

PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 11038

, "Front Matter: Volume 11038," Proc. SPIE 11038, X-Ray Free-Electron Lasers: Advances in Source Development and Instrumentation V, 1103801 (5 August 2019); doi: 10.1117/12.2535700

SPIE.

Event: SPIE Optics + Optoelectronics, 2019, Prague, Czech Republic

PROCEEDINGS OF SPIE

X-Ray Free-Electron Lasers: Advances in Source Development and Instrumentation V

Thomas Tschentscher
Luc Patthey
Kai Tiedtke
Marco Zangrando
Editors

3–4 April 2019
Prague, Czech Republic

Sponsored and Published by
SPIE

Volume 11038

Proceedings of SPIE 0277-786X, V. 11038

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

X-Ray Free-Electron Lasers: Advances in Source Development and Instrumentation V, edited by Thomas Tschentscher, Luc Patthey, Kai Tiedtke, Marco Zangrando, Proc. of SPIE Vol. 11038, 1103801 © 2019 SPIE
CCC code: 0277-786X/19/\$18 · doi: 10.1117/12.2535700

Proc. of SPIE Vol. 11038 1103801-1

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *X-Ray Free-Electron Lasers: Advances in Source Development and Instrumentation V*, edited by Thomas Tschentscher, Luc Patthey, Kai Tiedtke, Marco Zangrando, Proceedings of SPIE Vol. 11038 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510627420
ISBN: 9781510627437 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2019, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/19/\$18.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

Paper Numbering: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

v	<i>Authors</i>
vii	<i>Conference Committee</i>

FACILITY REPORTS, STATUS UPDATES AND FEL SCHEMES I

11038 03	Higher order modes at FELs: a machine interpretation [11038-5]
----------	-----------------------------------------------------------------------

X-RAY OPTICS AND WAVEFRONT DIAGNOSTICS I

11038 0L	Nanofocus characterization at the Coherent X-ray Imaging instrument using 2D single grating interferometry (Invited Paper) [11038-19]
----------	----------------------------------------------------------------------------------------------------------------------------------------------

X-RAY OPTICS AND WAVEFRONT DIAGNOSTICS II

11038 0M	Transition metal coatings for reflection polarimeters in the 50-100 eV region [11038-22]
----------	-------------------------------------------------------------------------------------------------

TIME-DOMAIN DIAGNOSTICS AND FEL INSTRUMENTATION

11038 0Q	First x-ray test of the Icarus nanosecond-gated camera [11038-27]
11038 0R	Laser power meters as portable x-ray power monitors [11038-28]
11038 0S	Generation of ultrathin free-flowing liquid sheets [11038-29]

POSTER SESSION

11038 0W	Comparison between classical and off-plane diffraction efficiency for the soft x-ray region [11038-30]
11038 0X	Simple generation of two-color FEL pulses using a sextupole magnet [11038-31]

- 11038 10 **Pulse power measurements and attenuator characterization of the hard X-ray beamline at the Linac Coherent Light Source** [11038-34]
- 11038 12 **Photon diagnosis and transmission for Dalian coherent light source** [11038-36]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five 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.

Alonso-Mori, Roberto, 10
Aquila, Andrew, 0L
Bechtel, Hans A., 0S
Boutet, Sébastien, 0L
Brůža, Petr, 0S
Carbajo, Sergio, 0L
Carini, Gabriella, 10
Carpenter, Arthur, 0Q
Chen, Zhijiang, 0S
Chollet, Matthieu, 03, 10
Claus, Liam, 0Q
Cordones, Amy A., 0S
Curry, Chandra, 0S
Dai, Dongxu, 12
Damiani, Daniel, 0Q
Dayton, Matthew, 0Q
Decker, Franz-Josef, 0Q
DePonte, Daniel P., 0S
Dijkstal, Philipp, 0X
Ding, Hongli, 12
Du, Xuewei, 12
Fabris, Nicola, 0M, 0W
Feng, Yiping, 03, 0L, 10
Frassetto, Fabio, 0M, 0W
Fritz, David, 0R
Gleason, Arianna, 0Q
Glenzer, Siegfried H., 0S
Glownia, James M., 10
Hart, Philip A., 0Q
Hastings, Jerome B., 03
Heimann, Philip, 0Q, 0R
Hunter, Mark S., 10
Hurd, Emily, 0Q
Jastrow, Ulf, 10
Kato, Masahiro, 10
Kern, Jan F., 0S
Kim, Jongjin B., 0S
Koralek, Jake, 0S
Krzywinski, Jacek, 0L, 0R
Lee, Hae Ja, 0L, 10
Lemke, Henrik T., 10
Li, Haoyuan, 03
Li, Qinming, 12
Liang, Mengning, 0L
Liu, Yanwei, 0L
Makita, Mikako, 0L
McBride, Emma, 0Q
Miotti, P., 0W
Moeller, Stefan P., 0R, 0S, 10
Nagler, Bob, 0L
Nelson, Silke, 0Q
Nordlund, Dennis, 0R
Owada, Shigeki, 10
Poletto, Luca, 0M, 0W
Prat, Eduard, 0X
Reiche, Sven, 0X
Reid, Alexander, 0R
Richter, Mathias, 10
Robert, Aymeric, 03, 10
Saito, Norio, 10
Sakdinawat, Anne, 0L
Samparisi, Fabio, 0M, 0W
Sanchez, Marcos, 0Q
Seaberg, Matthew H., 03, 0L
Seiboth, Frank, 0L
Shi, Lei, 12
Signorato, Riccardo, 0L
Sikorski, Marcin, 10
Song, Sanghoon, 03, 0Q, 10
Sorokin, Andrey, 10
Sperling, Philipp, 0S
Spezzani, C., 0W
Stefan, Peter, 0R
Sun, Peihao, 03
Sun, Yanwen, 03, 0L
Sutton, Mark, 03
Tanaka, Takahiro, 10
Tao, Kai, 12
Tiedtke, Kai, 10
Toleikis, Sven, 0S
Tono, Kensuke, 10
Walter, Peter, 0R
Wang, Guanglei, 12
Wang, Qiuping, 12
Wei, Shen, 12
Welch, James, 0R
Wu, Guorong, 12
Yabashi, Makina, 10
Yang, Jiayue, 12
Yang, Xueming, 12
Yu, Yong, 12
Zhang, Weiqing, 12
Zhu, Diling, 03, 0L, 0Q, 10
Zuppella, Paola, 0M, 0W

Conference Committee

Symposium Chairs

Bedřich Rus, ELI Beamlines (Czech Republic)
Chris B. Edwards, STFC Rutherford Appleton Laboratory (United Kingdom)
Saša Bajt, Deutsches Elektronen-Synchrotron (Germany)
Ivo Rendina, Istituto per la Microelettronica e Microsistemi (Italy)
Mike Dunne, SLAC National Accelerator Laboratory (United States)

Honorary Symposium Chair

Erich Spitz, French Academy of Sciences, National Academy of Technologies (France), Advisor to Thales (France)

Conference Chairs

Thomas Tschentscher, European XFEL GmbH (Germany)
Luc Patthey, Paul Scherrer Institut (Switzerland)
Kai Tiedtke, Deutsches Elektronen-Synchrotron (Germany)
Marco Zangrando, Elettra-Sincrotrone Trieste S.C.p.A. (Italy)

Conference Program Committee

Robert Aymeric, SLAC National Accelerator Laboratory (United States)
Jianhua He, Shanghai Synchrotron Radiation Facility (China)
Eduard Prat, Paul Scherrer Institut (Switzerland)
Seungyu Rah, Pohang University of Science and Technology (Korea, Republic of)
Jens Viefhaus, Deutsches Elektronen-Synchrotron (Germany)
Makina Yabashi, Japan Synchrotron Radiation Research Institute (JASRI) (Japan)
Mikhail V. Yurkov, Deutsches Elektronen-Synchrotron (Germany)

Session Chairs

- 1 Facility Reports, Status Updates and FEL Schemes I
Marco Zangrando, Elettra-Sincrotrone Trieste S.C.p.A. (Italy)
- 2 Scientific Applications Driving Instrumentation
Aymeric Robert, SLAC National Accelerator Laboratory (United States)

- 3 Facility Reports, Status Updates and FEL Schemes II
Luc Patthey, Paul Scherrer Institut (Switzerland)
- 4 X-ray Optics and Wavefront diagnostics I
Makina Yabashi, Japan Synchrotron Radiation Research Institute (JASRI) (Japan)
- 5 X-ray Optics and Wavefront Diagnostics II
Thomas Tschentscher, European XFEL GmbH (Germany)
- 6 Time-Domain Diagnostics and FEL Instrumentation
Kai Tiedtke, Deutsches Elektronen-Synchrotron (Germany)