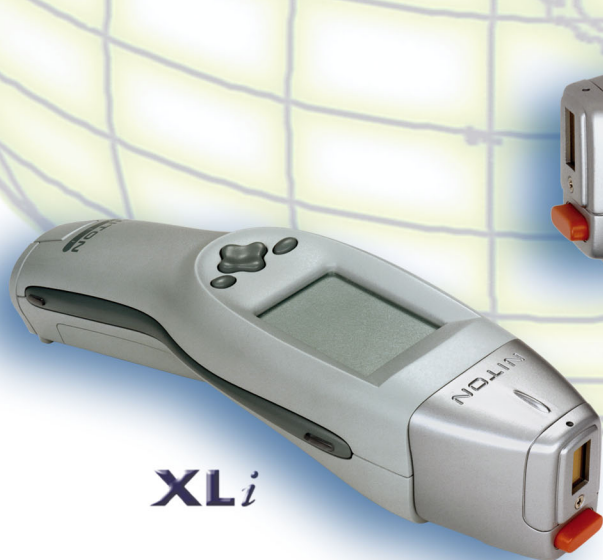


ENVIRONMENTAL ANALYSIS FOR THE NEW MILLENIUM

Charting a New Course to the Future



XLi



XLt

NITON

THE NEW STANDARD IN PORTABLE ALLOY ANALYSIS

ENVIRONMENTAL ANALYSIS FOR THE

In the early 1990's, NITON® Corporation revolutionized the environmental and metal analysis industries with the introduction of the first hand-held x-ray fluorescence (XRF) analyzer that had the performance of a laboratory unit combined with unmatched portability and ease of use. **NITON**, the worldwide leader in portable X-ray Fluorescence (XRF) analysis, has yet again transformed the environmental site characterization, soil analysis, and thin film analysis marketplaces with a new generation of handheld XRF instrumentation – the **XLi 700 Series XRF Analyzer**, available with a full suite of isotope source options including the **Infiniton™** source, and the **XLt 700 Series XRF Analyzer** with x-ray tube excitation.



XLi

The **XLi 700** analyzer incorporates state of the art electronics and advanced, digital signal processing technology for rapid testing and enhanced precision and accuracy. The products of a decade of intensive research and development in XRF technology for environmental testing, NITON's XLi 700 analyzers are the easiest to operate, lightest in weight, most ergonomic, and the most advanced isotope-based environmental XRF instruments ever developed.

NITON has also paved the way for an XRF analyzer equipped with a single isotope source by developing a patent-pending technique for specially packaging and processing the spectrum produced by a ^{241}Am isotope source. The XLi 700 with Infiniton allows efficient excitation of most elements conventionally associated with the ^{109}Cd source as well as those for which ^{241}Am is normally used – a source that never slows down and never requires replacement. In other words, the XLi 712 with the Infiniton source is virtually maintenance free.

The **XLt 700** analyzer provides the user with the speed and efficiency of an X ray tube excitation, while greatly reducing the regulatory demands encountered with the isotope based unit. The XLt can be easily shipped from state to state and between most countries with minimal paperwork and expense.



XLt

Key XLi and XLt 700 features include:

- Patented high-speed electronics for superior performance
- Integrated touch-screen display with advanced and intuitive user interface
- A full suite of excitation options, including:
 - Miniaturized x-ray tube for high performance and reduced regulatory requirements
 - Traditional isotopes or Infiniton configuration optimize performance for your application
- Quick-swap lithium-ion batteries to allow continued use without downtime
- Integrated barcode reader for fast, easy data entry
- Remote operation + custom report generator capability from a Windows™-based PC
- Attractive, ergonomic form factor
- High-strength, injection molded and environmentally sealed housing
- Benchtop docking station to facilitate fixed-site or trailer use
- New features and software upgrades via internet
- Internet-based diagnostics and troubleshooting

THE NEW MILLENIUM

Analytical Performance

Both the XLi and XLt offer analytical performance that is unsurpassed in the industry, providing improved precision in less time compared with NITON's earlier systems. Various excitation options, including the Infiniton source and the x-ray tube, are available depending on your particular analytical requirements. Please see our Performance Parameter Sheets or contact NITON or your local NITON Representative for information concerning excitation options and their particular analytical capability, long-term cost of ownership and regulatory requirements. The graph below demonstrates the improvement in instrument sensitivity, in terms of limit of detection (LOD), in comparison to our earlier system, and the superior performance of X-ray tube excitation over that of an isotope.

Modes of Operation

Bulk Sample Mode

Bulk sample mode provides rapid chemical composition analysis of soil, sediment and other thick, homogeneous samples. The pre-set factory calibration allows for simultaneous analysis of up to 25 elements in any bulk material, with no requirement for on-site calibrations or standards. To account for any matrix variation that exist from sample to sample, sophisticated software automatically compensates for matrix characteristics, allowing the operator to simply "point and shoot" any bulk sample without unnecessary data entry or additional calibrations. With typical testing times of only 60 seconds for most samples, either the XLi or XLt 700 series analyzer proves to be the ideal on-site companion!

Thin Sample Mode

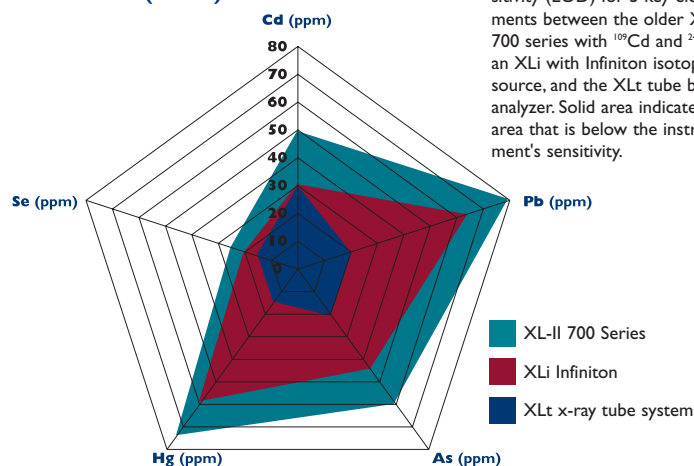
Thin sample mode provides rapid analysis of sample types including coatings, dust wipes for lead inspection, risk assessment and OSHA compliance, and various other filter media. This easy-to-use mode can adapt to virtually any filter media applications including the following:

- Pb in dust wipe as detailed by the US EPA-ETV Verification Program, and Industrial Hygiene applications
- TSP, PM₁₀, and PM_{2.5} for airborne metal particulate monitoring
- ion-exchange filter media for suspended and dissolved metals in liquids
- 25mm and 37mm diameter cellulose-ester filter used for OSHA compliance and Industrial Hygiene.

Results are typically obtained in 60 seconds in units of μg or $\mu\text{g}/\text{m}^2$.



Instrument LOD Comparison
SRM Matrix (60 sec)



Whatever the Application, **NITON** is the Solution

Bulk Sample Analysis

Whether testing is performed *in situ* or *ex situ*, the XLi and XLt never require site-specific calibrations. NITON's specialized software corrects automatically for variations in soil matrix and density making it a rapid and precise tool for both on-site and in-lab testing.

In situ testing allows the XLi or XLt to be placed directly on the ground or on bagged samples, allowing for a large number of data points to be collected in a short time. It is a fast and effective way of delineating contamination patterns. NITON's XLi and XLt 700 Series analyzers are in full compliance with the US EPA Method 6200 (Field Portable XRF Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment), and are the standard instruments for:

- Site Characterization
- On-Site Clearance Screening
- Soil Stabilization Control
- Remediation Quality Control

Both the XLi and XLt 700 Series analyzers are also supplied with a soil sampling kit for *ex situ* analysis, complete with soil grinding apparatus, sieve set, and x-ray sample cups. *Ex situ* testing of properly prepared samples with the XLi and XLt provides rapid laboratory-grade data quality without the wait or the costs associated with using an outside lab. Since XRF analysis is non-destructive, analyzed samples may be sent later to an accredited laboratory for result confirmation.

Thin Sample Analysis

NITON XLi 700 and XLt 700 Series Multi-Element Analyzers measure the elemental content of a variety of thin-sample media, including filters and dust wipes. These analyzers include calibrations and analysis software for on-site testing in which dust wipes and filters can be analyzed directly on their sample holders in minutes. Results are reported in μg of loading, and, using the volumetric flow-rate and air sampling time, the results can be converted to $\mu\text{g}/\text{m}^3$ concentrations. The XLi and XLt 700 Series are optimum for clearance testing of metals for negative exposure and residential risk assessment. NITON's portable XRF analyzers have been proven in US EPA-ETV studies for Lead in dust wipe testing and are also listed in NIOSH Method 7702 for airborne lead monitoring.

The 700 Series Analyzers are used for on-site screening of worker exposure monitoring filters for industrial hygiene and safety testing. Filter cassettes may be tested immediately following collection, or at mid-points throughout the sampling process, to rapidly determine if the working environment is safe, or if workers are being appropriately protected.

Environmental and industrial filters may also be checked during sampling, offering 'close-to-real-time' analysis, and the ability to immediately correct possibly erroneous procedures and environment protection. NITON analyzers offer unprecedented speed-to-results to ensure the absolute safety of workers and the environment.

Other Applications using NITON 700 Series Analyzers

Lead-Based Paint Screening

XLi-700 Series paint-testing modes are ideal for lead based paint screening applications.

Features and performance include the following:

- Rapid, 95%-confident Positive/Negative determinations for lead-in-paint action levels from 0.5-2.2 mg/cm². Results in as little as one second.
- No fixed reading times, no substrate corrections, no inconclusive ranges and no inconclusive results.

Coatings

- Coatings, paints and other thin samples for environmental, industrial, and/or quality control.
- Metal coatings and plating for industrial applications including coating thickness for Nickel, chromium, zinc, and other metals.

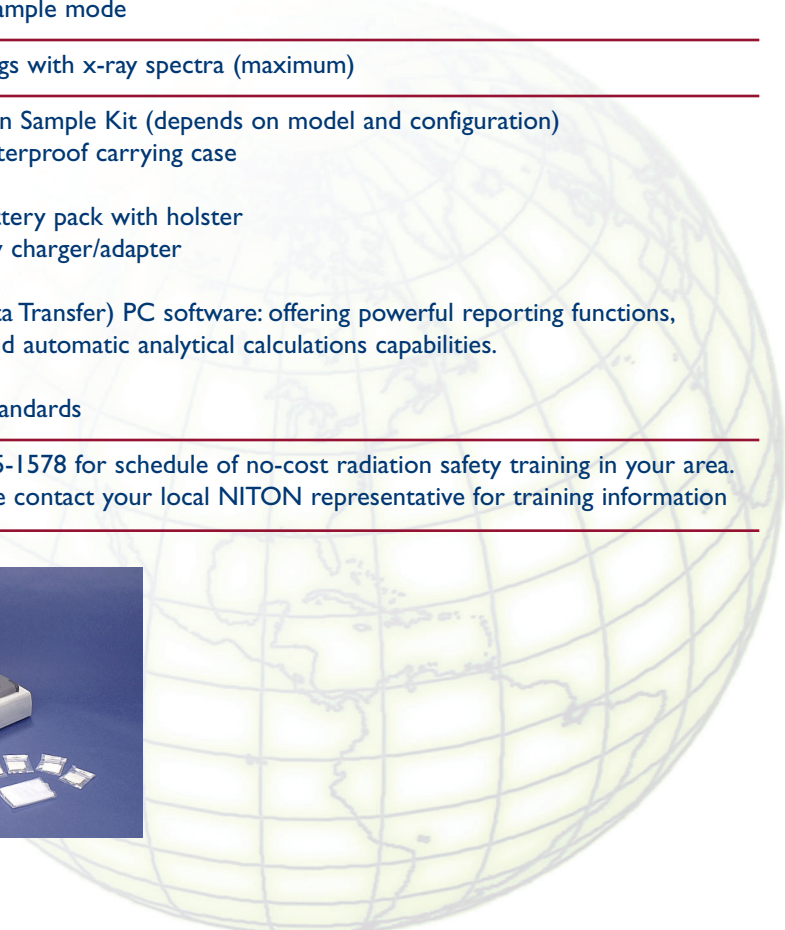
Quality Control

- Wood Preservatives
- Additives in Plastics
- Construction and Demolition(C&D)
Recycled Materials Inspection
- Impurities in Minerals or Catalysts



Specifications

| | |
|-----------------------------|---|
| Weight | XLi 1.7 lbs (0.8 kg) XLt 3.0 lbs (1.4 kg) |
| Dimensions | XLi 11.5 x 3.5 x 3.0 inches (292 x 89 x 76 mm) XLt 9.75 x 10.5 x 3.75 inches (248 x 273 x 95 mm) |
| Excitation Source | XLi ²⁴¹ Am Maximum 30 mCi (1,110 MBq)- Infiniton One or more of the following sealed sources: ⁵⁵ Fe, ¹⁰⁹ Cd, ²⁴¹ Am XLt Low powered (1.0W) X-ray tube with Ag anode target |
| X-ray Detector | High-performance Si-PIN detector, Peltier cooled. |
| System Electronics | Hitachi SH-4 CPU ASICS high-speed DSP 4096 channel MCA |
| Batteries | (2) Rechargeable Lithium-ion battery packs with Quick-swap capability. 6–12 hour depending on duty cycle, 2 hour recharge cycle. |
| Display | Backlit VGA touch screen LCD |
| Analysis Range | Up to 25 Standard elements in the range Ti(22) to U(92) Some nonstandard in-range elements available at additional cost. |
| Testing Modes | Bulk Sample Mode Thin Sample Mode, including Dust Wipe mode, 37mm Filter mode, User-Defined Thin Sample mode |
| Data Storage | Internal: 3000 readings with x-ray spectra (maximum) |
| Standard Accessories | Soil Sampling Kit/Thin Sample Kit (depends on model and configuration) Locking, shielded waterproof carrying case Shielded belt holster Spare lithium-ion battery pack with holster 110/220 VAC battery charger/adaptor PC interface cable NDT© (NITON Data Transfer) PC software: offering powerful reporting functions, remote operation and automatic analytical calculations capabilities. Safety Lanyard Check/verification standards |
| Training | U.S. – Call 1-800-875-1578 for schedule of no-cost radiation safety training in your area. Outside U.S. – Please contact your local NITON representative for training information |





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NITON was founded in 1987 by Professor of Physics, Dr. Lee Grodzins, to develop and market products using innovative x-ray and gamma-ray technologies. The company's first two products were patented radon-gas detection systems. Later, after two years of intensive development assisted by a series of federal research grants, the company introduced the first ever one-piece XRF analyzer, the NITON XL-309 Lead Paint Analyzer, in January, 1994.

NITON built its initial reputation for quality, value and innovative design with the XL-309 lead analyzer, and continued this tradition with the introduction of its first hand-held multi-element environmental analyzer, the XL-700 in 1995.

In just a few years since that introduction, NITON LLC has completely transformed the world of XRF on-site inorganic analysis. NITON has thousands of XRF analyzers installed in countries worldwide. No other XRF instrument company has ever sold analyzers at this pace! Many are in use by businesses who build their remediation and characterization strategies around these rugged and reliable instruments in order to ensure the health and safety of children and adults.

NITON continues to invest money into the research and development of advanced and higher performing XRF analyzers. The new XLi 700 and XLt 700 Series environmental analyzers are the latest examples of that commitment to R&D excellence. To quote NITON President and CEO, Hal Grodzins: "This is just the beginning..."

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