Versatile Benchtop X-ray CT Scanner: CT Lab HX

Aya Takase

Rigaku Americas Corporation

9009 New Trails Drive, The Woodlands, TX 77381-5209

X-ray computed tomography (X-ray CT) has been widely used in medical and industrial inspection industries in the last few decades. Although X-ray CT can be a great imaging tool for materials science research as well, until recently, the technique has been underutilized due to a lack of necessary computational power and readily available image segmentation algorithms to conduct quantitative analyses.

In the last several years, general purpose GPU's and artificial intelligence (AI) based image segmentation algorithms have become available as both commercial and open access software that materials scientists can use simply as tools [1-3]. Those technical developments are going to make X-ray CT an everyday imaging tool for materials science researchers and this change will require conventional X-ray CT scanners to be more versatile and easy to use. In this presentation, we will present a new benchtop X-ray CT scanner, Rigaku CT Lab HX, as an example of versatile and easy to use system and show example images collected on the CT Lab HX and analyzed using AI algorithms.

[1] https://theobjects.com/dragonfly/deep-learning.html

[2] Hall, M. et al., *ACM SIGKDD Explor. Newslett*., **11** (2009), p 10–18.

[3] Ignacio Arganda-Carreras et. al., *Bioinformatics*, **33**-15 (2017), p 2424–2426