

PROCEEDINGS OF SPIE

EUV and X-ray Optics: Synergy between Laboratory and Space VIII

**René Hudec
Ladislav Pina**
Editors

**26–27 April 2023
Prague, Czech Republic**

Sponsored by
SPIE

Cooperating Organisations
ELI Beamlines (Czech Republic)
HiLASE (Czech Republic)
Laserlab Europe
AWE (United Kingdom)
STFC (United Kingdom)

Published by
SPIE

Volume 12576

Proceedings of SPIE 0277-786X, V. 12576

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

EUV and X-ray Optics: Synergy between Laboratory and Space VIII, edited by René Hudec,
Ladislav Pina, Proc. of SPIE Vol. 12576, 1257601 · © 2023 SPIE
0277-786X · doi: 10.1117/12.2689284

Proc. of SPIE Vol. 12576 1257601-1

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 *EUV and X-ray Optics: Synergy between Laboratory and Space VIII*, edited by René Hudec, Ladislav Pina, Proc. of SPIE 12576, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510662728
ISBN: 9781510662735 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

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: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE 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 *Conference Committee*

SESSION 1 ASTRONOMICAL X-RAY OPTICS I

12576 02 **Grazing incidence x-ray optics in the Czech Republic: past, present, future** [12576-1]

SESSION 2 ASTRONOMICAL X-RAY OPTICS II

12576 03 **Imaging performance above 150 keV of the wide field monitor on board the ASTENA concept mission** [12576-3]

12576 04 **Novel lobster eye and Kirkpatrick Baez modules based on multi foil technology: design, assembly, and tests** [12576-5]

12576 05 **CubeSat microsatellite demonstrator with x-ray optical payload** [12576-24]

12576 06 **Testing of lobster-eye type telescopes with x-rays and visible light** [12576-6]

SESSION 3 MULTILAYER X-RAY OPTICS

12576 08 **Development of multilayer gratings for Solar-C EUV spectro-imager** [12576-8]

12576 09 **LPSIMUL: quick numerical simulator of multi-foil reflective optical system** [12576-25]

SESSION 4 X-RAY OPTICS: A HISTORICAL REVIEW

12576 0A **A guided tour of the Deutsches Röntgen-Museum: displaying X-ray history** [12576-10]

12576 0B **The Röntgen Medal: honouring x-ray excellence** [12576-11]

SESSION 5 LABORATORY X-RAY/EUV OPTICS

12576 0C **Soft x-ray spectroscopy in the lab with an ellipsoidal mirror and a wavefront corrected reflection zone plate** [12576-14]

12576 0D **Microfocus laboratory soft x-ray source for vacuum optical test facilities** [12576-20]

SESSION 6 INTEGRATED DEVICES

12576 0E **The stitching interferometry system of ALBA** [12576-15]

SESSION 7 REFRACTIVE AND DIFFRACTIVE X-RAY OPTICS

12576 0F **Anodic bonding to manufacture LAUE lenses for high-energy astrophysics** [12576-18]

12576 0G **Achromatic x-ray lenses based on low-Z hydride compounds** [12576-19]

POSTER SESSION

12576 0H **CubeSat tandem flight for asteroid surveillance** [12576-23]

Conference Committee

Symposium Chairs

Bedřich Rus, ELI Beamlines (Czech Republic)
Saša Bajt, Deutsches Elektronen-Synchrotron (Germany)
Ivo Rendina, Istituto per la Microelettronica e Microsistemi, CNR (Italy)
Mike Dunne, SLAC National Accelerator Laboratory (United States)
Chris Edwards, Central Laser Facility, Science and Technology
Facilities Council (United Kingdom)

Conference Chairs

René Hudec, Astronomical Institute of the ASCR, v.v.i.
(Czech Republic) and Czech Technical University in Prague
(Czech Republic)
Ladislav Pina, Czech Technical University in Prague (Czech Republic)

Conference Programme Committee

Webster Cash, University of Colorado at Boulder (United States)
Henryk Fiedorowicz, Military University of Technology (Poland)
René Hudec, Czech Technical University in Prague (Czech Republic)
Ali M. Khounsary, X-ray Optics, Inc. (United States)
Randall L. McEntaffer, The University of Iowa (United States)
Stephen L. O'Dell, NASA Marshall Space Flight Center (United States)
Giovanni Pareschi, INAF - Osservatorio Astronomico di Brera (Italy)
Ladislav Pina, Czech Technical University in Prague (Czech Republic)
Yuriy Ya Platonov, Rigaku Innovative Technologies, Inc.
(United States)
Paul B. Reid, Harvard-Smithsonian Center for Astrophysics
(United States)
Bedřich Rus, ELI Beamlines (Czech Republic) and Institute of Physics of
the ASCR, v.v.i. (Czech Republic)
Anatoly Snigirev, ESRF - The European Synchrotron (France)
Melville P. Ulmer, Northwestern University (United States)
David L. Windt, Reflective X-Ray Optics LLC (United States)
William W. Zhang, NASA Goddard Space Flight Center (United States)

