Elemental innovation

Continuous development, improved customer experience
Scientifically-sound, benefits-driven innovations implemented in the Minerals edition of the Zetium spectrometer make it the most powerful tool for the analysis of a wide range of minerals and concentrates.

Elemental intelligence

Advanced analytical software for advanced analytical hardware
A quantum step for our renowned SuperQ software gives access to new technology combinations and analytical possibilities. Starring the Virtual Analyst, it enhances the user experience in setting up and operating the system.
60 years of experience and heritage, the ideal starting point
The Minerals edition of the Zetium spectrometer represents the next generation of a remarkably successful series of WDXRF platforms, including the Axios, MagiX and PW2400. Proven technology has been refined and brought forward onto the Zetium platform, infusing a level of heritage and prestige.

Transparent and reliable support in your neighborhood
From service to expertise, training to laboratory analysis the Minerals edition of the Zetium spectrometer is supported from every angle. With a worldwide network of experienced engineers and application specialists and a full suite of remote support possibilities, we ensure that your spectrometer operates at its best regardless of the location.

The Minerals edition of the Zetium spectrometer is a complete, dedicated tool for minerals analysis. It delivers ultimate sensitivity, versatility, robustness and speed for mineral exploration, mine management, beneficiation and quality control in application areas from antimony to zinc.
Superior performance, speed & robustness

The Minerals edition of the Zetium XRF spectrometer delivers unrivalled analytical performance, speed and robustness through the seamless amalgamation of PANalytical’s core and innovative technologies.

1 Measure the element that makes your profit
The Hi-Per scint detector delivers unrivaled linearity at count rates of up to 3.5 Mcps, enabling the measurement of high concentrations of elements, that would usually be treated as part of the balance, making it ideal for the analysis of major mineral concentrates in production and quality control.

2 In-house expertise with Virtual Analyst
The Virtual Analyst, delivered with our latest version of SuperQ analytical software, ensures that specialist-level expertise is available to you 24/7, for the development of new applications. The Virtual Analyst actively calculates the ideal measurement conditions, taking into account the configuration of the spectrometer, sample preparation information, the required analytical range, detection limits and required precision.

3 Struggling to find standards? Use WROXI!
Finding enough standards to set up reliable calibrations can be difficult and costly, that is why we have developed WROXI. The WROXI package consists of 20 synthetic standards, reliable fusion recipes, application templates and monitor samples, making it an out-of-the-box solution for the analysis of major and minor elements in geological materials and mineral concentrates.

WROXI measured vs. certified concentrations in a wide range of geological CRMS
Superior performance, speed & robustness

4 Analyze more samples per shift
The Zetium platform features a new high-speed sample changer, which reduces overhead time by up to 30%, maximizing sample throughput in standard laboratory environments. The Zetium platform can also be fully integrated into automation environments, from container laboratories, that you can deploy anywhere in the world, to sophisticated central laboratories, that set the benchmarks for process and quality control.

5 Maximize instrument uptime, stability and precision
Unique drift-free SST R-mAX X-ray tubes eliminate the largest source of drift. Direct optical position sensing (DOPS) technology maximizes precision. Advanced technologies minimize sample contamination including automatic sample-type recognition, turret-style sample loading, preloading dust removal, and CHI-BLUE tube window protection.

6 Interested in trace elements?
Use Pro-Trace!
The analysis of trace elements is becoming increasingly important in geological applications from exploration to tails evaluation. Pro-Trace delivers unrivalled trace analysis of up to 44 elements in geological materials, without the need to determine major elements first.

Typical detection limits for trace elements in Pro-Trace using the Zetium spectrometer
SumXcore, revolutionary results

Analysis of iron ores, prepared as fused beads, using SumXcore technology

In large-volume environments, like those in the mining industry, any time savings that can be made, without a loss in accuracy and precision, results in higher sample throughput and faster turnaround times for fast-moving commodities.

Integration of the revolutionary ED core into the Zetium spectrometer sees two technologies, namely WD- and EDXRF, converging to make a unique and powerful analytical heart that we call SumXcore, which delivers unique benefits for mining applications.

WD core + ED core = SumXcore
- Reduce analysis times by up to 50 %
- Identify and flag unexpected elements
- Fast sample screening
- Spectrum archiving

In this example, 19 iron ore certified reference materials (CRMs) were used to set up applications using the WD core (conventional sequential WDXRF) and the SumXcore to demonstrate the achievable time savings with SumXcore technology.

The applications contained calibration lines for 18 oxides. All 18 oxides were measured sequentially, using optimal settings, on the WD Core.

In the SumXcore application, 11 of the 18 oxides were measured sequentially using the WD core and the remaining 7 oxides were measured simultaneously using the ED core.

Table 1 provides a summary of the measurement times. It can be seen that the combination of the WD and ED cores within the SumXcore delivered a 36 % reduction in total analysis time, due to time savings in both measurement time and overhead time (the time required to change crystals, collimators filters, etc.). Table 2 demonstrates the accuracy of the SumXcore application when measuring Japanese Standard Sample JSS 830-3.

<table>
<thead>
<tr>
<th>WD/ED</th>
<th>Element/compound (as per certificate)</th>
<th>Certified concentration (wt%)</th>
<th>SumXcore measured (wt%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED</td>
<td>Total Fe</td>
<td>60.57</td>
<td>60.52</td>
</tr>
<tr>
<td></td>
<td>Mn</td>
<td>0.61</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>SiO₂</td>
<td>2.26</td>
<td>2.19</td>
</tr>
<tr>
<td></td>
<td>TiO₂</td>
<td>6.32</td>
<td>6.34</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>Zn</td>
<td>0.075</td>
<td>0.075</td>
</tr>
<tr>
<td>WD</td>
<td>MgO</td>
<td>2.15</td>
<td>2.24</td>
</tr>
<tr>
<td></td>
<td>Al₂O₃</td>
<td>2.75</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>0.124</td>
<td>0.124</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>0.005</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>CaO</td>
<td>0.68</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>Cr</td>
<td>0.018</td>
<td>0.016</td>
</tr>
<tr>
<td></td>
<td>Cu</td>
<td>0.011</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>Ni</td>
<td>0.006</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Table 1. Achievable time savings with SumXcore technology

<table>
<thead>
<tr>
<th>Iron ores as fused beads</th>
<th>WD core</th>
<th>SumXcore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxides measured with WD core</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Oxides measured with ED core</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Measurement time (s)</td>
<td>216</td>
<td>136</td>
</tr>
<tr>
<td>Overhead time (s)</td>
<td>122.5</td>
<td>80</td>
</tr>
<tr>
<td>Total analysis time (s)</td>
<td>338.5</td>
<td>216</td>
</tr>
<tr>
<td>Time saving with SumXcore</td>
<td></td>
<td>36%</td>
</tr>
</tbody>
</table>
Elemental support

1. SERVICE
Worldwide network of experienced engineers backed by regional and headquarter specialists
Tailor-made support packages with three tiers of support by phone, by remote connection, or on site
Performance certificates after every service
Rapid dispatch of spare parts
Guaranteed 10 year replacement of parts after production of your instrument
Software and hardware upgrades are available if your requirements change or if new innovations arise.

2. EXPERTISE
Access to the industry’s largest pool of application specialists either by phone, remote connection or on-site visit.
Complete analytical solutions including:
- Sample preparation
- In-house fusion expertise
- Ready-to-go application solutions
- Design and integration of automation solutions
- Method development and optimization
- Method maintenance to ensure independent validation
- Multi-laboratory standardization - SOP
Participation in development of international norms

3. TRAINING & EDUCATION
Regular courses worldwide in various languages
Customized training to cater for beginners and advanced users, delivered on-site or at one of our competence centers
Access to a wide and expanding published knowledge center
Regular webinars with on-demand access
Regional workshops and user days

4. ANALYSIS & STANDARDS PREPARATION
Analytical services to ISO 17025 compliance at a dedicated facility: PANalytical Nottingham
Accredited analysis of customer samples e.g. in-house standards
Production of customized standards
About PANalytical

PANalytical’s mission is to enable people to get valuable insight into their materials and processes. Our customers can be found in virtually every industry segment, from building materials to pharmaceuticals and from metals and mining to nanomaterials. The combination of our software and instrumentation, based on X-ray diffraction (XRD), X-ray fluorescence (XRF), near-infrared (NIR) and optical emission (OES) spectroscopy and pulsed fast thermal neutron activation (PFTNA), provides our customers with highly reliable and robust elemental and structural information on their materials and is applied in scientific research and industrial process and quality control.

PANalytical employs over 1,000 people worldwide. The company’s headquarters are in Almelo, the Netherlands. Fully equipped application laboratories are established in Japan, China, the US, Brazil, and the Netherlands. PANalytical’s research activities are based in Almelo (NL) and on the campus of the University of Sussex in Brighton (UK). Supply and competence centers are located on two sites in the Netherlands: Almelo (X-ray instruments) and Eindhoven (X-ray tubes), in Nottingham, UK (XRF applications and standards), in Quebec, Canada (fusion sample preparation) and in Boulder CO, US (near-infrared instruments).

PANalytical is active in all but a few countries of the world. This worldwide sales and service network ensures unrivalled levels of customer support.

The company is certified in accordance with ISO 9001 and ISO 14001.

Visit [www.panalytical.com](http://www.panalytical.com) for more information about our activities.

PANalytical is part of Spectris plc, the productivity-enhancing instrumentation and controls company.

Access to expertise

With the largest service network we are able to offer the most comprehensive support package possible.

Expertise:
- On-site training available
- XRF training courses
- Performance optimization
- Customizable expertise programs
- Assistance with multi-laboratory standardization

Care Agreements

Our customer support solutions have been developed with your business in mind. They are formulated as a family of four Care Agreements which can be tailored to your specific needs and provide fast, secure and reliable support.

- ECONOMY: indispensable coverage for self-sufficient operations
- ADVANCED: cost-effective support for routine usage
- PREMIUM: flexible package for high equipment usage
- ELITE: most comprehensive package for demanding environments

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