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Developments in X-Ray Tomography X

Stuart R. Stock
Bert Müller
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Editors

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Contents

vii *Authors*

ix *Conference Committee*

xi *Introduction*

xiii *Chair's Postscript*

SESSION 1 APPLICATIONS I

9967 02 **Developments in x-ray tomography I - IX** [9967-1]

9967 03 **X-ray micro-tomography for investigations of brain tissues on cellular level** [9967-2]

9967 04 **Evaluation of the degradation behavior of resorbable metal implants for in vivo osteosynthesis by synchrotron radiation based x-ray tomography and histology** [9967-3]

9967 05 **Strategies for fast and low-dose laboratory-based phase contrast tomography for microstructural scaffold analysis in tissue engineering** [9967-4]

9967 06 **High-resolution synchrotron radiation-based phase tomography of the healthy and epileptic brain** [9967-5]

SESSION 2 ALGORITHMS I

9967 07 **2D beam hardening correction for micro-CT of immersed hard tissue (Invited Paper)** [9967-7]

9967 08 **Automatic histology registration in application to x-ray modalities** [9967-8]

9967 09 **Interior tomography from differential phase contrast data via Hilbert transform based on spline functions** [9967-9]

SESSION 3 APPLICATIONS II

9967 0B **Arterial wall perfusion measured with photon counting spectral x-ray CT (Invited Paper)** [9967-11]

9967 0D **High contrast XMT studies of in-situ electrochemical dissolution of broken dental tools** [9967-13]

9967 0E **Development of modern human subadult age and sex estimation standards using multi-slice computed tomography images from medical examiner's offices** [9967-14]

SESSION 4 INSTRUMENTATION I

9967 0F **Simultaneous x-ray fluorescence and K-edge CT imaging with photon-counting detectors (Invited Paper)** [9967-15]

9967 0I **First results on laboratory nano-CT with a needle reflection target and an adapted toolchain** [9967-18]

SESSION 5 APPLICATIONS III

9967 0K **Computational cell quantification in the human brain tissues based on hard x-ray phase-contrast tomograms (Invited Paper)** [9967-20]

9967 0L **Advancing the visualization of pure water transport in porous materials by fast, talbot interferometry-based multi-contrast x-ray micro-tomography** [9967-21]

9967 0M **Trabecular network arrangement within the human patella: how osteoarthritis remodels the 3D trabecular structure** [9967-22]

9967 0N **Synchrotron x-ray microtomography of the interior microstructure of chocolate** [9967-23]

9967 0O **Histology-validated x-ray tomography for imaging human coronary arteries** [9967-24]

9967 0P **Hard x-ray micro-tomography of a human head *post-mortem* as a gold standard to compare x-ray modalities** [9967-25]

SESSION 6 APPLICATIONS IV

9967 0Q **Imaging tissues for biomedical research using the high-resolution micro-tomography system nanotom® m (Invited Paper)** [9967-26]

9967 0R **Hierarchical imaging of the human knee** [9967-27]

9967 0S **Comparing natural and artificial carious lesions in human crowns by means of conventional hard x-ray micro-tomography and two-dimensional x-ray scattering with synchrotron radiation** [9967-28]

9967 0T **Phase-contrast tomography of neuronal tissues: from laboratory- to high resolution synchrotron CT** [9967-29]

SESSION 7 INSTRUMENTATION II

9967 0U **High cone-angle x-ray computed micro-tomography with 186 GigaVoxel datasets** [9967-30]

9967 0V **Development of micro-tomography system for materials science at SPring-8** [9967-31]

9967 0W **Enhancing spatial resolution for spectral µCT with aperture encoding** [9967-32]

9967 0X **High-speed tomography using pink beam at GeoSoilEnviroCARS (Invited Paper)** [9967-33]

SESSION 8 ALGORITHMS II

9967 0Y **X-ray interior tensor tomography with 2D gratings** [9967-34]

9967 0Z **Tensor decomposition and nonlocal means based spectral CT reconstruction** [9967-35]

9967 10 **Multi-resolution radiograph alignment for motion correction in x-ray micro-tomography** [9967-36]

9967 11 **A very fast iterative algorithm for TV-regularized image reconstruction with applications to low-dose and few-view CT** [9967-37]

9967 12 **Optimized x-ray source scanning trajectories for iterative reconstruction in high cone-angle tomography** [9967-38]

SESSION 9 INSTRUMENTATION III

9967 15 **High-throughput data acquisition and processing for real-time x-ray imaging (Invited Paper)** [9967-41]

9967 16 **Increased robustness and speed in low-dose phase-contrast tomography with laboratory sources** [9967-42]

9967 18 **Single-grating interferometer for high-resolution phase-contrast imaging at synchrotron radiation sources** [9967-44]

SESSION 10 INSTRUMENTATION IV

9967 1A **Towards laboratory x-ray nanotomography: instrumental improvements on a SEM-based system** [9967-45]

9967 1B **X-ray microtomography at Shanghai Synchrotron Radiation facility (Invited Paper)** [9967-46]

9967 1C **An analytical method for optimizing imaging parameters in industrial x-ray computed tomography for dimensional measurements on multimaterial workpieces** [9967-47]

SESSION 11 APPLICATIONS V

9967 1E **Development of grating-based x-ray phase tomography under the ERATO project** [9967-49]

9967 1G **Analysis of x-ray tomography data of an extruded low density styrenic foam: an image analysis study** [9967-51]

9967 1H **Developments in synchrotron x-ray micro-tomography for in-situ materials analysis at the Advanced Light Source** [9967-52]

9967 1I **A comparison of classical histology to anatomy revealed by hard x-rays** [9967-53]

SESSION 12 ALGORITHMS III

9967 1J **Artifacts reduction based on 3D surface prior information in iterative breast tomosynthesis reconstruction** [9967-54]

9967 1K **Proposal of fault-tolerant tomographic image reconstruction (Invited Paper)** [9967-55]

9967 1L **A statistical iterative reconstruction framework for dual energy computed tomography without knowing tube spectrum** [9967-56]

9967 1M **Rapidly converging multigrid reconstruction of cone-beam tomographic data** [9967-57]

9967 1N **Dictionary learning based statistical interior reconstruction without a prior knowledge** [9967-58]

POSTER SESSION

9967 1P **Low-dose multiphase abdominal CT reconstruction with phase-induced swap prior** [9967-60]

9967 1Q **Middle ear bones of a mid-gestation ruminant foetus extracted from x-ray computed tomography** [9967-61]

9967 1R **Innovation and fusion of x-ray and optical tomography for mouse studies of breast cancer** [9967-62]

9967 1S **Dictionary learning-based CT detection of pulmonary nodules** [9967-63]

9967 1T **Comparison studies of different regularizers for spectral computed tomography** [9967-64]

9967 1X **Magnesium degradation observed *in situ* under flow by synchrotron radiation based microtomography** [9967-68]

Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Anderson, Jill L., 0B
Ardila Perez, Luis Eduardo, 15
Barnard, Harold S., 1H
Barroso, Margarida, 1R
Beckmann, Felix, 04, 0L, 0N, 0O, 0Q, 18, 1X
Beeching, Levi, 1M
Ben Achour, S., 1C
Bikis, Christos, 03, 06, 08, 0K, 0Q
Bleuet, P., 1A
Boone, Matthieu N., 0L
Botta, Lea Maria, 0S
Bravin, Alberto, 05
Buijsse, B., 1A
Buratti, A., 1C
Buscema, Marzia, 0O, 0Q
Byskosh, Orest, 1I
Caselle, Michele, 15
Cattin, Philippe C., 08
Chang, Shaojie, 1L
Chen, Mianyi, 0W, 0Y
Chen, Rongchang, 1B
Chen, Zhiqiang, 0F
Chicherova, Natalia, 06, 08, 0K
Chilingaryan, Suren, 15
Coan, Paola, 05
Cong, Wenxiang, 09, 0W, 0Y, 1R
Costeur, Loic, 1Q
Dagassan-Berndt, D., 0P
Dalstra, M., 0P
Damm, Timo, 04
Davis, Graham, 07, 0D
De Coppi, Paolo, 05, 16
Deng, Biao, 1B
Derluyn, Hannelore, 0L
Dewulf, W., 1C
Deyhle, Hans, 03, 06, 0K, 0M, 0O, 0Q, 0R, 0S
Diemoz, Paul C., 05, 16
Dittmann, J., 0I
Dose, Thomas, 1X
Dremel, K., 0I
Du, Guohao, 1B
Dülger, Nihan, 0N
Dziadowiec, Iwona, 0S
Endrizzi, Marco, 05, 16
Engel, J. M., 0I
Feng, Binggang, 1B
Ferrucci, M., 1C
Feyerabend, Frank, 1X
Galli, Silvia, 04
Garvin, Heather M., 0E
Getzin, Matthew, 0W
Gomes Perini, L. A., 1A
Götz, Christian, 0R
Greving, Imke, 0N
Griffa, Michele, 0L
Haas, Carola A., 06
Hagen, Charlotte K., 05, 16
Halaweish, Ahmed, 0B
Hammel, Jörg U., 04, 18, 1X
Hanke, R., 0I
Heeschen, William, 1G
Heinrich, Stefan, 0N
Hench, Jürgen, 03, 06, 0K
Herzen, Julia, 04, 18
Hieber, Simone E., 03, 06, 08, 0K, 0Q
Hipp, Alexander, 03, 0L, 0O, 18
Hoechel, Sebastian, 0M, 0Q
Hoelzing, A., 0I
Holme, Margaret N., 0O, 0Q
Hoshinio, Masato, 0V, 1E
Hu, Tao, 1B
Ilgenstein, Bernd, 0Q
Intes, Xavier, 1R
Janz, Philipp, 06
Jaquiery, Claude, 0Q
Jimbo, Ryo, 04
Jorgensen, Steven M., 0B
Kaufmann, Rolf, 0L
Khimchenko, Anna, 03, 06, 08, 0K, 0O, 0Q, 0R
Khine, Sean, 0D
Kingston, Andrew M., 0U, 10, 12, 1M
Kishimoto, Hiroyuki, 0V
Klales, Alexandra R., 0E
Kolomazník, Jan, 0U
Kopmann, Andreas, 15
Korinek, Mark J., 0B
Kozhar, Sergii, 0N
Krajíček, Václav, 0U
Krenkel, Martin, 0T
Krupka, Tomáš, 0U
Kudo, Hiroyuki, 11, 1K, 1P
Kunz, Christoph, 0Q
Kwakman, L. F. Tz., 1A
Latham, Shane J., 0U, 10, 12, 1M
Leng, Shuai, 0B
Li, Heyang, 12
Li, Liang, 0F
Li, Qiao, 1B

Li, Ruizhe, 0F
Li, Thomas, 1M
Liang, Jimin, 1R
Lin, Jui-Ching, 1G
Liu, Tianyu, 0W
Lügger, Svenja K., 0N
Lura, Pietro, 0L
Lytaev, P., 18
MacDowell, A. A., 1H
Maghsoudlou, Panagiotis, 05
Mansour, N. N., 1H
Mariani, Luigi, 06
Mashita, Ryo, 0V
Matviykiv, Sofiya, 0O
McCollough, Cynthia H., 0B
Mennecart, Bastien, 1Q
Michaud, Katarzyna, 0O
Mills, David, 07, 0D
Mitchell, Alison, 0D
Momose, Atsushi, 1E
Moonen, Peter, 0L
Mou, Xuanqin, 1J, 1L, 1N
Müller, Bert, 03, 06, 08, 0K, 0O, 0P, 0Q, 0R, 0S, 1Q
Müller, Kristin, 0T
Müller-Gerbl, Magdalena, 0M, 0P, 0Q, 0R
Myers, Glenn R., 0U, 10, 12, 1M
Nemoto, Takuya, 11, 1K
Olivo, Alessandro, 05, 16
Palzer, Stefan, 0N
Panerai, F., 1H
Parker, W., 1A
Parkinson, D. Y., 1H
Pian, Qi, 1R
Qian, Xiaohua, 1S
Rack, Alexander, 06, 0K, 0R
Rashed, Essam A., 1P
Recur, Benoit, 10, 1M
Reinke, Lennart M., 0N
Ren, Yuqi, 1B
Richter, Claus-Peter, 1I
Ritman, Erik L., 0B
Rivers, Mark L., 0X
Robinson, Alan, 1I
Rohr, Nadja, 0Q
Rota, Lorenzo, 15
Salditt, Tim, 0T
Salehjahromi, Morteza, 1T
Saxer, Till, 0O, 0Q
Schmitt, R. H., 1C
Schreyer, Andreas, 18, 1X
Schulz, Georg, 03, 06, 08, 0K, 0O, 0P, 0Q, 0R, 0S, 1Q
Schweighauser, Gabriel, 03, 06, 0K
Selim, Mona, 1P
Sheppard, Adrian P., 0U, 10, 12, 1M
Shi, Yongyi, 1N
Soriano, Carmen, 1I
Stahlhut, P., 0I
Stalder, Anja K., 0Q
Stekker, Michael, 1X
Stock, Michala K., 0E
Stock, Stuart R., 02, 1I
Stull, Kyra E., 0E
Takaki, Keita, 11, 1K
Takano, Hidekazu, 1E
Tan, Hai, 1B
Tan, Xiaodong, 1I
Thalmann, Peter, 03, 06, 0K, 0Q, 0R, 0S
Töpperwien, Mareike, 0T
Toranelli, Mireille, 0M
Totonelli, Giorgia, 05
Turner, Michael L., 1M
Uesugi, Kentaro, 0V
Urbani, Luca, 16
Varslot, Trond K., 0U
Veldkamp, Jan P., 12
Venkatakrishnan, S. V., 1H
Vercnocke, Andrew J., 0B
Verna, C., 0P
Vieira, Josélio, 0N
Vittoria, Fabio A., 16
Vogelgesang, Matthias, 15
Wang, Feixiang, 1B
Wang, Ge, 09, 0W, 0Y, 1R, 1S
Wang, Yudan, 1B
Wei, Biao, 0Y
Wennerberg, Ann, 04
White, Shane N., 0S
Whitlon, Donna, 1I
Wilde, Fabian, 0N, 1X
Willumeit-Römer, Regine, 04, 1X
Wu, Panpan, 1S
Wu, Yanlin, 1E
Xia, Kewen, 1S
Xiao, Tiqiao, 1B
Xiao, Xianghui, 1I
Xie, Honglan, 1B
Xu, George, 0W
Xu, Liang, 1B
Xu, Yuling, 1X
Yamazaki, Fukashi, 11, 1K
Yang, Fei, 0L
Yang, Qingsong, 09, 0W, 0Y, 1R
Yang, Yiming, 1B
Yashiro, Wataru, 1E
Young, Hunter, 1I
Yu, Hengyong, 0Z, 1S, 1T
Zabler, S., 0I
Zamir, Anna, 05, 16
Zanette, Irene, 03, 0K, 0R
Zdora, Marie-Christine, 03, 0K, 0R
Zhang, Siyuan, 0F
Zhang, Yanbo, 0Z, 1S, 1T
Zheng, Jing, 1I
Zhi, Shaohua, 1J
Zhou, Guangzhao, 1B
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Introduction

This volume is published in honor of the 90th birthday of Professor Ulrich Bonse who founded the conference, chaired the first five meetings and edited the first five proceedings. This volume is also dedicated to the memory of Professor Jim Elliott.

Professor Bonse pioneered a number of very important x-ray characterization methods. One was x-ray interferometry which is a direct precursor of one approach to x-ray phase contrast tomography. The second was the development of x-ray area detectors for volumetric tomography; this design coupled a single crystal scintillator to a CCD detector via an optical lens and is now ubiquitous. This work in the late 1980s and follow-on applications underlies much of the burgeoning field of non-clinical tomography.

Professor Elliott's 1982 paper reported the first microComputed Tomography (microCT or microtomography) results. This first generation instrument (pinhole beam, scan and translate methodology) was built in the face of considerable skepticism about the usefulness of x-ray microCT; thirty-four years later there are as many as 2,500 microCT systems scattered around the world. Another very important contribution was the systematic investigation of the precision and accuracy of linear attenuation coefficient values derived from tomographic data, i.e., the quantitative interpretation of contrast.

Program Committee member Erik L. Ritman will retire in the near future, and this is the last *Developments* conference in which he will serve in this capacity. He has been on the Program Committee since the beginning, and his discussions of papers will be greatly missed. Since the 1960s, he has developed advanced x-ray imaging techniques for physiological studies, innovating in areas as diverse as clinical CT and microCT and imaging with novel contrast mechanisms. His activities also extend to translation of x-ray approaches to neutron beam imaging. Professor Ritman is well known as a mentor and for enthusiastically sharing his ideas with the community.

We hope the present volume is as useful to others as the past volumes have been to us. It is difficult to keep up with all of the activity in x-ray tomographic imaging, scattered as it is across many disciplines, and having a cross-disciplinary collection of studies is something that helps one find individuals active in specific areas and through them track down what is the current state of the art.

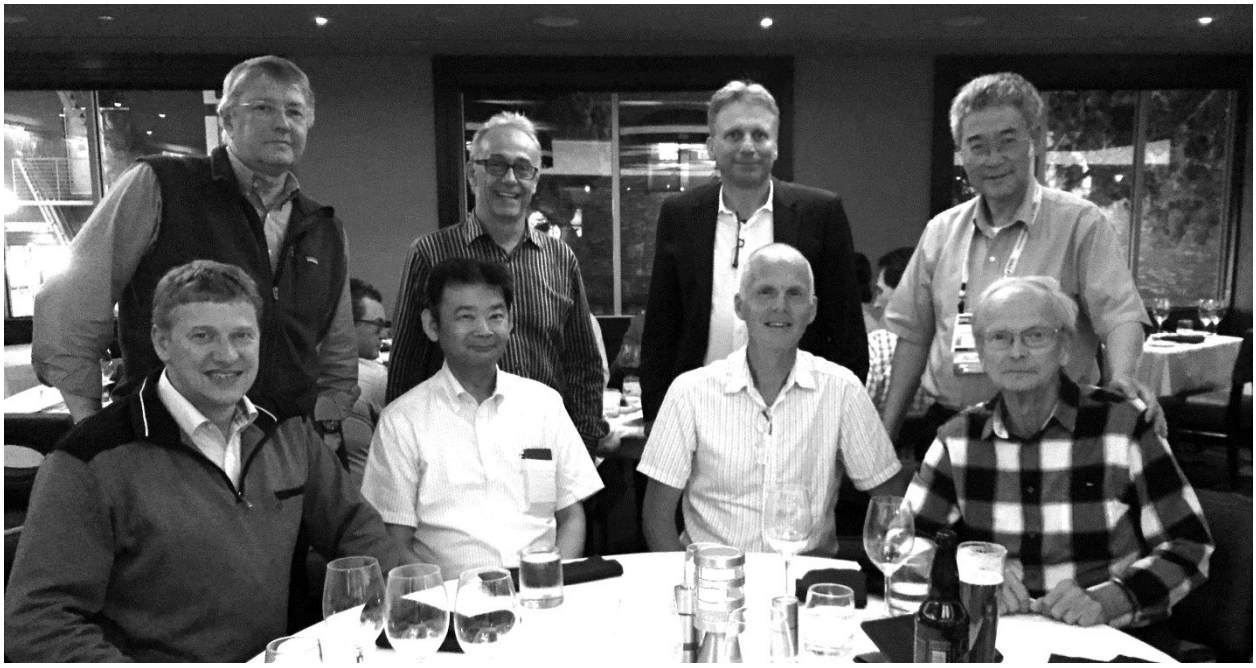
The Program Committee is an important part of the conference, and a photograph of the members attending the 2016 planning meeting follows the Preface and the Chair's Postscript.

Stuart R. Stock, Chair
Ge Wang and Bert Müller, Co-chairs

Chair's Postscript

It has been my privilege to Chair the last five *Developments in X-ray Tomography* conferences, and bringing the conference to the start of its third decade has been rewarding in ways too numerous to mention. I have enjoyed following in Professor Bonse's footsteps as Chair. Chairing five *Developments* was enough for Prof. Bonse, and it is enough for me. I am confident the Co-Chairs of this conference and the Program Committee will lead the meeting forward in new and interesting directions.

I want to offer special thanks to the SPIE staff with whom I worked; their efforts made it quite it quite painless to assemble the program and publish the proceedings.



Program Committee at the 2016 planning meeting. Bottom row, from left to right: Felix Beckmann, Atsushi Momose, Graham Davis, Erik Ritman. Top row, from left to right: Stuart Stock, Mark Rivers, Bert Müller, Ge Wang.

Stuart R. Stock