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Introduction

This year in San Diego, California, we held the twelfth SPIE conference on *Developments in X-ray Tomography*. A tradition in the interdisciplinary field of x-ray tomography is to exchange ideas and facilitate collaboration on instrumentation, algorithms, and a wide variety of applications enabled by tomographic characterization using x-rays. We acknowledge the submission of about 70 papers of decent quality and appreciate remarkable efforts by the Program Committee members: F. Beckmann, G. R. Davis, F. de Carlo, J. Herzen, A. Momose, F. Peyrin, and S. R. Stock. (See Figure 1.)

Figure 1. Committee members at the SPIE dinner meeting (left to right): Felix Beckmann, Graham R. Davis, Bert Müller, Francesco de Carlo, Atsushi Momose, Julia Herzen, Stuart R. Stock, and Ge Wang.

The conference was organized in three domains: Algorithms I-III, Applications I-IV, and Instrumentation I-V. The instrumentation topics included liquid-metal and compact light sources, next-generation systems, grating-based phase tomography, synchrotron radiation-based tomography, and system enhancement. The algorithms were presented for image-artefact and noise reduction, compressed sensing and deep-learning-based image reconstruction, and feature extraction. Applications ranged from bone to brain, medically relevant imaging, fast tomographic imaging, and studies on unique objects. The multidisciplinary flavor was evident as oral presentations and posters were introduced through collaboration among physicists, engineers, and biomedical experts. A special mention was given to the posters by two high-school interns, both as first author.

The *Developments in X-ray Tomography* conference series always welcomes PhD students and encourages postdoctoral fellows. In order to promote their career development, the best poster presented by a PhD student as the first author was

awarded with a cash contribution and sponsored by Sigray, Inc. (United States) (http://www.sigray.com). The winner of the outstanding poster award for this year was Yongchae Kim from H. Kudo's group for the work on image reconstruction in a sparse-view CT setting using nonlocal TV regularization. (See Figure 2.)

Figure 2. Photograph of the award-winning poster by Yongchae Kim, a student supervised by Hiroyuki Kudo at the University of Tsukuba, Japan.

In addition to the Best Student Poster Award, we have also created the Best Presentation Award (postdoctoral fellow or equivalent as the first author and presenter) and the Best Paper Award (for any paper, oral or poster). For the best presentation award and the best paper award, all authors are qualified excluding Chairs. For either award, we asked interested and qualified participants to submit an application package, including a 300-word summary of the paper, the applicant's CV, and for the best presentation award their presentation file and the advisor's letter of support with confirmation that the first author and presenter is a postdoc or equivalent. The selection process is managed by the Chairs and aided by the committee members.

The awardee of best presentation was Marius Reichardt, who gave an impressive talk on the fiber orientation in an entire mouse heart starting from the oriented nanostructures investigated using the nanotomography setup at the beamline P10, PETRA III, located in Hamburg, Germany. He presented the results of laboratory phase-contrast micro-CT based on liquid metal source.

Anna-Lena Robisch, who is also a member of the Institute of X-ray Physics at the Georg-August-University in Göttingen, Germany, has been honored for the best paper (1111304) entitled "Nanoscale x-ray holo-tomography of human brain tissue with phase retrieval based on multi-photon energy recordings." This contribution perfectly combined theory, simulations and experiments. The data acquired at the high-end GINIX-setup of beamline P10 at DESY, Hamburg, Germany, are an important contribution to nascent non-destructive histopathology in three-dimensional space.

To facilitate the growth of our SPIE x-ray tomography community, we encourage you to get connected to our LinkedIn group at https://www.linkedin.com/groups/12293644. It is up to us to enrich the functionalities of this web resource for our research, development, and applications.

We look forward to seeing you at the next conference in 2021.

Bert Müller
Ge Wang