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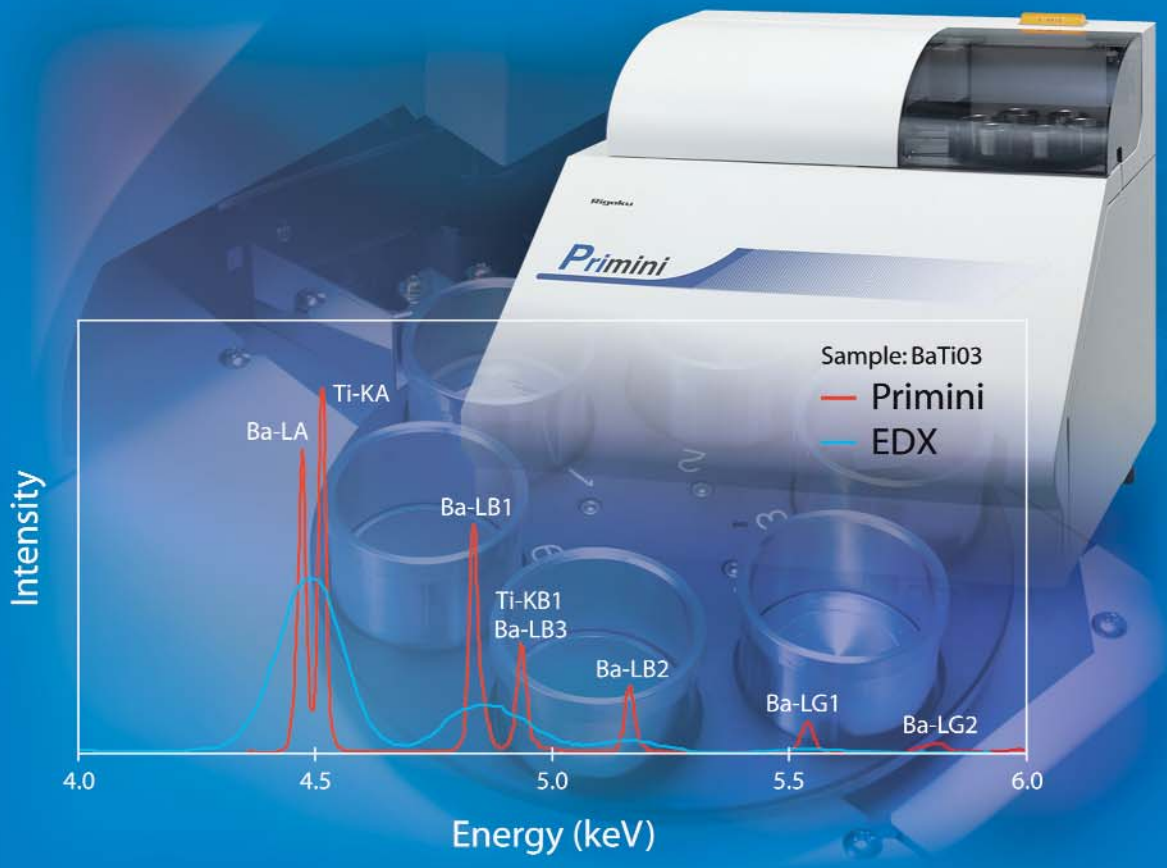
Primini

Benchtop wavelength dispersive X-ray fluorescence spectrometer



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Designed for the future

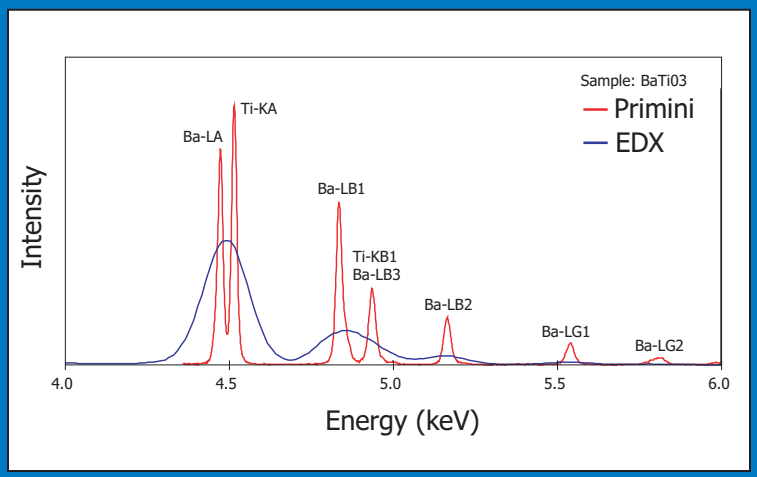
Evolution: a process in which something passes by degrees to a different, more-advanced stage

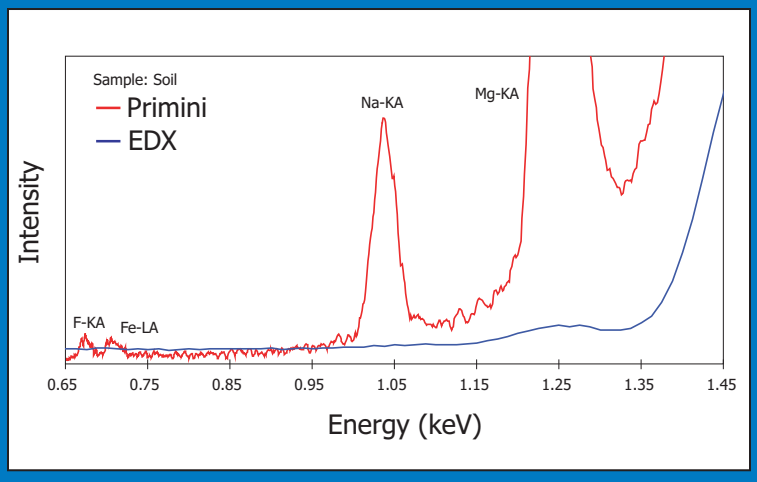
The new Primini® benchtop spectrometer represents the next stage in the evolution of Rigaku's line of WDXRF instrumentation. Using just three crystals, the Primini is capable of analysis from F^{9} to U^{92} in a vacuum or helium atmosphere. Since it is a WDXRF unit, the Primini does not have the resolution problems typically associated with EDXRF instruments, nor does it suffer from a lack of light element sensitivity.

The Primini contains all the special software features available in other members of Rigaku's ZSX® series, making

Features

- High resolution compared to EDXRF
- High light element sensitivity
- Analyze multiple film samples to a maximum of 10 layers
- Reduced operational costs
  - Very low P-10 gas flow
  - Standard 100/110 V, 50/60 Hz
  - Air cooled tube
- Small enough for mobility within the lab or conditioned field environment
- New 'super speed' evacuation feature





Comparison between Primini and EDXRF spectra

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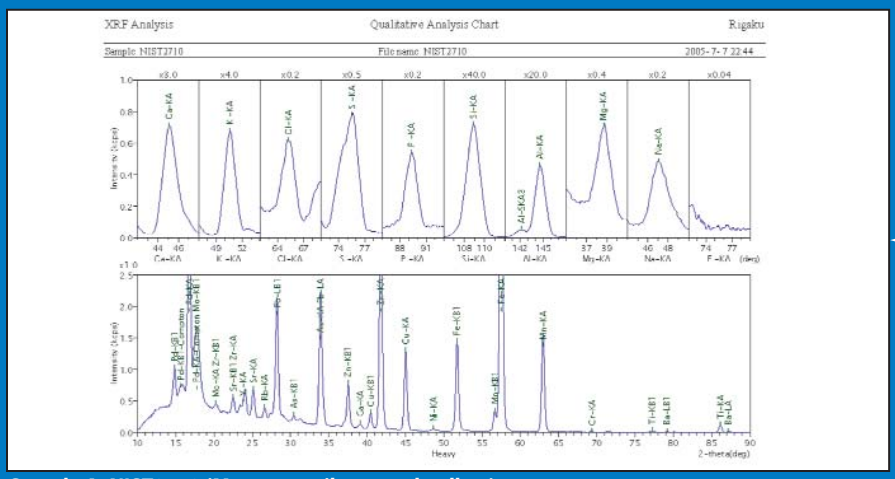
it the most powerful benchtop system available. An analyst's basic needs are all satisfied by this new instrument: Quantitative, Qualitative, and Semi-Quantitative analysis. Analyze loose powders, liquids, pressed pellets, and fused disks with ease and confidence using proven software and dependable instrumentation. Using flow bars, setup of quantitative and qualitative routines has never been easier.

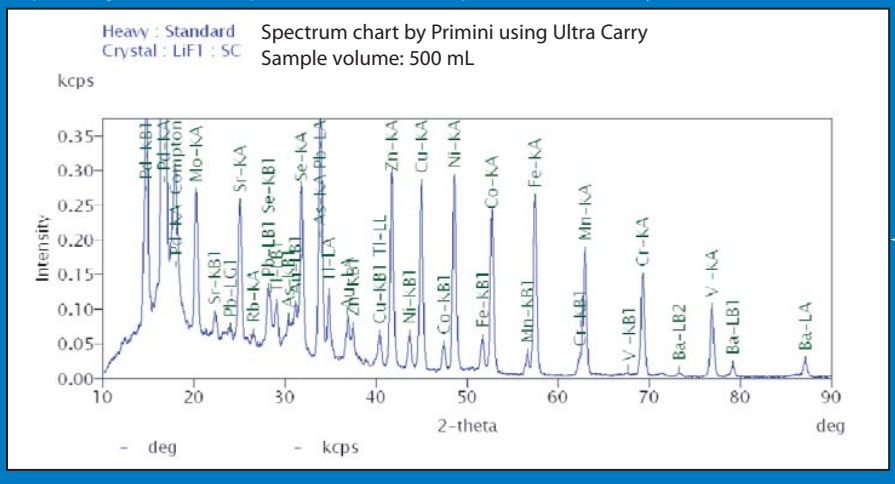
The Primini can also use Rigaku's patented Ultra Carry® filters, which allow levels of detection never seen before in such a low-powered XRF unit. The spectrometer features a 6-position sample carousel with automated loading. The Primini is air cooled, eliminating the need for external cooling associated with traditional XRF instrumentation, and also has no special power requirements: it operates on standard 100/110 V.

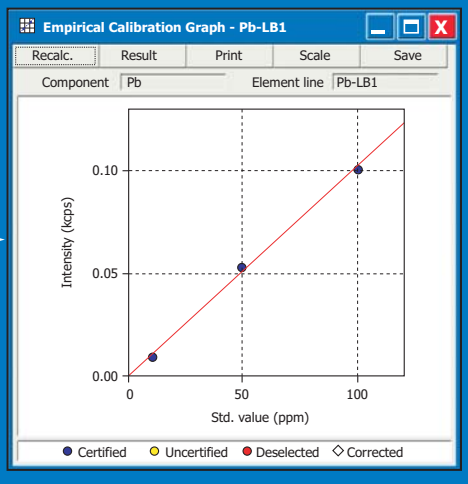
Experimental results



	Analyzed values mass %	Standard value mass %
Na	1.2	1.12
Mg	1.0	0.85
Al	7.0	6.4
Si	31	29
P	0.12	0.106
S	0.25	0.24
K	2.6	2.1
Ti	0.32	0.283
Mn	1.2	1.01
Fe	4.1	3.38
Pb	0.65	0.55

Sample A: NIST2710 (Montana soil, pressed pellets)
Using EZ scan and SQX analysis, excellent results are easily obtained through qualitative scans. Superior light element response is observed compared to an EDXRF system.





Sample B: Aqueous solution of element concentrations at 60 ppm
Higher sensitivity analysis is possible when Ultra Carry (high absorbancy analysis pad) is used in the analysis of liquid samples.

Calibration chart for Pb
LLD: 0.7 ppm

Wavelength dispersive X-ray fluorescence

Specifications

X-ray tube:		Pd target, 50 W (40 kV, 1.25 mA)
Analyzing crystals:		LiF 200, PET, and RX25 (RX35 optional)
Detectors:	Light elements: Heavy elements:	F-PC SC
Gas for F-PC:		P-10
Mask diameter:		ϕ 30 mm
Sample changer:		6-position with spinner: 30 rpm
Atmosphere:		Vacuum/He
Power requirements:		AC single phase, 100/110 V, 15 A max., 50/60 Hz (200 V optional)
Ground resistance:		30 Ω or less
Computer/software:		PC, monitor, printer, Windows® XP
Size:		640 mm x 580 mm x 580 mm
Weight:		200 lbs (90 kg)

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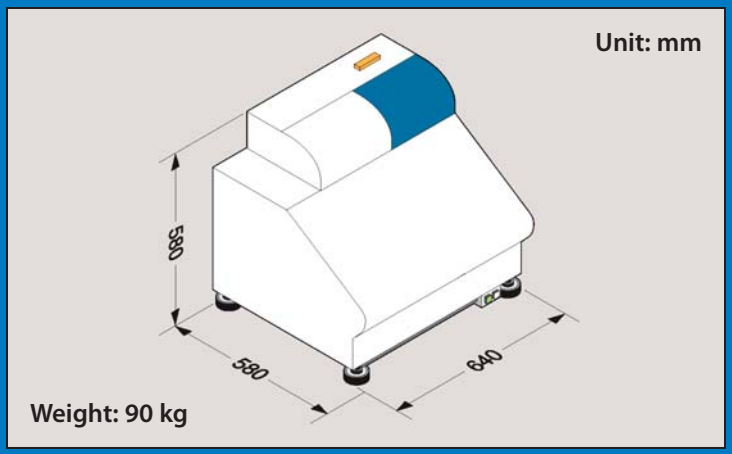

Dimensions

The Rigaku Primini WDXRF Spectrometer is a completely contained X-ray generating system. Interlocks and safety "X-RAY ON" indicators are present to protect operators from exposure to X-rays being produced. The spectrometer meets all North American safety codes and is CE marked. State regulations governing radiation safety and registration of X-ray emitting equipment can be obtained by contacting individual state government agencies.

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