



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at ***wvOASIS.gov***. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at ***WVPurchasing.gov*** with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header #7

[List View](#)[General Information](#) [Contact](#) [Default Values](#) [Document](#) [Document Information](#) [Clarification Request](#)

Procurement Folder: 1004250

Procurement Type: Central Purchase Order

Vendor ID: 000000188051

Legal Name: THERMO ELECTRON NORTH AM LLC

Alias(USA)

Total Bid: \$118,712.00

Response Date: 09/27/2025

Response Time: 11:57

Responded By User ID: Therme1

First Name: Sholep

Last Name: Ortega

Email: CMJAmortalsbids@thermoil

Phone: 0722270879

SO Doc Code: CRFO

SO Dept: 0003

SO Doc ID: DOT2580006642

Published Date: 3/24/25

Close Date: 3/27/25

Close Time: 13:30

Status: Closed

Solicitation Description: Worklight SuperVie X-Ray Fluorescence (XRF) Machine

Total of Header Attachments: 7

Total of All Attachments: 7



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder: 1604258
Solicitation Description: Wavelength dispersive X-Ray Fluorescence (XRF) Machine
Proc Type: Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2025-03-27 13:30	SR 0803 ESR03272500000005754	1

VENDOR
000000186851
THERMO ELECTRON NORTH AM LLC

Solicitation Number: CRFQ 0803 DOT2500000042
Total Bid: 119712
Response Date: 2025-03-27
Response Time: 11:57:41
Comments:

FOR INFORMATION CONTACT THE BUYER
John W Estep
304-558-2566
john.w.estep@wv.gov

Vendor Signature X	FEIN#	DATE
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Wavelength Dispersive X-Ray Fluorescence Sequential Spectrom	1.00000	EA	119712.000000	119712.00

Comm Code	Manufacturer	Specification	Model #
41100000			

Commodity Line Comments: Ref: Quotation No CPQ-00757542
Lead Time: 3-4 months, subject to prior orders and system configuration

Extended Description:
Wavelength Dispersive X-Ray Fluorescence Sequential Spectrom



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Request for Quote
Miscellaneous

Proc Folder: 1604258			Reason for Modification:
Doc Description: Wavelength dispersive X-Ray Fluorescence (XRF) Machine			
Proc Type: Central Purchase Order			
Date Issued	Solicitation Closes	Solicitation No	Version
2025-03-10	2025-03-27 13:30	CRFQ 0803 DOT2500000042	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: 000000186851
Vendor Name : Thermo Electron North America LLC
Address :
Street : 1400 Northpoint Pkwy, Ste 10
City : West Palm Beach
State : FL **Country :** USA **Zip :** 33407
Principal Contact : Vilma Negrón
Vendor Contact Phone: 561-688-8721 **Extension:**

FOR INFORMATION CONTACT THE BUYER

John W Estep
304-558-2566
john.w.estep@wv.gov

In the event that we are awarded this RFQ, Thermo Electron North America LLC hereby requests to conduct limited negotiations on the Terms and Conditions. This bid submission is subject to Thermo Electron North America LLC expressly reserving the right to negotiate Terms and Conditions and in no way shall submission of this bid constitute acceptance of, or a waiver of any objection to, the Terms and Conditions

Vendor Signature X **FEIN#** 43-1992201 **DATE** 3/27/2025

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION
<p>REQUEST FOR QUOTATION:</p> <p>The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Department of Transportation, Division of Highways, Materials, Control, Soil & Testing Division, to establish a contract for the one time purchase of the supply, delivery, and installation of a wavelength-dispersive X-Ray Fluorescence (XRF) Sequential Spectrometer for analysis of major, minor, and trace elements in cement, fly ash, and related materials/samples. Per the Bid Requirements, Specifications, Terms and Conditions attached to this solicitation.</p>

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS MATERIALS, CONTROL, SOILS, & TESTING 190 DRY BRANCH DR CHARLESTON WV US	DIVISION OF HIGHWAYS MATERIALS, CONTROL, SOILS, & TESTING 190 DRY BRANCH DR CHARLESTON WV US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Wavelength Dispersive X-Ray Fluorescence Sequential Spectrom	1.00000	EA	\$119,712.00	\$119,712.00

Comm Code	Manufacturer	Specification	Model #
41100000	Thermo Scientific	ARL Perform'X 1.5kW WDXRF	XR-PFX-01

Extended Description:
Wavelength Dispersive X-Ray Fluorescence Sequential Spectrom

SCHEDULE OF EVENTS		
Line	Event	Event Date
1	Tech Questions due by 10:00am	2025-03-19

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	Document Phase	Document Description	
DOT2500000042	Final	Wavelength dispersive X-Ray Fluorescence (XRF) Machine	

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Request for Quote
Miscellaneous

Proc Folder: 1604258

Doc Description: Wavelength dispersive X-Ray Fluorescence (XRF) Machine

Reason for Modification:

Addendum No_1
Vendor Questions and Responses

Proc Type: Central Purchase Order

Date Issued	Solicitation Closes	Solicitation No	Version
2025-03-24	2025-03-27 13:30	CRFQ 0803 DOT2500000042	2

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: 000000186851

Vendor Name : Thermo Electron North America LLC

Address : 1400 Northpoint Pkwy, Ste 10

Street :

City : West Palm Beach

State : Florida

Country : USA

Zip : 33407

Principal Contact : Vilma Negrón

Vendor Contact Phone: 561-688-8721

Extension:

FOR INFORMATION CONTACT THE BUYER

John W Estep
304-558-2566
john.w.estep@wv.gov

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**Vendor
Signature X**

FEIN# 43-1992201

DATE 3/27/2025

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION**ADDENDUM NO_1**

Addendum No_1 issued to publish and distribute the attached information to the Vendor Community

REQUEST FOR QUOTATION:

The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Department of Transportation, Division of Highways, Materials, Control, Soil & Testing Division, to establish a contract for the one time purchase of the supply, delivery, and installation of a *wavelength-dispersive X-Ray Fluorescence (XRF) Sequential Spectrometer for analysis of major, minor, and trace elements in cement, fly ash, and related materials/samples. Per the Bid Requirements, Specifications, Terms and Conditions attached to this solicitation.*

INVOICE TO**SHIP TO**

DIVISION OF HIGHWAYS

MATERIALS, CONTROL,
SOILS, & TESTING

190 DRY BRANCH DR

CHARLESTON

WV

US

DIVISION OF HIGHWAYS

MATERIALS, CONTROL,
SOILS, & TESTING

190 DRY BRANCH DR

CHARLESTON

WV

US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Wavelength Dispersive X-Ray Fluorescence Sequential Spectrom	1.00000	EA	\$119,712.00	\$119,712.00

Comm Code	Manufacturer	Specification	Model #
41100000	Thermo Scientific	ARL Perform'X 1.5kW WDXRF	XR-PFX-01

Extended Description:

Wavelength Dispersive X-Ray Fluorescence Sequential Spectrom

SCHEDULE OF EVENTS

<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	Tech Questions due by 10:00am	2025-03-19

SOLICITATION NUMBER: CRFQ DOT2500000042

Addendum Number: 1

The purpose of this addendum is to modify the solicitation identified as CRFQ DOT2500000042 (“Solicitation”) to reflect the change(s) identified and described below.

Applicable Addendum Category:

- ☐ Modify bid opening date and time
- ☐ Modify specifications of product or service being sought
- ☒ Attachment of vendor questions and responses
- ☐ Attachment of pre-bid sign-in sheet
- ☐ Correction of error
- ☐ Other

Additional Documentation:

Vendor Questions and Response

Bid Opening remains 03/27/2025 at 1:30pm

Terms and Conditions:

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

CRFQ DOT2500000042

Wavelength Dispersive X-Ray Fluorescence (XRF) Machine for MCS&T

Question 1 – 3.1.1.4 / 3.1.2.1 – An internal chiller coupled with a 1500 W generator power may be specific to a single vendor. Would WV DOH consider an instrument a 1 kW instrument with an internal chiller if analytical performance can be met? If not, would WV DOH consider an instrument at a higher power (2.4 kW) with an external air-cooled chiller?

Answer 1 – Yes, we might consider an instrument with a 1 kW power and internal chiller, provided that the analytical performance requirements are met.

- Alternatively, a 2.4 kW instrument with an external air-cooled chiller could also be acceptable if it meets the necessary performance criteria and does not introduce excessive energy consumption or instability issues.

Question 2 – 3.1.1.5 – Is a maximum sample diameter of 51.5 mm acceptable?

Answer 2 – Yes, For XRF analysis, glass beads are typically prepared with the following dimensions:

- Diameter: 30–40 mm (to allow for adequate interaction with the X-ray beam).
- Thickness: 3–5 mm (to ensure sufficient penetration of X-rays and maintain the quality of the analysis).

- These dimensions help create a uniform and homogeneous sample that ensures accurate, reproducible results when using XRF for analysis.

Question 3 – 3.1.1.6 – Malvern Panalytical normally supplies 4 filters using a heavy brass filter to protect detectors rather than a beam stop. Are 4 filters with a heavy bass filter, or 3 filters plus a beam stop acceptable if analytical performance criteria are met?

Answer 3 – Yes, both configurations (4 filters with a heavy brass filter or 3 filters plus a beam stop) could be acceptable if the analytical performance criteria are met.

- If the system is achieving the required accuracy, precision, and detection limits, and the signal-to-noise ratio is within acceptable limits, either configuration can work.
- The key factor here is that the system must perform as expected for the type of analysis we are conducting, and both setups should allow for this as long as the detector protection and radiation filtering are properly handled.

Question 4 – 3.1.2.3 – Is 60 kV / 50 mA maximum acceptable if analytical performance criteria are met (kV-mA combination to be less than or equal to 1000 W)?

Answer 4 – Yes, we would consider the 60 kv / 50 mA, as long as it does not compromise the system's ability to meet the analytical performance criteria. It's important to verify that the system still meets the required sensitivity, accuracy, and precision, and that the additional collimators don't interfere with the instrument's functionality or data quality.

Question 5 – 3.1.3.1 Would 3 primary collimators be acceptable if analytical performance criteria are met?

Answer 5 – Yes, 3 primary collimators can be acceptable, as long as they do not compromise the system's ability to meet the analytical performance criteria. It's important to verify that the system still meets the required sensitivity, accuracy, and precision, and that the additional collimators don't interfere with the instrument's functionality or data quality. *If these criteria are still being met, the use of multiple collimators should be fine.*

Question 6 – 3.1.3.2 – Would an 8-position crystal holder with 4 crystals fitted be acceptable if analytical performance criteria are met?

Answer 6 – Yes, An 8-position crystal holder with 4 crystals fitted is acceptable, as long as the system meets the analytical performance criteria. The number of crystals being used does not necessarily need to match the number of available positions, as long as the crystals that are installed provide accurate, precise, and reliable measurements. The key point is that the system must be able to meet the necessary performance specifications with the 4 crystals in place.

Question 7 – 3.1.6.1 – Would turnkey calibration standards for Cement prepared as glass beads be acceptable rather than pressed pellets?

Answer 7 – Yes, turnkey calibration standards for cement prepared as glass beads can be acceptable in place of pressed pellets, provided that they meet the required analytical performance criteria. Glass beads, with their more homogeneous and consistent nature, could even provide enhanced analytical performance in some cases. The key factor is ensuring that the standards used allow the instrument to achieve accurate and reproducible results that meet the specific needs of the analysis.

Question 8 – 3.1.6.3 – The calibrated values specified (considering the Fe range) appear to be for white cement, which is not very common. Is a

standard and a modified Portland cement calibration acceptable rather than one for white cement?

Answer 8 - Yes, it is generally acceptable to use a standard Portland cement calibration instead of one specifically for white cement, as long as the properties of interest are well within the expected range for Portland cement.

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFQ DOT2500000042

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

<input checked="" type="checkbox"/> Addendum No. 1	<input type="checkbox"/> Addendum No. 6
<input type="checkbox"/> Addendum No. 2	<input type="checkbox"/> Addendum No. 7
<input type="checkbox"/> Addendum No. 3	<input type="checkbox"/> Addendum No. 8
<input type="checkbox"/> Addendum No. 4	<input type="checkbox"/> Addendum No. 9
<input type="checkbox"/> Addendum No. 5	<input type="checkbox"/> Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Thermo Electron North America LLC

Company

Authorized Signature

3/27/2025

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

Pricing Page

RFQ#:

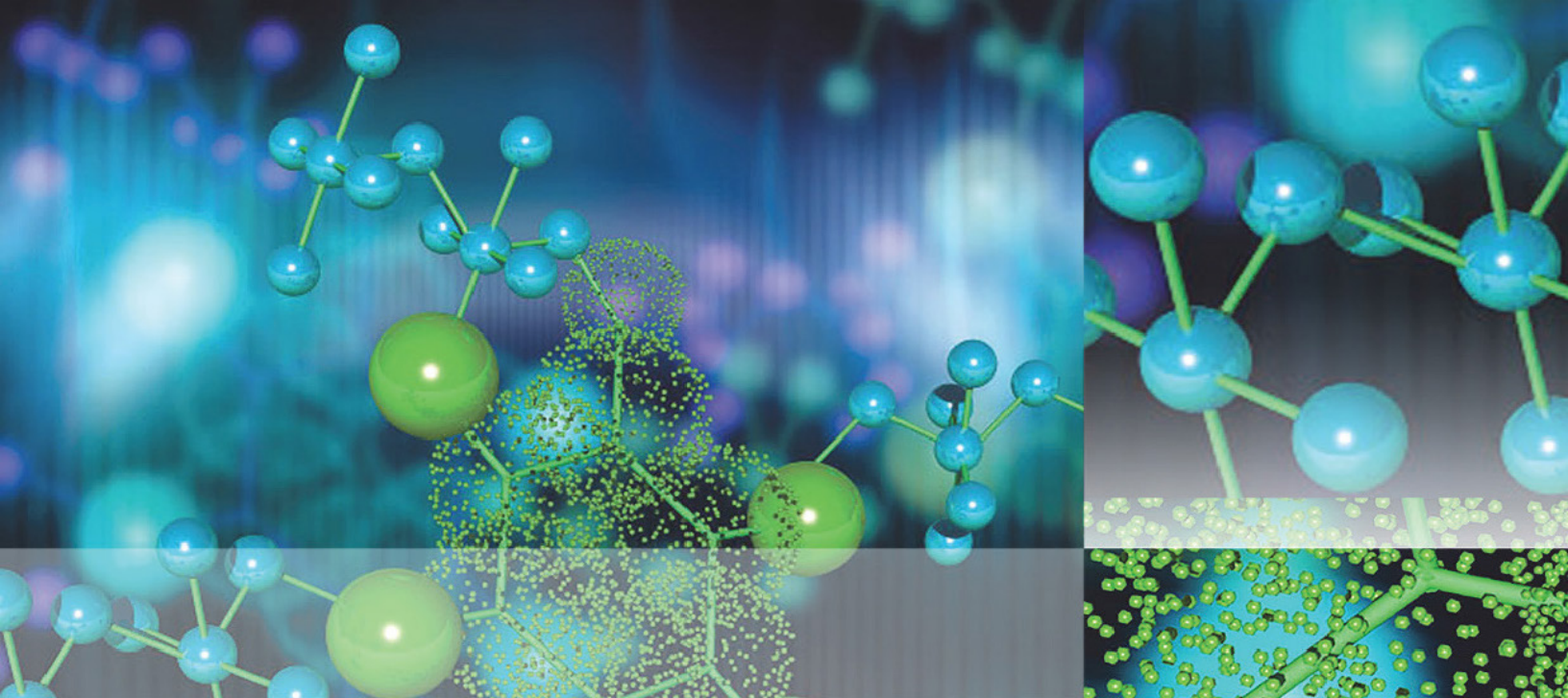
Kanawha County: WV, DOH, Materials, Controls, and Soil Testing Division

190 Dry Branch Drive, Charleston, WV 25306

Line Number	Item Description	Purchase Rate	Total Amount
1	Wavelength dispersive X-Ray Fluorescence (XRF) Sequential Spectrometer		\$ 112,257.00
2	Operational Supplies (ie sample cups, any consumable products necessary for operation)		\$
3	Installation / Maintenance Calibration		\$ Included
4	Training / Instruction / Support		\$ Included
5	Warranty		\$
6	Shipping		\$ 7,455.00
			\$
			\$
Grand Total:			\$ 119,712.00

*The estimated purchase volume for each item represents the approximate volume of the anticipated purchases only. No future use of the Contract or any individual item is guaranteed or implied.

Vendor Name: Thermo Electron North America LLC**Contanct Name:** Vilma Negron**Phone:** 561-88-8721**Fax #:** 412-200-6542**Email:** CMDAmericasbids@thermofisher.com**# Years in Business:** _____



ARL Perform'X 1.5kW WDXRF

CPQ-00759661

March 27, 2025

WEST VIRGINIA DEPT OF TRANS

John Estep

2019 Washington Street
East Charleston West Virginia 25305
United States

John Estep
WEST VIRGINIA DEPT OF TRANS
2019 Washington Street
East Charleston West Virginia 25305
United States

March 27, 2025

ARL Perform'X 1.5kW WDXRF

Ref: Sol No CRFQ 0803 DOT2500000042
Due Date & Time: 3/27/25 @ 13:30

In the event that we are awarded this RFQ, Thermo Electron North America LLC hereby requests to conduct limited negotiations on the Terms and Conditions. This bid submission is subject to Thermo Electron North America LLC expressly reserving the right to negotiate Terms and Conditions and in no way shall submission of this bid constitute acceptance of, or a waiver of any objection to, the Terms and Conditions



David Mcanallen
Sr. Instrument Sales Representative
117, Cedar Crest Drive
Huntington West Virginia 25704
US
Tel. : 304-654-1951
david.mcanallen@thermofisher.com

Sales Quotation

Quote Number	Version	Quotation Date	Page
CPQ-00759661	1.00	March 27, 2025	3
Lead Time	Payment Terms	Freight Terms	Expiration Date
3-4 months, subject to prior orders and system configuration	NET 30 DAYS UPON INVOICE DATE	Delivered duty paid	May 25, 2025
Company Name		Customer Name	
WEST VIRGINIA DEPT OF TRANS		John Estep	
* See end pages of quote for PO Submission details			

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

1400 Northpoint Parkway
West Palm Beach FL 33407

Customer Info:

Customer Name: John Estep
Company Name: WEST VIRGINIA DEPT OF TRANS
Address: 2019 Washington Street
East Charleston West Virginia 25305
United States

Phone: (304) 558-2566
Email: john.w.estep@wv.gov

Sales Contact Info:

Contact Name: David Mcanallen
Phone: 304-654-1951
Email: david.mcanallen@thermofisher.com

ARL Perform'X 1.5kW WDXRF

Item	Description	Unit Price	Qty	Unit Discount	Total Price
1.1	<p>XR-PFX-01 Country: CH \$202,980.00 1 \$101,489.50 \$101,490.50</p> <p>ARL PERFORM'X 1500 XRF STANDARD VERSION</p> <p>Sequential Spectrometer (element coverage O to AM in solids) including:</p> <ul style="list-style-type: none"> • 4GN+ type Rh target X-Ray tube with 75 micron window • 1500 W Power supply for 60 kV max. or 70 mA max. (KV-mA combinations to be less than 1500W) • Goniometer with: <ul style="list-style-type: none"> • 4 position programmable collimator changer with 4 collimators fitted: 0.15°, 0.4°, 1° and 2.5° angular admittance • 9 position crystal changer with 3 crystals fitted: LiF200, PET and AX06 • 2 detectors: flow proportional and scintillation • Fixed internal mask opening diameter 29 mm • Closed circuit deionized water-cooling system (water-air) • Vacuum system with rotary pump • Automatic sample changer for 9 samples, including 9 standard cassettes for samples of maximum diameter 52 mm, maximum height 30 mm, Opening diameter 29 mm. One position can be dedicated for urgent samples • Sample rotation system, 60 revolutions/minute • Microprocessor control electronics • Display of instrument status and current operation on PC screen • Capability for remote diagnostics; Modem on user site is not included • 6 position Primary Beam Filter with Al20, Al200, Al500, Al750, Cu250 filters • Pb Programmable beam stop • One set of Quality Assurance monitor samples for Instrument Performance and Operational Performance certification • Auto-diagnostic support • Instrument documentation in electronic form • Packing for truck transport <p>Notes: - P-10 or Helium gas cylinder and pressure reducer are not included - Isolation transformer is already included in all ARL PERFORM'X instruments - Helium flush system (XR-PX-HE) should be added in case analysis of liquids is required</p>				

Sales Quotation

Quote Number	Version	Quotation Date	Page
CPQ-00759661	1.00	March 27, 2025	4
Lead Time	Payment Terms	Freight Terms	Expiration Date
3-4 months, subject to prior orders and system configuration	NET 30 DAYS UPON INVOICE DATE	Delivered duty paid	May 25, 2025
Company Name		Customer Name	
WEST VIRGINIA DEPT OF TRANS		John Estep	
* See end pages of quote for PO Submission details			

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

1400 Northpoint Parkway
West Palm Beach FL 33407

Item	Description	Unit Price	Qty	Unit Discount	Total Price
	- Computer is not included in this item				
1.2	XO-PC-COMPUTER Country: CH Desktop Personal Computer Personal Computer system DELL OptiPlex XE3 Small Form Factor <u>With the following minimum specifications</u> - Intel Core I5 Processor, 4 GB Memory - One hard disk drive (500 GB) - Microsoft Windows 10 Pro (64-bit) - 23-inch Widescreen Flat Panel Display, USB keyboard and mouse - 1 x VGA and 2 x Display Port - 2 x Ethernet 10/100/1000 LAN interface (RJ-45 connector) - 1 serial - 1 x USB 3.1 Gen 2 Type-C, 5 x USB 3.1 Gen 1 Type-A, 4 x USB 2.0 Type-A - Includes factory installation and configuration of operating system and instrument software <i>Note: Thermo Fisher Scientific reserves the right to substitute the latest equivalent (or better) computer model & configuration</i> <i>Note: In the case the instrument computer is not supplied from Thermo Fisher Scientific (Ecublens) SARL, the PC hardware and the operating system configuration must strictly conform to the following minimal requirements:</i> - Personal Computer with Windows 10 PRO, 64 bits only - The following minimum specifications: 2.0 GHz processor, 4 GB memory and 20 GB free disk space. 2 network interfaces, 1 free serial RS-232 port and 1 free USB port	\$1,673.00	1	\$836.50	\$836.50
1.3	XR-CR-GE111 Country: CH Ge flat crystal # P to Cl Ge flat crystal – P to Cl	\$3,989.00	1	\$1,994.50	\$1,994.50
1.4	XR-CAL-CEM Country: CH Calibration for Cement Calibration for Cement as pressed pellets A series of cement certified reference materials are used to derive the calibration curves for pressed pellets. Samples are pressed with 10% wax binder. Check separate calibration specifications for more details especially on sample preparation and calibration ranges. <i>Notes: - Prerequisite to be included on universal goniometers are LiF200, PET, Ge111 and AX06 (or AX03) crystals; FPC and scintillation detectors; fine, medium and coarse collimators</i> - This calibration includes a set of stable and polished setting-up samples for maintenance of the calibration curves over the lifetime of the instrument - No certified reference material are delivered with this calibration	\$6,452.00	1	\$3,226.00	\$3,226.00
1.5	XR-CR-RED Country: CH CENTR. RING 51.8/31.7x2 ALUMINIUM 10 pcs Set of 10 red centering rings, diam 51.8/31.7 x 2mm Metallic, External diameter 51.8mm, internal diameter 31.7mm • Ideal for UniQuant calibration samples	\$142.00	1	\$71.00	\$71.00

Sales Quotation

Quote Number	Version	Quotation Date	Page
CPQ-00759661	1.00	March 27, 2025	5
Lead Time	Payment Terms	Freight Terms	Expiration Date
3-4 months, subject to prior orders and system configuration	NET 30 DAYS UPON INVOICE DATE	Delivered duty paid	May 25, 2025
Company Name		Customer Name	
WEST VIRGINIA DEPT OF TRANS		John Estep	
* See end pages of quote for PO Submission details			

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

1400 Northpoint Parkway
West Palm Beach FL 33407

Item	Description	Unit Price	Qty	Unit Discount	Total Price
1.6	XR-CR-BLU Country: CH CENTR. RING 51.8/37X2 ALUMINIUM 10 pcs Set of 10 blue centering rings, diam 51.8/37 x 2mm Metallic, External diameter 51.8mm, internal diameter 37 mm	\$161.00	1	\$80.50	\$80.50
1.7	XR-CR-YEL Country: CH CENTR. RING 51.8/41X2 ALUMINIUM 10 pcs Set of 10 yellow centering rings, diam 51.8/41 x 2mm Metallic, External diameter 51.8mm, internal diameter 41 mm	\$161.00	1	\$80.50	\$80.50
1.8	XR-PX-CLIP Country: CH Clip for cassette with spring Spring helps keep sample in position <i>Note: Compatible with all ARL PERFORM'X cassettes except cassettes for liquids (XR-PF-LCAS)</i>	\$81.00	5	\$40.50	\$202.50
1.9	XR-PR-FP Country: CH High Pressure Reducer for P-10 Gas Bottle of P-10 gas (Ar + 10%CH4) for FPC detector to be supplied locally – see gas specifications in Pre-installation manual	\$1,694.00	1	\$847.00	\$847.00
1.10	XR-PX-AIR Country: CH Airfreight (crate without sealing) Standard Airfreight Packing	\$2,091.00	1	\$0.00	\$2,091.00

Item	Description	Unit Price	Qty	Unit Discount	Total Price
2.0	NA-TR-REMOTE Country: US Remote Support (4 hour online support)	\$1,337.00	2	\$668.50	\$1,337.00

Sales Quotation

Quote Number	Version	Quotation Date	Page
CPQ-00759661	1.00	March 27, 2025	6
Lead Time	Payment Terms	Freight Terms	Expiration Date
3-4 months, subject to prior orders and system configuration	NET 30 DAYS UPON INVOICE DATE	Delivered duty paid	May 25, 2025
Company Name		Customer Name	
WEST VIRGINIA DEPT OF TRANS		John Estep	
* See end pages of quote for PO Submission details			

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

1400 Northpoint Parkway
West Palm Beach FL 33407

Quote Subtotal:	\$222,422.00
Promotions / Discounts:	- \$110,165.00
Quote total less discounts:	\$112,257.00
Shipping:	\$7,455.00
Quotation Totals:	\$119,712.00

Billing plan:	30% invoiced on receipt of order. Payment on receipt of invoice 65% invoiced on delivery 5% invoiced on installation, or within 3 months of delivery if installation is delayed by customer – whichever occurs first
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As part of instrument purchase, the customer automatically qualifies for two (2) free admissions to a 3-day XRF training course at the Thermo training facility, excluding travel charges.

Sales tax exemption/resale certificates or direct pay permits must be provided with the order documents, if applicable. If valid sales tax exemption documentation is not provided, buyer shall pay all applicable federal, state and local taxes in addition to the price stated on this quotation.

Options / Recommendations

Item	Description	Unit Price	Qty	Unit Discount	Total Price
3.0	278-1296800 Country: 4.5kVA UPS, with battery backup Supplied by Trystar, part number ES-LGUX-4500-TC. Input voltage 240V, single-phase. Output voltage 230V-N. Battery run-time approximately 35 minutes.	\$19,158.00	1	\$0.00	\$19,158.00

Options Total: \$19,158.00

Purchase Order - Submission Details

Quote Number	Version	Quotation Date	Page
CPQ-00759661	1.00	March 27, 2025	7
Lead Time	Payment Terms		Expiration Date
3-4 months, subject to prior orders and system configuration	NET 30 DAYS UPON INVOICE DATE		May 25, 2025
Inco Terms 1	Inco Terms 2	Shipping Method	
Delivered duty paid		Air Freight	
See below			

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

1400 Northpoint Parkway
West Palm Beach FL 33407

To place your order and expedite shipment, please 1) sign and date the last page of this document; and 2) fax or e-mail it along with your Purchase Order to one of the addresses below.

To place an order via Ariba, please use Ariba Vendor Number AN01000155661.

Please note-all Purchase Orders must show the vendor name of Thermo Electron North America LLC

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

or

Thermo Electron North America LLC
1400 Northpoint Parkway
West Palm Beach FL 33407

Complete System Orders:

Fax: 412-200-6542

e-mail: usmadorderprocessing@thermofisher.com

Parts or Service Orders:

Fax: 877-680-2565

e-mail: USMAD.ServiceOE.PO@thermofisher.com

Notes:

- Items marked with an asterisk (*) on the face of the quotation are non-Thermo Electron North America LLC products.
- Prices, warranty, installation and service on the items quoted herein are available only in the United States and may not be otherwise assigned.
- Tax exemption certificates or direct pay permits must be provided with the order documents, if applicable. If tax exemption documentation is not provided, buyer shall pay federal, state and local taxes in addition to the price stated on this quotation.
- Buyer shall not export or re-export technical data or products supplied by Thermo Electron North America LLC in violation of applicable export regulation. Buyer who exports products purchased hereunder assumes all responsibility for obtaining required export documentation, authorization, and payment of all applicable fees.
- All prices are quoted in USD

To keep you informed, we offer a convenient way to track your order status through our Order Lookup solution. Click [here](#) to access real-time updates and stay up to date on your shipment.

In the event that we are awarded this RFQ, Thermo Electron North America LLC hereby requests to conduct limited negotiations on the Terms and Conditions. This bid submission is subject to Thermo Electron North America LLC expressly reserving the right to negotiate Terms and Conditions and in no way shall submission of this bid constitute acceptance of, or a waiver of any objection to, the Terms and Conditions

Purchase Order - Submission Details

Quote Number	Version	Quotation Date	Page
CPQ-00759661	1.00	March 27, 2025	8
Lead Time	Payment Terms		Expiration Date
3-4 months, subject to prior orders and system configuration	NET 30 DAYS UPON INVOICE DATE		May 25, 2025
Inco Terms 1	Inco Terms 2	Shipping Method	
Delivered duty paid		Air Freight	
See below			

Thermo Electron North America LLC
5225 Verona Road
Madison WI 53711

1400 Northpoint Parkway
West Palm Beach FL 33407

TERMS AND CONDITIONS OF SALE FOR PRODUCTS AND SERVICES

This quotation, and Seller's Terms and Conditions of Sale for Products and Services (which are hereby incorporated by reference into this quotation and any resulting contract), set out the terms on which Seller is offering to sell the product(s) and/or service(s) listed in this quotation. By issuing a purchase order or otherwise ordering or accepting product(s) and/or services, Buyer expressly confirms that it agrees to be bound by and agrees to the terms of this quotation and the Terms and Conditions of Sale for Products and Services to the exclusion of all other terms not expressly agreed to in writing by an authorized representative of Seller, and that the purchase and sale transaction between Buyer and Seller is governed by this quotation and Terms and Conditions of Sale for Products and Services. Any new or different provisions contained in any document issued by Buyer in response to this offer are expressly rejected. Seller's Terms and Conditions of Sale for Products and Services can be found on the Thermo Fisher Scientific website at www.thermofisher.com/terms-tena and will be sent to Buyer via mail or e-mail upon request. The Terms and Conditions of Sale for Products and Services are subject to change by Seller, from time to time.

As an Authorized representative of the Buyer, your signature below creates an agreement to buy the products and services listed herein and your acceptance of the Seller's Standard Terms and Conditions of Sale included herein as the sole and exclusive terms for your purchase.

BUYER

SELLER

By: _____

By:



Print Name: _____

Print Name:

David Mcanallen

Print Title: _____

Print Title:

Sr. Instrument Sales Representative

Date: _____

Date:

March 27, 2025

_____ Initial here to indicate Buyer's agreement to automatically apply Seller's Standard Terms and Conditions of Sale for Products and Services to all future orders of Products and Services from Seller, whether or not the Agreement is referenced on Seller's quote or Buyer's Purchase Orders, for _____ (write # of years) from later date of the parties' signature, or until either party provides written notice that this Agreement is terminated.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or "Agencies" means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or "Proposal" means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or "Vendors" means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

Initial Contract Term: The Initial Contract Term will be for a period of _____. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

☐ **Alternate Renewal Term** – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☐ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____ days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that:

☐ the contract will continue for _____ years;

☐ the contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's Office (Attorney General approval is as to form only).

☒ **One-Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Construction/Project Oversight:** This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and continues until the project for which the vendor is providing oversight is complete.

☐ **Other:** Contract Term specified in _____

4. AUTHORITY TO PROCEED: Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☐ **Open End Contract:** Quantities listed in this Solicitation/Award Document are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☐ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☒ **One-Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

☐ **Construction:** This Contract is for construction activity more fully defined in the specifications.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

☐☐☐☐

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

Vendor must maintain:

☒ **Commercial General Liability Insurance** in at least an amount of: \$1,000,000.00 per occurrence.

☐ **Automobile Liability Insurance** in at least an amount of: _____ per occurrence.

☐ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: _____ per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of: _____ per occurrence.

☐ **Cyber Liability Insurance** in an amount of: _____ per occurrence.

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

☐ **Pollution Insurance** in an amount of: _____ per occurrence.

☐ **Aircraft Liability** in an amount of: _____ per occurrence.

☐

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9. WORKERS' COMPENSATION INSURANCE: Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. VENUE: All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

☐ _____ for _____.

☐ Liquidated Damages Contained in the Specifications.

☒ Liquidated Damages Are Not Included in this Contract.

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

14. PAYMENT IN ARREARS: Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

20. TIME: Time is of the essence regarding all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in www.state.wv.us/admin/purchase/privacy.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

34. VENDOR NON-CONFLICT: Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. NO DEBT CERTIFICATION: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

38. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

39. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☒ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.division@wv.gov.

40. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open hearth, basic oxygen, electric furnace, Bessemer or other steel making process.
- c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
 1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
 2. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

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42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a “substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

44. PROHIBITION AGAINST USED OR REFURBISHED: Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

45. VOID CONTRACT CLAUSES: This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

46. ISRAEL BOYCOTT: Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Vilma Negron, Proposal Specialist Team Lead
(Address) 1400 Northpoint Pkwy, Ste 10, West Palm Beach, FL 33407
(Phone Number) / (Fax Number) 561-688-8721 / 412-200-6542
(email address) CMDAmericasbids@thermofisher.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Thermo Electron North America LLC
(Company) *

(Signature of Authorized Representative)
Vilma Negron, Proposal Specialist Team Lead
(Printed Name and Title of Authorized Representative) (Date)
561-688-8721 / 412-200-6542
(Phone Number) (Fax Number)
CDMAmericasbids@thermofisher.com
(Email Address)

In the event that we are awarded this RFQ, Thermo Electron North America LLC hereby requests to conduct limited negotiations on the Terms and Conditions. This bid submission is subject to Thermo Electron North America LLC expressly reserving the right to negotiate Terms and Conditions and in no way shall submission of this bid constitute acceptance of, or a waiver of any objection to, the Terms and Conditions



CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
07/02/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Aon Risk Services Northeast, Inc. Boston MA Office 53 State Street Suite 2201 Boston MA 02109 USA	CONTACT NAME: PHONE (A/C. No. Ext): (866) 283-7122 FAX (A/C. No.): (800) 363-0105 E-MAIL ADDRESS:														
INSURED Thermo Electron North America LLC Thermo Fisher Scientific Inc. 1400 Northpoint Parkway, Suite 50 West Palm Beach FL 33407 USA	<table><tr><th>INSURER(S) AFFORDING COVERAGE</th><th>NAIC #</th></tr><tr><td>INSURER A: Travelers Property Cas Co of America</td><td>25674</td></tr><tr><td>INSURER B: ProAssurance Specialty Insurance Company</td><td>17400</td></tr><tr><td>INSURER C: ACE American Insurance Company</td><td>22667</td></tr><tr><td>INSURER D: ACE Property & Casualty Insurance Co.</td><td>20699</td></tr><tr><td>INSURER E:</td><td></td></tr><tr><td>INSURER F:</td><td></td></tr></table>	INSURER(S) AFFORDING COVERAGE	NAIC #	INSURER A: Travelers Property Cas Co of America	25674	INSURER B: ProAssurance Specialty Insurance Company	17400	INSURER C: ACE American Insurance Company	22667	INSURER D: ACE Property & Casualty Insurance Co.	20699	INSURER E:		INSURER F:	
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INSURER F:															

COVERAGES**CERTIFICATE NUMBER:** 570107042008**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
C	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> <input type="checkbox"/> GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:			G71815067005 SIR applies per policy terms & conditions	07/01/2024	07/01/2025	EACH OCCURRENCE \$2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000 MED EXP (Any one person) \$10,000 PERSONAL & ADV INJURY \$2,000,000 GENERAL AGGREGATE \$4,000,000 PRODUCTS - COMP/OP AGG Excluded
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY			TC2J-CAP-7439L260-TIL-24	07/01/2024	07/01/2025	COMBINED SINGLE LIMIT (Ea accident) \$2,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
D	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$25,000			XEUG71815080005	07/01/2024	07/01/2025	EACH OCCURRENCE \$10,000,000 AGGREGATE \$10,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N	N/A	UB5P0275212451K	07/01/2024	07/01/2025	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$1,000,000 E.L. DISEASE-EA EMPLOYEE \$1,000,000 E.L. DISEASE-POLICY LIMIT \$1,000,000
C	Products Liability			G72530494004 Completed Ops-Claims Made SIR applies per policy terms & conditions	07/01/2024	07/01/2025	Aggregate Limit \$5,000,000 Each Claim \$5,000,000 Completed Ops Included

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Evidence of Insurance.

CERTIFICATE HOLDER**CANCELLATION**

Thermo Electron North America LLC 1400 Northpoint Parkway, Suite 50 West Palm Beach FL 33407 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE <i>Aon Risk Services Northeast, Inc.</i>
--	--

Holder Identifier :

Certificate No : 570107042008



THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,
FORM NUMBER: ACORD 25 **FORM TITLE:** Certificate of Liability Insurance

[illegible]



Thermo Scientific ARL PERFORM'X XRF

Sequential X-Ray Fluorescence Spectrometer

Where performance meets versatility

Geology • Environment • Petroleum • Polymers • Materials science • Metals and alloys
Glass • Raw materials • Mining • Cement • Catalysts • Ceramics • Refractories • Coatings

Where Performance meets Versatility

Sequential X-Ray Fluorescence Spectrometer

An evolutive platform

The Thermo Scientific™ ARL™ PERFORM'X wavelength-dispersive X-ray fluorescence (WDXRF) spectrometer presents an advanced platform for rapid and precise analysis of up to 90 elements in nearly any solid or liquid sample. Advantages over other analytical techniques are:

- Easy and fast sample preparation
- Analysis of the whole surface of a sample, a segment of it or specific spots on the surface
- Speed of analysis
- High stability and excellent precision
- Wide dynamic range (from ppm levels to 100%)
- Simple and rapid analysis of totally unknown samples through advanced standard-less analysis packages

The ARL PERFORM'X spectrometer compact design provides superior benefits of XRF analysis including sensitivity, reproducibility and ease of use while establishing new standards of speed, reliability and flexibility on the widest range of sample types. It will solve composition problems in demanding industrial processes and quality applications in industries as diverse as metallurgy, petroleum, polymers, mining, glass, cement, refractories and others. Academic or research labs dealing with geochemistry, automotive engineering, materials science, environmental research and forensics will also benefit from its performance and versatility.

Speed of analysis

- Fastest goniometer in industry
- Dual sample loading system for high sample throughput
- Up to 60 samples per hour, unmanned
- Dedicated loading position for urgent samples

Flexibility

- Choice of power levels: 1500W, 2500W or 4200W
- Mid power systems without external water chiller
- Multiple position automated X-Y sample changer frees technicians for other work
- New goniometer design offers many crystal and collimator options achieving the widest possible analysis range
- Selection of viewed diameter in multiple increments from large 35 mm area to small 0.5 mm spot
- Several beam filters mean optimal analysis parameters can be chosen for every element

Sensitivity and precision

- Ultra-thin X-ray tube window improves sensitivity for light elements
- Unique Thermo Scientific™ UCCO™ technology (Ultra Closely Coupled Optics)
- Excellent peak to background ratio
- Unrivalled long-term stability and short-term repeatability

Highest standards of reliability

- Design for reliability concepts for maximum uptime and ease of maintenance
- Fully digital, frictionless goniometer ensures excellent lifetime angular accuracy
- Security device for dust/liquid collection in case of accidental breakage of a pressed pellet/liquid cell during loading



Geological applications among others require fast and accurate goniometer



Dual sample loading and urgent sample position when speed is required, more specifically in metallurgy



Collection pot for safe loading of pressed powders and liquids

ARL PERFORM'X

Powerful add-ons for problem solving and R&D

The ARL PERFORM'X spectrometer brings added value to your laboratory with new features for challenging non-routine analyses.

Complete characterization of unknown samples without calibration standards

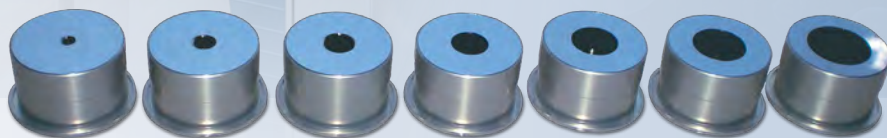
- Semi-quantitative analysis of unknown samples in 3 minutes using scans from fluorine to uranium with Thermo Scientific™ QuantAS™ software
- Industry-leading Thermo Scientific™ UniQuant™ software provides best limits of detection and accuracy in standard-less analysis up to Am (Z=95)

Small spot analysis & mapping

- Pinpoint focus on specimen sections with selectable X-ray diameter of 0.5 or 1.5 mm
- Maps of element distributions with cartography down to 0.1 mm steps
- Allows study of sample homogeneity and inclusions for process improvement and problem solving

Safe and stable liquids analysis

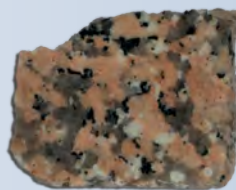
- The helium shutter provides maximum goniometer stability and protection during liquid analysis
- Optional tube shield protects the X-ray tube window from liquid spills and loose powders
- Sample recognition sensor ensures easy and safe exchanges between solids and liquids



Cassettes of various apertures for small and large samples



Helium shutter for easy and stable liquid analysis



Elemental mapping of inhomogeneous sample or small spot analysis



Large sample collections run automatically overnight

State-of-the-art components for highest flexibility

Based on years of experience, the ARL PERFORM'X spectrometer benefits now from the 6th generation goniometer, fully digitally mastered, working at highest speed with best accuracy and precision.

The goniometer can be programmed to analyze specific elements (quantitative analysis) or to scan the X-ray spectrum to detect elements present in a given sample (qualitative analysis). This state-of-the-art compact goniometer features up to 9 analytical crystals and 4 collimators providing analysts for a wider range of applications. Elemental signal count rates are augmented by up to 25% through the uniquely compact goniometer technology. Improved detector linearity provides better counting statistics at high count rates.

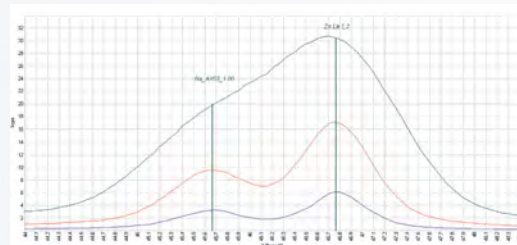
Analytical range is also widened by the inclusion of 7 primary X-ray beam filters, thereby reducing interference on select elements from X-ray tube emission lines and greatly improving peak to background ratios for most elements.

Additional optional features increase the number of sample types that can be analyzed such as the 4-position programmable aperture changer. It always includes a 29 mm aperture and 3 additional apertures can be chosen among the following diameters: 0.5, 1.5, 5, 10, 15, 20, 25, 35 mm to help analysis of large or small samples.

The X-ray tube provides unmatched long term stability through LoVap filament technology working at lower temperature thus eliminating drift due to slow tungsten vapor plating on the beryllium tube window. When ultimate performance is required for your applications, the ARL PERFORM'X spectrometer can be optionally equipped with the latest UCCO-30 X-ray tube. With its 30 micron Be window and tight coupling, this unique tube provides nearly 60% increase in sensitivity on light elements and 25% increase on all other elements of the periodic table.

Gearless digital goniometer advantages

- Quantitative analysis of any element from Be to Am providing adequate crystals are fitted
- Angular positioning is achieved through Moiré fringe optical encoders:
 - No friction – No wear!
 - Ensures accurate $\theta/2\theta$ relationship between crystal and detector
 - Excellent angular positioning and high precision
 - Fastest positioning with a slewing speed of 4800°/min
 - Fast scanning up to 500° per minute
- Temperature regulation of crystals for best analytical stability
- Best standard-less analysis when coupled to QuantAS and UniQuant software packages
- Unique polarization effect for reduced background



Effect of collimator on resolution and intensity

Evolution of the X-ray tubes over the years

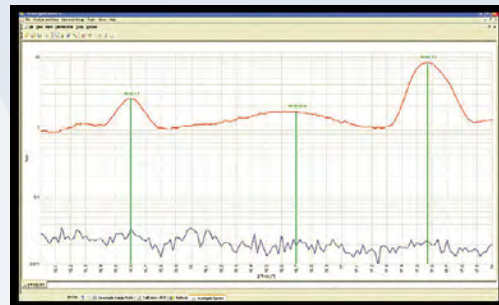
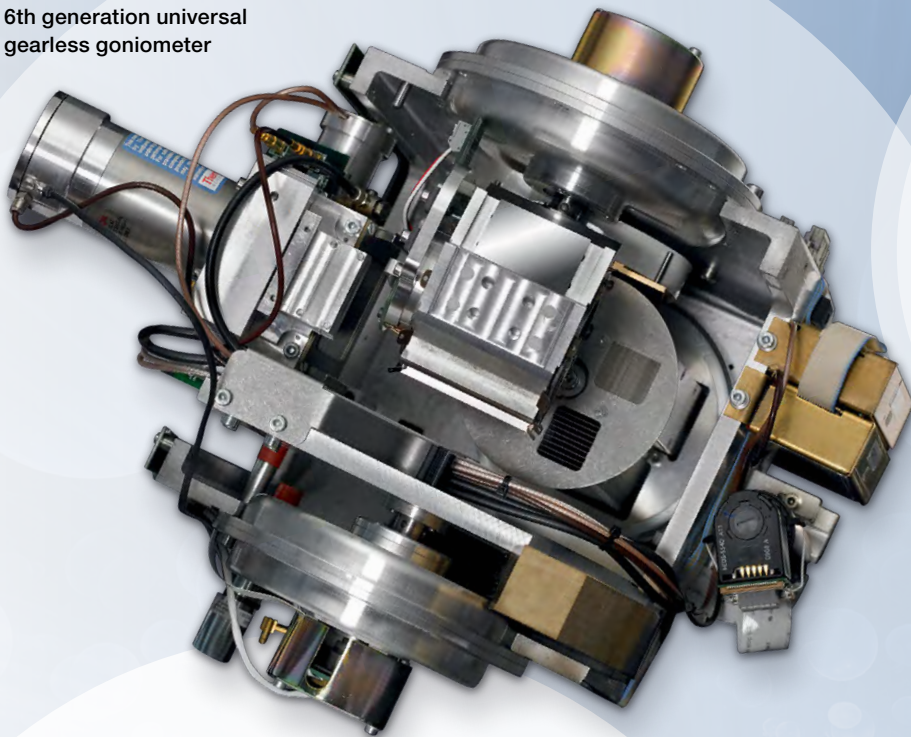
> Closer coupling between anode and sample

> Thinner Be windows



PRECISION SPEED

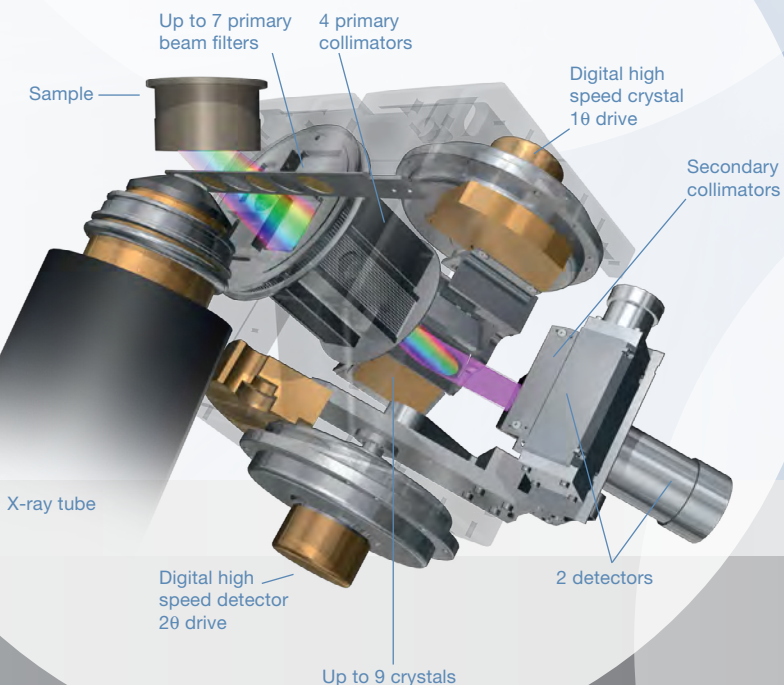
6th generation universal gearless goniometer



Removal of Rh tube lines with primary beam filter

UCCO™ technology

Ultra Closely Coupled Optics between X-ray tube and sample



Four collimator changer as standard



Right on the spot!

Choice of analyzed area size



SAMPLE

Small sample analysis

The optional programmable aperture changer is available for routine analysis of small samples. It is used in conjunction with cassettes of matching apertures from 35 mm to 5 mm diameter (29 mm standard, other diameters at choice: 5, 10, 15, 20, 25, 35 mm).

Small spot analysis

- Narrow spot analysis of specimens selectable with on-board camera
- Pinpoint focus with X-ray beam diameters of 1.5 mm or 0.5 mm
- Allows full quantification when combined with UniQuant standard-less analysis software
- Ideal for samples in jewellery, forensics, automotive, industry, metallurgy and other R&D applications and failure analysis

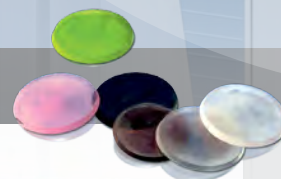
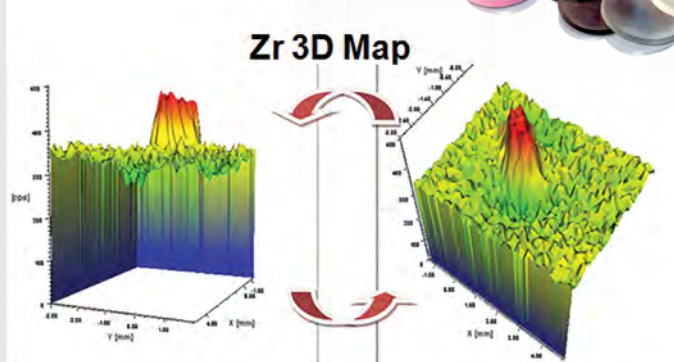
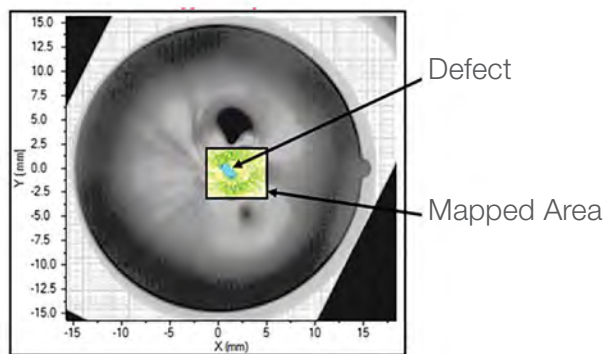
Mapping

The precisely-tuned X-ray mapping capability of the ARL PERFORM[®]X spectrometer provides complete elemental visualization of complex non-homogenous surfaces. Analysts can identify and characterize elemental impurities, inclusions and gradients that are unidentifiable by other analysis methods.

- Cartography control and overlay using 0.5 mm or 1.5 mm spots
- Construct detailed composite maps of element distribution within samples
- Fine resolution down to 0.1 mm steps for process improvement and problem solving applications
- Can be combined with UniQuant standard-less analysis software for full quantification
- Ideal for materials engineering applications in various industries



Results of a mapping of an inclusion in a glass sample



Automatic sample loading creates productivity

ANALYSIS



The sample changer fits directly atop the ARL PERFORM'X spectrometer. It accommodates multiple sample dimensions to a top capacity configuration of 112 samples for unattended and overnight analysis. Any urgent sample can at any time be placed on the specific "urgent" position to be run as first priority. Series of samples of uniform size and shape (e.g. fusion beads, pressed pellets, polymer discs, etc.) can be placed directly on trays without need for cassettes.

Specific cassettes are used for liquid analysis in order to make sure liquids will never be loaded under vacuum.

Continuous on-line process monitoring in unattended mode can be achieved through connection with an automatic sample preparation machine. A simple transport belt will link the ARL PERFORM'X spectrometer and the automatic press, mill or fusion machine. The OXSAS/OEM software option allows communication between the preparation machine and the spectrometer.



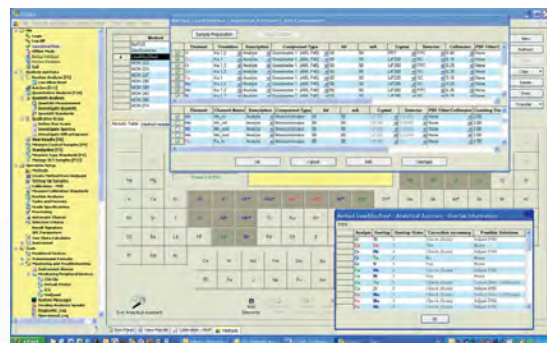
Special cassettes for
liquid cell loading



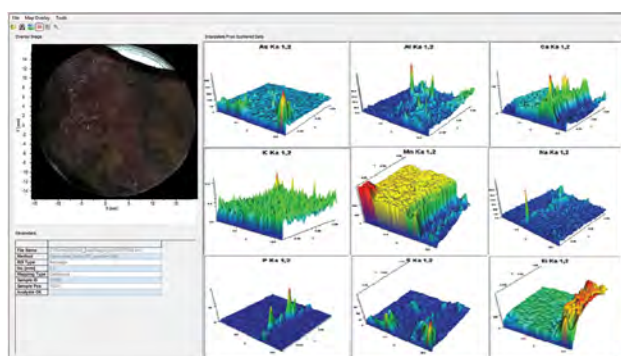
OXSAS Software

Easy and comprehensive XRF analysis

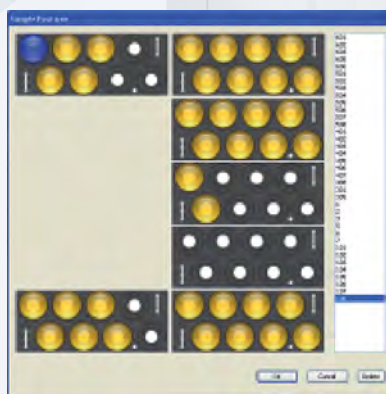
Operating the ARL PERFORM'X spectrometer and rapidly delivering accurate and attractive analytical reports are easily achieved through the state-of-the-art Thermo Scientific™ OXSAS™ software. Using Windows® 10 operating system, OXSAS software is designed to evolve to meet customer's needs with up-to-date solutions throughout the lifetime of the instrument. All features and details can be found in the OXSAS software product specification sheet.



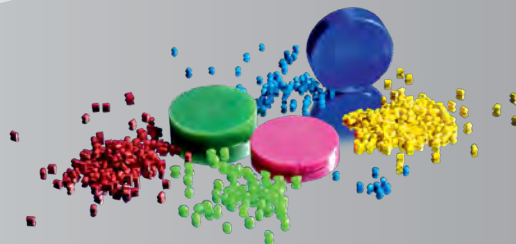
The Analytical Assistant helps definition of analytical programs, calibrations and instrument use



Typical screen of a mapping study



Selection of sample positions from a graphical view of the magazine



OXSAS

Fast and accurate analysis

Fast qualitative analysis

Step scanning provides precise definition of peaks with a resolution of 0.001° . For rapid qualitative analysis, continuous digital scanning allows fast acquisition of spectra at speeds up to 500° per minute. Peaks identification representing the elements present is automatic.

Accuracy made easy

The on-line Analytical Assistant helps quick and correct definition of analytical programs and calibrations. The multi-variable regression (MVR) program is used to build the various calibration curves. The influence of interfering elements in multi-component matrices is minimized thanks to correction models leading to better accuracy of analysis. These models are:

- Line overlap correction
- Additive correction on intensities
- Additive correction on concentrations
- Multiplicative correction on intensities
- Multiplicative correction on concentrations
- Multiplicative and additive corrections on concentrations
- Comprehensive Lachance (COLA) with 3 term alphas is used with NBSGSC fundamental parameters program, which simulates analytical calibrations for homogeneous materials. Inter-element correction factors (theoretical alphas, with matrix and LOI/GOI elimination) are calculated and used as known coefficients in the MVR. This minimizes the number of standards necessary to produce calibrations and improves the accuracy of analysis.

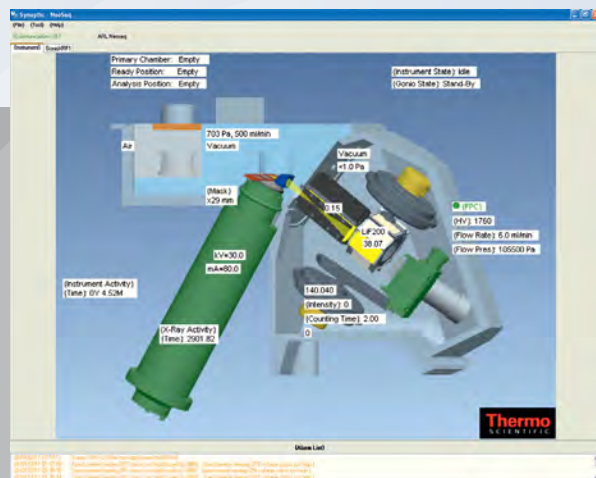
Turnkey calibrations

Ex-works calibrations can be delivered for various materials such as:

- Oil industry products using Thermo Scientific™ PetroilQuant™ program or ASTM/ISO methods
- Iron, steel and slags
- Copper, bronze and brass
- Aluminum and alloys
- Various oxides through the General Oxide calibration and the Minerals/Ceramics calibration
- Cement and clinker, limestone and dolomite, glasses, polymers
- Traces in soils and sediments
- Ferro-alloys and others for which analytical specifications are available on request
- Majors, minors and traces in rocks



MVR Calibration curve showing real concentrations vs. intensities



Current operations and status can be checked with the on-line synoptic screen

Total elemental analysis

A unique advantage

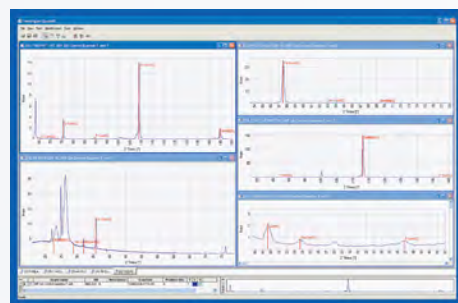
XRF provides a unique advantage over other elemental analysis techniques: quantifying elemental concentrations without calibration standards.

QuantAS – scan-based standard-less software

The user friendly QuantAS software quickly determines concentration levels in unknown liquid or solid samples. The scans covering 70 elements from fluorine to uranium can be done in only 3 minutes. Smoothing, background subtraction, peak identification, overlap and matrix corrections, calculation of semi-quantitative concentrations and normalization are all done automatically for a fast and easy quantification of unknown samples. Type standardization is available for ultimate accuracy. Four multi-element samples are provided for setting-up and maintenance over time.

The optional QuantAS software is fully calibrated and installed from the factory. Hence the ARL PERFORM'X spectrometer is ready to perform meaningful analysis of unknown samples directly after installation at the customer's site.

QUANTAS



QuantAS software calculates concentrations of elements from F to U in a sample from these five scans

Typical QuantAS results on a mineral sample

Element		Duration of analysis		
		2 min 40 sec	6 min 16 sec	12 min 12 sec
CaO	(%)	42.8	43.1	42.8
SiO ₂	(%)	31.3	31.7	32.1
Al ₂ O ₃	(%)	10.2	9.55	9.49
MgO	(%)	5.12	5.06	5.10
MnO	(%)	2.37	2.39	2.39
SO ₃	(%)	2.10	2.06	2.11
K ₂ O	(%)	1.80	1.63	1.71
Na ₂ O	(%)	1.42	1.22	1.26
TiO ₂	(%)	1.04	0.93	0.88
Fe ₂ O ₃	(%)	0.96	0.95	0.93
P ₂ O ₅	(%)	0.62	0.66	0.60
V ₂ O ₅	(%)	0.21	0.21	0.21
SrO	(%)	0.038	0.033	0.044
ZrO ₂	(%)	0.030	0.022	0.022
La ₂ O ₃	(%)	—	0.073	0.051
Y ₂ O ₃	(%)	—	0.025	0.025
Cr ₂ O ₃	(%)	—	—	0.014
F	(%)	—	—	0.092

Longer counting time provides better limits of detection and determination of lighter elements, here fluorine

UNIQUANT

UniQuant – industry leading standard-less analyses

As the original and most powerful standard-less XRF program, the optional UniQuant software works with the most advanced and powerful Fundamental Parameters algorithms. It is ideal for analysis of up to 79 elements in solids and liquids when standard samples are not available or when samples can only be obtained in small quantities, irregular shapes or coatings. UniQuant program uses 122 carefully selected line positions in order to determine peak and background intensities. It also calculates the balance of unanalyzed elements present in the sample, e.g., organic and ultra-light elements. Elements and their counting time can be selected hence deriving concentrations in a few minutes with best limits of detection.

UniQuant software is fully calibrated and installed from the factory. Hence the ARL PERFORM'X spectrometer is ready to perform meaningful analysis of unknown samples directly after installation at the customer's site. Stable samples are provided for setting-up and maintenance over time.

Typical UniQuant standard-less results

Traces in a geological sample

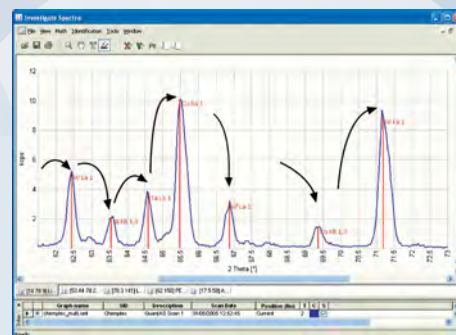
Element	Chem (ppm)	UniQuant (ppm)
Mn	1310	1340
Sr	1100	1080
F	700	650
Zr	277	280
V	165	167
Zn	150	135
Ni	140	128
Cr	134	116
Cl	114	98
S	100	158
Nb	68	75
Cu	49	56
Rb	37	33
Ga	25	23
Y	22	18
Sc	15	10

Coatings on steel

Element	Sample A		Sample B	
	Given	UniQuant	Given	UniQuant
Cr (mg/m ²)	1.9	2.1	8	8.4
Sn (g/m ²)	11.5	10.9	4.97	4.92



UniQuant, the world most renowned standard-less analysis package



UniQuant software uses up to 122 carefully selected line positions to determine peak and background intensities

Since X-rays are used in these instruments, please check all local laws and regulations in advance of the installation to avoid any regulatory problems.

XRF and XRD analysis capabilities from Thermo Fisher Scientific



Thermo Scientific Niton XL5
XRF Portable Analyzer



ARL QUANT'X
Versatile EDXRF



ARL OPTIM'X
Compact WDXRF



ARL PERFORM'X
Advanced WDXRF



ARL EQUINOX 100
Compact low power XRD



ARL EQUINOX 1000
Compact high power XRD



ARL EQUINOX 3000-5000-6000
Advanced XRD



ARL 9900 X-ray WorkStation
full XRF/XRD

X-ray spectrometry is a very powerful technique for fast, non-destructive, quantitative analysis of major, minor and trace components in all types of materials, including solids, powders, aqueous or organic solutions, and layered structures. It has numerous applications in every industry: pharmaceuticals, environmental monitoring, metals, cement, electronics, glass, polymers, ceramics, refractories, geochemistry, petroleum, chemicals and mining.

Thermo Fisher Scientific provides a full range of X-ray fluorescence and X-ray diffraction instrumentation (EDXRF, WDXRF, XRD, EDS, ESCA) that covers every aspect of X-ray spectrometry from routine to highly specialized research applications. From the versatile ARL QUANT'X to the ultra-precise ARL 9900 X-ray WorkStation, each instrument combines leading-edge technology with a long history of quality, durability and exceptional analytical performance.

Since X-rays are used in these instruments, please check all local laws and regulations in advance of the installation to avoid any regulatory problems.



ISO 9001
One-time audit

Thermo Fisher Scientific (Eublens) SARL,
Switzerland is ISO certified.



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