JULY 2022, ISSUE 109

WELCOME

Two scientific conferences with which Rigaku has a long history return as live or hybrid events this summer; the American Crystallographic Association's annual meeting (ACA) in Portland, Oregon and the Denver X-ray Conference (DXC) in Rockville, Maryland. We hope to see many of you there!

In this issue, we present an article on battery research and the third installment in Rigaku Analytical Device's podcast series on the opioid crisis, along with the news about the use of the ResQ CQL handheld Raman analyzer for the characterization of a range of hazardous materials.

We are also sharing an informative article from the Summer 2021 issue of the *Rigaku Journal* about the instrumental requirements for collecting high-quality X-ray diffraction data.

The high-resolution images captured by the James Webb Space Telescope have been all over the news and social media recently. Although it has only been in operation for a short while, the data this telescope has been providing is reshaping our thoughts about the known universe.

In late August, Rigaku's thermal analysis division is presenting another webinar, this time about using STA, DSC, TMA and evolved gas analysis to study elastomers. We also present two XRF application notes, one featuring WDXRF analysis of recycled solid fuel and another about the use of EDXRF to monitor sulfur content in gypsum.

IN THE NEWS

Article

Batteries researchers and material scientists will likely be interested in an article entitled "Improving the oxygen redox reversibility of Li-rich battery cathode materials via Coulombic repulsive interactions strategy" recently published in *Nature Communications*. It describes a new approach to steer electric properties of cathode active materials by chemical reduction and defect engineering.

Podcast

Listen to Episode 3 of *The Opioid Matrix: Fruit of The Poisonous Tree: Origins of the Fentanyl Problem* podcast, where Jen Lynch, Marketing Director at Rigaku Analytical Devices, talks with Michael W. Brown, the host of the show, and Global Director of Counter-Narcotics Interdiction Partnerships at Rigaku Analytical Devices, about how the symbiotic relationship between Chinese crime groups and Mexican cartels has resulted in thousands of fentanyl-related deaths.

FEATURED RIGAKU JOURNAL ARTICLE

Powder X-ray Diffraction Basic Course
Second Installment: Selection of equipment configuration to obtain high-quality data.

It is necessary to obtain high-quality data for highly accurate analysis. This article explores the factors involved in selecting the proper equipment configurations to obtain high-quality data:

- Selection of X-ray source
- Selection of optical systems
- Setting incident and receiving optical systems
- Detector configuration.

These sections are arranged in order from the X-ray source to the receiving optical system.
Read More >

LINK OF THE MONTH

The James Webb Space Telescope's view of the galaxy NGC 7496 reveals bright channels of dust and gas where stars are actively forming.

In a recent development, the telescope may have spotted the most distant galaxy ever seen, producing light formed a mere 300 million years after the Big Bang.
Read More >

UPCOMING EVENTS

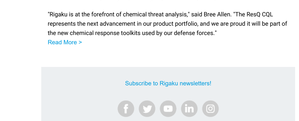
Rigaku is a Dimond Sponsor at 72nd ACA Annual Meeting
Portland, Oregon, July 29 - August 3, 2022

In an effort to remain flexible in this dynamic time, the ACA will offer a selection of in-person content as fully accessible, hybrid presentations. Topics will cover single-crystal, powder, and fiber diffraction with X-rays, neutrons and electrons; scattering; cryogenic electron microscopy; advanced capabilities at national synchrotron and neutron sources; and much more.
Visit us at the Booth #201 & #414 >

Denver X-ray Conference 2022
Rockville, Maryland, USA, August 1-5, 2022

The most awaited X-ray event of the year
From its humble beginning of 35 participants on the University of Denver campus, to a nationally and internationally recognized annual event, this year, DXC will celebrate 71 years as the leading annual forum on general X-ray analysis, including both X-ray fluorescence and X-ray diffraction.
Visit us at the Booth #33, 34, 35 >

UPCOMING RIGAKU WEBINARS



Thermal Analysis Technical Seminar: Evaluation of Elastomers by Thermal Analysis
Thursday, August 25, 2022 - 02:00 CDT

This webinar will focus on elastomers evaluated by common methods in thermal analysis such as STA, DSC, TMA and evolved gas analysis
Register Now >

FEATURED APPLICATION NOTES

Semi-quantitative Analysis of Recycled Solid Fuel with Benchtop WDXRF "Supermini200"
Rigaku Corporation

In X-ray fluorescence (XRF) analysis, it is possible to perform qualitative and quantitative analysis with easy sample preparation, without dissolving samples. Therefore, XRF is widely used for industrial process and quality control. In addition, evolution of the fundamental parameter method (FP method) has improved performance of the semi-quantitative analysis program "SQX" analysis), where it is possible to calculate quantitative values based on the results of qualitative analysis without calibration standards.

This application note demonstrates analysis results of refuse derived fuel (RDF) by the semi-quantitative analysis program "SQX" with the benchtop wavelength-dispersive (WD) XRF spectrometer, Supermini200.
Read More >

The measurement of sulfur in gypsum
Applied Rigaku Technologies

Gypsum (calcium sulfate dihydrate) is a very useful industrial mineral, sought mainly for its high sulfur content. An important use of gypsum is in finished Portland cement to prevent flash-setting of concrete and also to establish drying properties in wet environments. The sulfur content of the gypsum as it is processed needs to be closely monitored to ensure the quality and proper formulations of the products. To meet the industry needs, Rigaku offers NEX QC, a simple and versatile benchtop EDXRF analyzer for the analysis of sulfur in gypsum.
Read More >

MATERIALS ANALYSIS IN THE NEWS

Second Generation Handheld Raman Chosen as Part of U.S. JPEO CBRND Modernization Program

We're pleased to announce the Rigaku ResQ CQL 1064 nm handheld Raman analyzer will be deployed globally as part of the U.S. Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) Program.

The DR SKO System Modernization program deploys new and improved kits of technology to Department of Defense (DoD) locations around the world for characterization of suspected chemical, biological, radiological, and nuclear (CBRN) hazards.

"Rigaku is at the forefront of chemical threat analysis," said Bree Allen. "The ResQ CQL represents the next advancement in our product portfolio, and we are proud it will be part of the new chemical response toolkits used by our defense forces."
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