



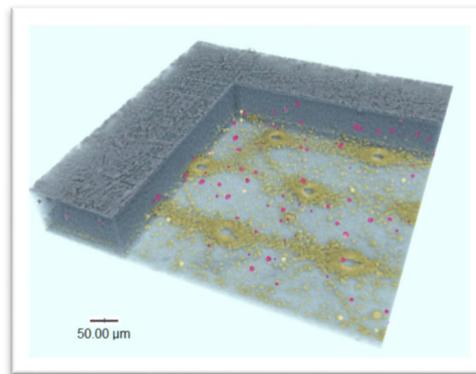
## **X-ray Microscopy Seminar and Workshop**

30 October 2019 | Rigaku Americas Corporation  
Reported by Tom McNulty, Sr VP GM Materials Analysis

X-ray computed tomography (CT) is well known as a diagnostic technique in the medical arena or as a non-destructive inspection technique for luggage and various mechanical parts. X-ray source and detector technologies, along with data processing techniques, have advanced rapidly in recent years, making X-ray CT a great imaging technique for Materials and Life Science. Since the technique is relatively new to those fields, it is still very much under-recognized. As a leading X-ray company, we started an X-ray CT outreach to Materials and Life Science researchers last year.



*Attendees pictured in front of Rigaku Americas Corporation, The Woodlands, Texas*



*3 μm thick organic membrane filter imaged by Rigaku nano3DX*

On October 30, 2019, we hosted our third X-ray Microscopy Seminar and Workshop at our Rigaku facility in The Woodlands, Texas. Previous events were held at the University of Southern California Medical Imaging Center in 2018 and by The Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana-Champaign in June 2019.

In the seminar held last month, attendees learned the latest advances in X-ray microscopy from top-level innovators in the field. The morning session consisted of four invited speakers:

**Dr. Tom Fitzgibbons, The Dow Chemical Company**

*“X-ray Tomography Big and Small: The Versatility of CT for Soft Material Characterization”*

**Dr. Mike Marsh, Object Research Systems**

*“Image Analysis in MicroCT - Transformative Advances in Deep Learning”*

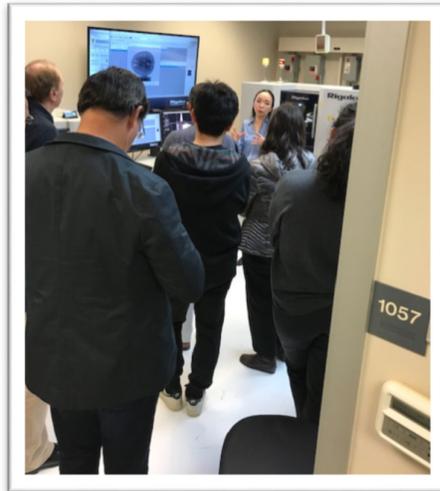
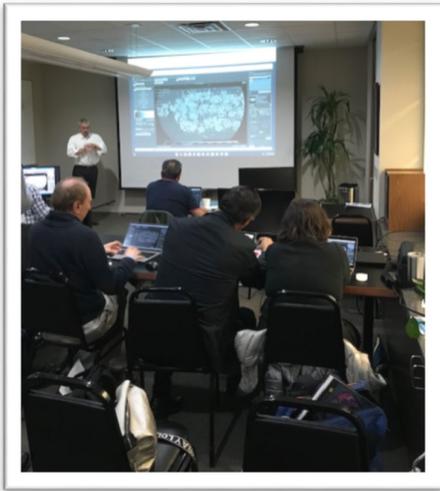
**Aya Takase, Rigaku Americas Corporation**

*“High-Resolution X-ray CT for Low Z Materials”*

**Prof. Kostya Kornev, Clemson University**

*“X-ray Microscopy in Analysis of Surface Phenomena”*

After enjoying the invited speakers' talks in the morning, participants were treated to a nice lunch in the lobby that included entertainment from a professional street magician. After lunch, Aya Takase gave a second talk focusing on the basic principles of X-ray microscopy.



In the afternoon, attendees participated in a hands-on lab workshop using Rigaku instruments and ORS's Dragonfly Deep Learning image analysis software.

Rigaku offers three X-ray CT scanners, the nano3DX for 700 nm resolution high-contrast microscopy, the CT Lab HX to cover a wide range of microtomography needs from 2.2  $\mu\text{m}$  voxel resolution to 200 mm field of view, and the CT Lab GX for stationary sample mount and high-speed scans for in-situ measurements and in-vivo scans. The Imaging Suite at Beckman Institute houses the nano3DX and the CT Lab GX to offer a wide range of X-ray CT imaging services.



*Rigaku X-ray microscope and microtomography systems  
(from left to right: nano3DX, CT Lab HX, and CT Lab GX)*

Speakers and attendees had great discussions about the different kinds of research fields we were in and we all learned something new from each other. We would like to thank all the invited speakers and attendees, especially the out-towners, who came to the seminar to join us.

In collaboration with University of Delaware, we will be organizing another X-ray Microscopy Seminar and Workshop next year. Stay in touch. We might be in your town next!