# Xenemetrix

**The Power to Change** *Energy Into Information*

# Genius IF

## SDD / LE
Bench Top EDXRF Spectrometer with Secondary Target Excitation Mode



- **Light Elements Optimized**
- **Silicon Drift Detector**
- **Quantitative and Qualitative Elemental Analysis**
- **Fast and Non-Destructive Analytical Method**
- **Analysis of Minor and Trace Elements**

- 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

Xenemetrix'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.

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 performance for low Z elements analysis.

# Key applications

The range of applications includes the analysis of:

- Petrochemicals
- Polymers
- Metallurgical samples
- Alloys
- Environmental
- Oil, Fuels, Diesel & Liquids
- Mining & Geological (Including rare earth elements)
- Forensics
- Authentication & Precious Metals
- Pharmaceutical & Biomedical

# Genius IF- EDXRF Spectrometer

| 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 | Be | Light element optimized thin window |
| **General Features** | | |
| Autosampler | 8/16 positions | |
| Work Environment | Air/ Vacuum/ Helium | |
| Tube Filters | 8 software selectable (customized) | |
| Power Supply | 115 VAC/60 Hz or 230 VAC/50 Hz | |
| 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 + basic fundamental parameters | |
| 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 | |

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# Secondary Targets

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 ED-XRF instruments, and turn this instrument into the most versatile elemental analyzer available.

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

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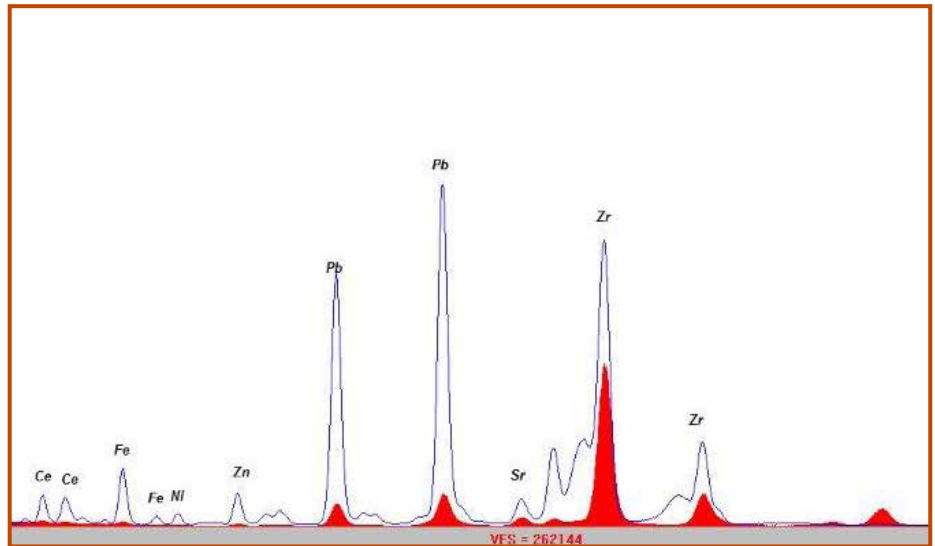


**The Ultimate in Field Analytical Performance**

**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 state-of-the-art technologies and innovative solutions for today's analytical challenges. Xenemetrix combines the latest technological developments with innovative engineering to provide cost effective solutions for a wide range of industries and applications.