University of Delaware Advanced Materials Characterization Laboratory acquires two Rigaku X-ray imaging systems

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New laboratory will host two Rigaku computed tomography (CT) systems: CT Lab GX 130 micro-CT system and nano3DX nano-CT system.

April 9, 2019 – Newark, DE. Rigaku Corporation is pleased to announce that the new University of Delaware CT Scanner Facility, based at the Patrick T. Harker Interdisciplinary Science and Engineering Laboratory's Advanced Materials Characterization Lab (AMCL), will host two advanced Rigaku X-ray computed tomography imaging systems. The nano3DX and CT Lab GX 130 instruments from Rigaku address a wide range of applications in both materials and life sciences.

The AMCL worked with Gonzalo Arce, a professor in UD's Department of Electrical and Computer Engineering, and industrial partner W.L.Gore & Associates, Inc. in the acquisition of the two new 3D X-ray microscopes that are destined to greatly enhance the core facility's ability to meet current and future University of Delaware research needs.[1] Both instruments were installed in March and will be commissioned in April.

Commenting on the acquisition, Tom McNulty, SVP and General Manager of the Materials Analysis SBU at Rigaku, said, "Providing multiple instruments that are optimized for individual material types and measurement requirements enhances both the quality of the observed data as well as overall laboratory throughput. In the case of a centralized facility – such as the Advanced Materials Characterization Lab here at University of Delaware – offering a wide range of analytical services to a broad user base, experimental flexibility and high throughput are especially critical."

According to Charles G. Riordan, UD Vice President for Research, Scholarship and Innovation, the latest addition to the AMCL enhances the university's ability to foster an atmosphere of collaborative, interdisciplinary research and industrial partnership.

"UD is pleased to partner with Rigaku and W.L. Gore & Associates to bring micro- and nano-CT capabilities to our faculty, students and staff. These partnerships are critical to driving research forward as expeditiously as possible," said Riordan.

[1] https://sites.udel.edu/amcl/2018-fall-newsletter/

Gerald Poirier, laboratory manager for AMCL, added that the new instruments will be in an open-access laboratory providing non-destructive 3D X-ray computed tomography (CT) and high-performance image analysis services to the general UD user community, including local researchers, companies and also remote users (both local and international, via sample shipment and data transfer).

"The Advanced Materials Characterization Lab serves a diverse set of users across a wide range of disciplines from art conservation to engineering to physics and more," Poirier said. "The facility now will include a high-speed scanning system suitable for large samples and dynamic *in situ* experiments, and a second system that can provide very high-resolution images, such as those necessary to the continued research being conducted by Dr. Gonzalo Acre, which features coded apertures and filters for multiple energy X-rays."

The Rigaku nano3DX system is a true X-ray microscope (XRM) that is fast enough to deliver 4D computed tomography (CT) images of relatively large samples at high resolution. This is accomplished by using a high-power 1.2 kW, 60 kV rotating anode X-ray source and a high-resolution CCD detector. The rotating anode provides for fast data acquisition and the ability to switch anode materials easily to optimize contrast for specific sample types. The nano3DX system is optimized for lower density materials.

About Rigaku

Since its inception in Japan in 1951, Rigaku has been at the forefront of analytical and industrial instrumentation technology. Rigaku and its subsidiaries form a global group focused on general-purpose analytical instrumentation and the life sciences. With hundreds of major innovations to their credit, Rigaku companies are world leaders in X-ray spectrometry, diffraction, and optics, as well as small molecule and protein crystallography and semiconductor metrology. Today, Rigaku employs over 1,400 people in the manufacturing and support of its analytical equipment, which is used in more than 90 countries around the world supporting research, development, and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial communities.

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