JUNE 2022, ISSUE 108

WELCOME

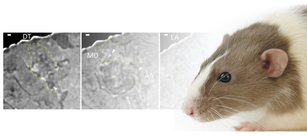
Powering New Perspectives
The vast universe of materials analysis

As Rigaku's 70th Anniversary celebrations come to a close, it provides an opportunity to reflect on our "why"; our raison d'être for what Rigaku is striving to achieve. Before this newsletter is composed, content is gathered from various divisions of the organization and, this month, it was genuinely impressive to look at the submitted information covering a vast array of applications and fields of study that we support with our instrumentation.

This month, learn about strain-induced crystallization of rubber, silicone coatings on paper and plastics, the fight against opioids, and 3-D observations of mouse kidneys.

To quote our president: "...we have continued to develop and grow alongside our customers, always mindful of our mission: to contribute to the enhancement of humanity through scientific and technological development. All of us hope that the work we do today will make the world a better place for the generations that follow by **powering new perspectives**."

IN THE NEWS



Article: A new paper, published in *Scientific Reports*, introduces paraffin-mediated contrast enhancement used to visualize biopsy samples of mouse kidney with nano3DX, Rigaku's laboratory-based X-ray microscope.

Podcast

Listen to Episode 1 of the podcast called *The Opioid Matrix: The U.S. Domestic Drug War-Is this battle a lost cause?* 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 the domestic side of the war on drugs.

VIDEO OF THE MONTH

Rigaku NEX LS Scanning Multi-element Coating Analyzer

Watch how coatings are analyzed using the Rigaku NEX LS Scanning Multi-element Coating Analyzer. Designed explicitly to meet the needs of challenging conditions found in coating and converting processes, NEX LS helps maintain routine quality control for web and coil applications. The NEX LS linear scanner provides real-time coat weight profiling of your process. Common applications include silicone release coaters, converters, denesting Si for vacuum-formed plastics, conversion coatings, fuel cell loadings, metalized plastic, top coatings on metal coil, and fire retardants on fabric.

LINK OF THE MONTH

This multi-award-winning *Naked Scientists Podcast* comes to you from Cambridge University and delivers a weekly dose of the world's most important science news and breakthroughs. The Naked Scientists are a team of scientists, doctors and communicators whose passion is to help the general public to understand and engage with the worlds of science, technology and medicine.
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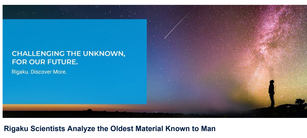
RYUGU ASTEROID PROJECT



Rigaku Scientists Analyze the Oldest Material Known to Man

Rigaku experts have analyzed the oldest material ever identified at 4.5 billion years old, the tiny sample of the Ryugu asteroid that returned to earth aboard the Hyabusa2 space probe launched by JAXA (the Japanese State Space Agency) following a six-year round trip. The WDXRF and thermal analysis results will be invaluable for other researchers around the world and will provide valuable insights into the formation of our universe.
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FEATURED APPLICATION NOTES

XRD

Observation of Strain-Induced Crystallization of Natural Rubber.
Rigaku Corporation

In addition to evaluation of crystal structure, X-ray diffractometry enables evaluation of periodic structure called "long-period structure." For this long-period structure, it is necessary to observe a period a few times to a few tens of times longer than the periodic structure of atoms or molecules in ordinary crystals, and thus evaluation using small-angle scattering measurement becomes important. Structural changes due to heating, stretching, magnetic fields and other external factors are often seen, particularly in samples such as polymers and rubber which have both a crystal structure (microstructure) and long-period structure (macro structure). New findings can be obtained by evaluating both crystal structure and long-period structure while varying these external factors.
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EDXRF

Silicone Coating on Paper and Plastic
Applied Rigaku Technologies

Paper and plastic are coated with a thin layer of silicone as a release coating in the manufacture of labels, tape, or other adhesives, or as a barrier coating for protection against air in the packaging of food, medical products, and other materials. In a clay-coated paper, the clay coating adds weight and adjusts various physical properties such as paper glossiness and ink retention. During the coating process, the amount of silicone coating, usually expressed as coat weight in g/m^2 or lbs/ream, must be periodically measured in order to ensure the proper physical properties of the product. When the coating is too heavy, silicone material is needlessly wasted, while too little coating may not meet the product spec. To achieve reliable QA/QC, Rigaku offers the NEX QC EDXRF analyzer. Simple to operate, NEX QC gives the QC technician an ideal tool for quickly checking silicone coat weight in order to maintain the highest product quality with minimal costs.
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