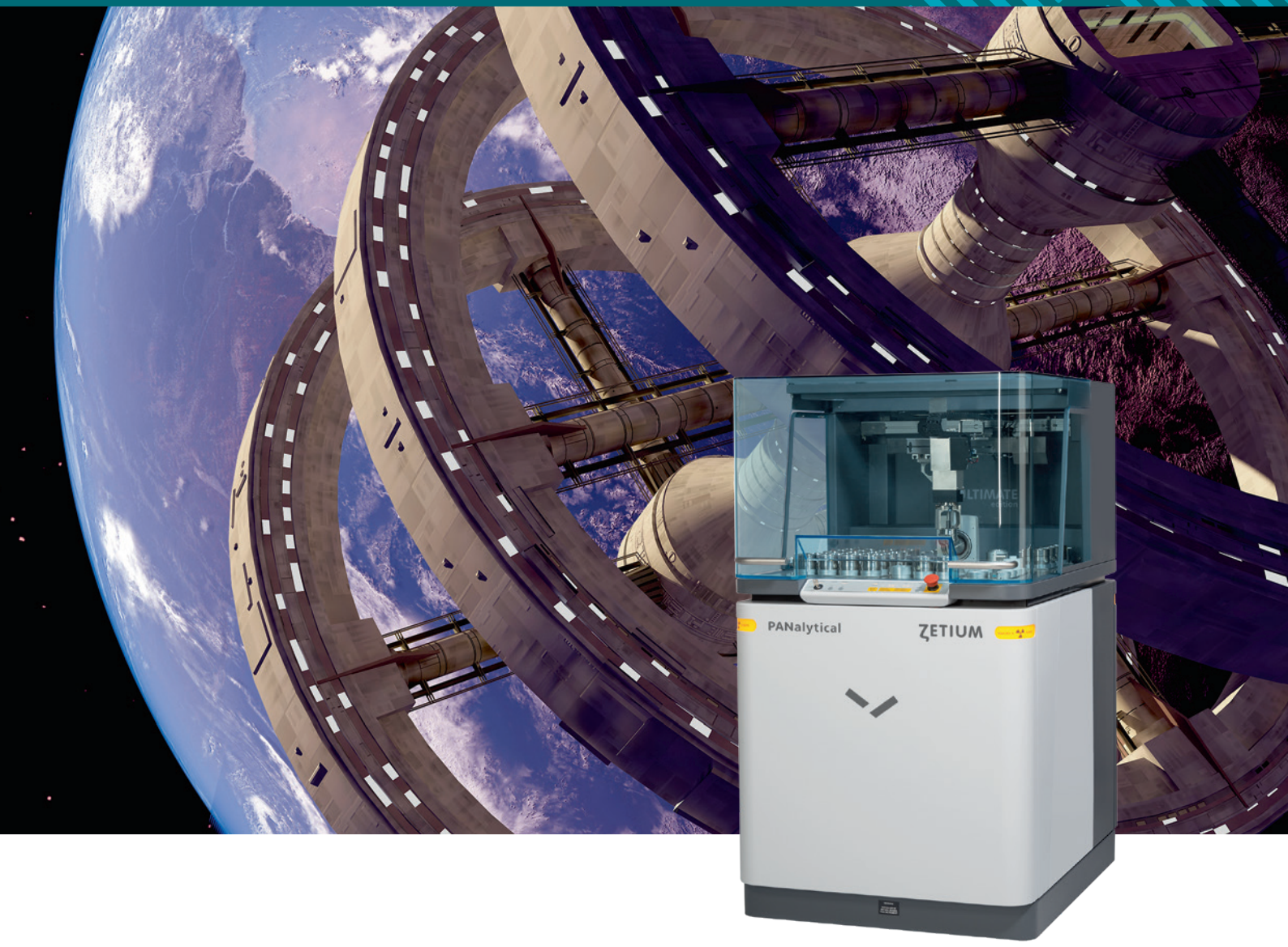
Malvern Panalytical
a spectris company

ZETIUM

Ultimate edition



The Ultimate edition of the Zetium spectrometer is a complete, dedicated tool for research environments as well as in industrial applications where ultimate performance is key. It is designed for the analysis of any type of sample and unknown material.
To meet customer's expectations, spectrometers can be optimized to your budget and performance requirements.

ELEMENTAL INNOVATION

Continuous development, improved customer experience

Scientifically-sound, benefits-driven innovations implemented in the Ultimate edition of the Zetium spectrometer make it the most powerful multipurpose tool for the analysis of a wide range of materials, from liquids to layered materials.

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.

ELEMENTAL TECHNOLOGY

60 years of experience and heritage - the ideal starting point

The Ultimate edition of the Zetium spectrometer represents the next generation of a remarkably successful series of WDXRF platforms, including the Axios, the MagiX and the PW2400. Proven technology has been refined and brought forward onto the Zetium platform, infusing a level of heritage and prestige.

ELEMENTAL SUPPORT

Transparent and reliable support in your neighborhood

From service to expertise, training to laboratory analysis the Ultimate edition of the Zetium spectrometer is supported from every angle. With a worldwide network of experienced engineers coupled with the industry's largest pool of application scientists, Malvern Panalytical is always on hand to help you meet your analytical requirements.

TOWARDS NEW HORIZONS

The Ultimate edition of the Zetium XRF spectrometer delivers unrivalled analytical performance, speed and robustness through the seamless amalgamation of Malvern Panalytical's core and innovative technologies.

Outstanding accuracy across the entire periodic table

Ultra-light element performance results from the combination of a 50 µm X-ray tube window, dedicated multilayer and curved crystals and high-yield collimators. Transition row and heavy elements are rapidly analysed using the combination of Hi-Per scint and duplex detectors.

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. Virtual Analyst is not just another wizard, it actively calculates the ideal measurement conditions, taking into account the configuration of the spectrometer, sample and preparation information, the required analytical range, detection limits and required precision.

Save time and money

Advanced sample handling and completely integrated solutions maximize return on investment by minimizing time spent on manual operations. For optimized process control, fully automated systems can be configured to include complementary technologies such as optical emission (OES) and X-ray diffraction (XRD) all coordinated by a LIMS system.

Combined technologies, unlimited benefits

A single platform combines sequential and simultaneous analysis. SumXcore, the innovative combination of WD- and EDXRF technologies, offers a fast and powerful screening tool for XRF analysis. The entire spectrum can also be rapidly collected during routine analyis facilitating rapid detection of contaminants during process control. The ED core features a small spot mapping SDD detector, adding a compositional mapping functionality for fast and accurate analysis of inclusions.

Accurate results even without standards

In addition to a comprehensive set of standards and dedicated software support, the Omnian standardless analysis package can be used for the analysis of unknown compositions. Moreover it can be used to perform fast screening analysis without the need for dedicated reference materials.

From major concentrations to trace elements in different industries

Always meet your analytical requirements with turn-key solutions. Application templates and software packages are available for the analysis of different materials, whether you need accurate and precise analysis of traces with the Pro-Trace software, or the analysis of production samples in the metals industry with NiFeCo and Cu-base.

Superior characterization of multilayered materials

The Virtual Analyst expert software will guide you to the best choice of measurement and analysis settings using the Stratos software package for your multilayer measurements. By automating the complexity of the analysis steps, you are enabled to meet your specifications for single and multilayer coatings on metallic substrates. Typical applications of the Stratos software are: the analysis of single layer and multilayer surfaces and coatings, such as deposited metals, processed semiconductor wafers and others.

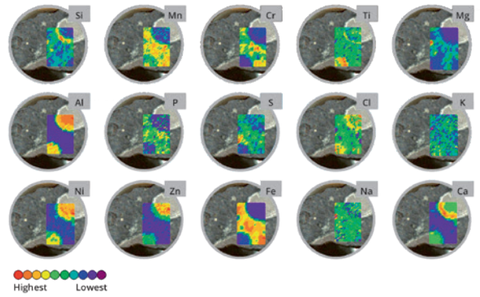
SMALL SPOT ANALYSIS WITH MAPPING: CLUES TO THE EARLY SOLAR SYSTEM

Compositional mapping of a chondritic sample

Carbonaceous chondrites are a subcategory of chondrites, and are among the rarest types of meteorites. Their geochemical signature is very characteristic. In fact, their non-volatile chemical composition is the most primitive of any rock in the solar system, very similar to the composition of the Sun (and therefore the overall solar system). Because they are the oldest bodies of the solar system, carbonaceous chondrites are used as geochemical reference in dating studies.

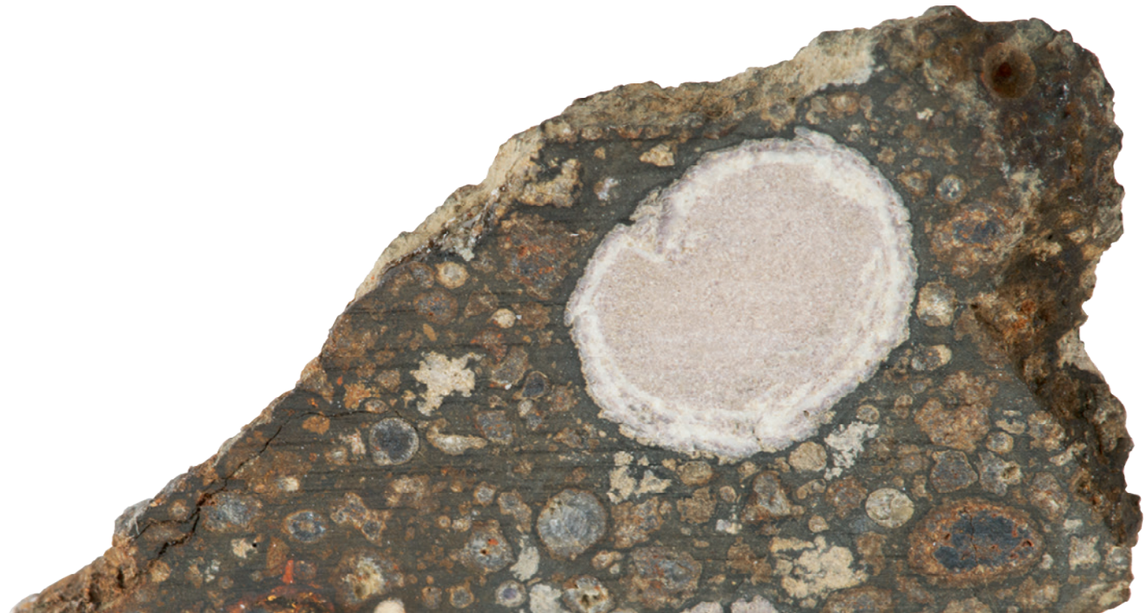
In this study the distribution of a variety of elements was mapped in a chondritic meteorite sample (type CV3), with calcium-aluminium rich inclusions (CAIs). The analysis was carried out with the Zetium small spot mapping function, which combines the ED core with the innovative sample translation mechanics of the sample introduction turret.

The meteorite sample was mounted in a special sample holder, designed to accommodate a variety of irregular-shaped samples. A 5 mm x 7.5 mm area of the sample surface was mapped, using a total of 600 spots with a spot size of 500 microns. Each spot was measured for 60 seconds, giving a total measurement time of 10 hours. Images showing the distribution and relative concentration of 15 elements with the analysed area clearly show the compositional differences between the host sample matrix and the Ca-Al rich inclusions.



Small spot elemental analysis and mapping by XRF

Adding practical small spot mapping functionality to a full-function WDXRF, without compromising its performance, adds new and realistic analytical possibilities for a variety of laboratories. Moreover, compared to other elemental mapping techniques, like scanning electron microscopy or electron microprobe analysis that involve quite complex sample pre-treatments, XRF requires little or no sample preparation. Now available to users of varying experience, element mapping becomes a straightforward task, indispensable in scientific research and process troubleshooting.



ED CORE AND SMALL SPOT ANALYSIS WITH MAPPING

- Fast, multi-element data acquisition
- Individual inclusion analysis and element distribution mapping, revealing compositional trends and heterogeneities
- Standardless Omnian quantification and/or material-specific calibrations

Malvern Panalytical
a spectris company

WHY CHOOSE **MALVERN PANALYTICAL**?

We are global leaders in materials characterization, creating superior, customer-focused solutions and services which supply tangible economic impact through chemical, physical and structural analysis.

Our aim is to help you develop better quality products and get them to market faster. Our solutions support excellence in research, and help maximize productivity and process efficiency.

Malvern Panalytical is part of Spectris, the productivity-enhancing instrumentation and controls company.

www.spectris.com

SERVICE & **SUPPORT**

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy

www.malvernpanalytical.com/zetium

MALVERN PANALYTICAL

Grovewood Road, Malvern,
Worcestershire, WR14 1XZ,
United Kingdom

Tel. +44 1684 892456
Fax. +44 1684 892789

Lelyweg 1,
7602 EA Almelo,
The Netherlands

Tel. +31 546 534 444
Fax. +31 546 534 598

info@malvernpanalytical.com
www.malvernpanalytical.com