, when using secondary target excitation (see blue contour spectrum) versus using direct excitation mode (see main red spectrum).



# System Specifications

System Specifications	SDD Version	SDD LE
Measurement Capability		
Detectable Range	F(9) - Fm(100)	C(6) - Fm(100)
Detectable Concentration	sub ppm -100%	
X-Ray Generation		
X-Ray Tube	Rh/Ag/Mo/W/Pd anode	
X-Ray Source	50kV, 50W	
Excitation Type	Direct excitation and secondary target excitation	
Stability	Precision 0.1% at ambient temperature	
X-Ray Detection		
Detector	SDD version	
Resolution (FWHM)	125eV ± 5eV	
Window Type	Be	Light element optimized thin window
General Features		
Autosampler	8/16 positions	
Work Environment	Air/ Vacuum/ Helium	
Tube Filters	Eight software selectable: Si, Ti, Fe, Gd, Ge, Zr, Mo & Sn	
Power Supply	110-230VAC 50/60Hz	
Pulse Processing	High speed digital multi-channel analyzer (DPP)	
System Dimensions (L x W x H, cm)	Unpacked: 55 x 55 x 32, Packed: 80 x 80 x 65	
System Weight	50kg (net), 90kg (gross)	
Chamber Dimensions	22 x 22cm, H=5cm	
Computer	Integrated PC	
Software		
Operating Software	nEXT™ analysis package, running under Microsoft Windows™ OS including basic fundamental parameters software	
Control	Automatic control of excitation, detection, sample handling and data processing	
Spectrum Processing	Automatic escape peak and background removal. Automatic peak deconvolution. Graphical statistics	
Quantitative Analysis Algorithms	Multi-element regression with inter-element corrections (six models available). Gross, net, fit and digital filter intensity methods	
Reporting	User-customizable data print out	
Options at Additional Cost	16 pos. carousel autosampler. Sample spinner. Professional fundamental parameters. Robust casing, LE detector	

# Key applications

- **Mining & Minerals:** cement, limestone, sand, clays, bauxite, phosphate rock, gypsum and others
- **Metallurgical:** research and quality control of the various metal industry processes of stainless steels, cast irons, metal sorting and others
- **Environmental:** wastewater, RoHS compliance, air pollution, soils & grounds, emission control and others
- **Petrochemical:** Sulfur and ULS in fuels, lube oils monitoring, additives, wear metals and others
- **Academic Research:** academic studies of material sciences, chemical engineering, electronics and others
- **Polymers:** plastics raw material analysis, PVC, additives, traces and others
- **Coating Thickness & Thin Films:** analysis of multilayer coatings, steel coating, impurities and others
- **Food, Cosmetics and Pharmaceutical:** additives control, raw materials, hazardous metals, packaging quality and others



## Xenemetrix

**Worldwide Distributions:**

North America, Latin America, Europe, Asia, Australia, Africa & Middle East

Xenemetrix is a leading designer, manufacturer and marketer of Energy-Dispersive X-Ray Fluorescence (EDXRF) systems. With more than 30 years experience, Xenemetrix continues to develop highly innovative technologies and solutions suitable for

today's ever-growing analytical challenges. Xenemetrix combines the latest technological developments with innovative engineering, to provide cost-effective solutions to a wide range of industries and applications.

