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Developments in X-Ray Tomography XI

**Bert Müller
Ge Wang**
Editors

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Introduction

This volume results from the eleventh *SPIE Conference on Developments in X-ray Tomography*, a platform for research teams active in the field of x-ray tomography to exchange ideas and discuss topics on instrumentation, algorithms, and a wide variety of applications that need tomographic characterization. Several thousand x-ray tomography systems are currently operated in clinics, industry, and academia. While fast tomography systems with a spatial resolution down to 10 nm belong to the portfolio of the synchrotron radiation facilities, advanced laboratory systems are becoming closer and closer to delivering the performance of nano-tomography. Alternatives to the conventional attenuation-based imaging are emerging and increasingly more popular in solving real problems. A huge amount of x-ray data requires not only the associated hardware but also state-of-the-art software for reconstruction, artifact compensation, and image analysis. Several technical advancements are pushing the performance envelope of tomography in pathology, wood science, anthropology, etc. It is particularly interesting to generate impressive imagery of unique objects and derive critical features of the three-dimensional structures. In addition, the multi-modal imaging is also important, which very recently incorporates the reciprocal space information or physical/chemical synergy. Finally, machine learning has attracted a significant interest in our community, for not only image analysis but also tomographic reconstruction.

The *Developments in X-ray Tomography* conference series traditionally welcomes PhD-students working in the field. In order to promote their career development, the best poster presented by a PhD-student as the first author is awarded and sponsored with a cash contribution by Sigray, Inc. (<http://www.sigray.com>), United States. The winner of the outstanding poster award (see Figure 1) is Mr. Tom Hohweiller, CREATIS, France, for the paper entitled "A Kullback-Leibler approach for 3D reconstruction of spectral CT data corrupted by Poisson noise". Tom, Congratulations!



Figure 1. Tom Hohweiller from France (center), the winner of the outstanding poster award, received the certificate (left image) from the Chairs of the conference, Ge Wang (left) and Bert Müller (right), who both are *Fellows of SPIE*.

This conference again encouraged interdisciplinary discussions on x-ray tomography, which included scientists and experts from computer sciences, engineering and applied mathematics, medicine/dentistry, biology, earth and materials science, crystallography and solid state physics, chemistry. Researchers from the globe presented diversified cutting-edge results. We are proud of the quality and quantity of the accepted papers, and their oral or poster presentation. The Chairs of the conference acknowledge the tremendous efforts by the Program Committee, especially those who participated the scientific meeting, see Figure 2.



Figure 2. Committee members at SPIE (from left to right): Stuart R. Stock, Atsushi Momose, Ge Wang, Felix Beckmann, Bert Müller, and Graham Davis.

The traditional dinner was used once more to discuss the feedback of the participants and to plan the next meeting, which will take place in San Diego, August 11-15, 2019. Again, PhD students active in the field will be highly welcome. Three companies indicated to generously sponsor awards for the best papers of PhD students.

Bert Müller
Ge Wang

