## PROCEEDINGS OF SPIE

## X-Ray Nanoimaging: Instruments and Methods IV

Barry Lai Andrea Somogyi Editors

11–12 August 2019 San Diego, California, United States

Sponsored and Published by SPIE

**Volume 11112** 

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 SPIEDigital Library.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 Nanoimaging: Instruments and Methods IV, edited by Barry Lai, Andrea Somogyi, Proceedings of SPIE Vol. 11112 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510629172

ISBN: 9781510629189 (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 \$21.00 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/\$21.00.

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.



**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 vii	Authors Conference Committee
SESSION 1	SCANNING PROBES
11112 04	Design optimization of a confocal x-ray fluorescence imaging capability for XFM and SRX at NSLS-II [11112-3]
11112 06	TARUMÃ station for the CARNAÚBA beamline at SIRIUS/LNLS [11112-5]
SESSION 2	FULL-FIELD IMAGING
11112 08	Full-field hard x-ray microscopy based on aberration-corrected Be CRLs [11112-7]
11112 OB	The PXM scintillator image resolution analysis [11112-10]
SESSION 3	PTYCHOGRAPHY
11112 0C	Correlative conventional scanning and ptychographic soft x-ray microscopy (Invited Paper) [11112-11]
11112 0D	Ptychographic Nano-Analytical Microscope (PtyNAMi) at PETRA III: signal-to-background optimization for imaging with high sensitivity [11112-12]
11112 OE	Instrumentation and method developments of x-ray ptychography at the Advanced Photon Source (Invited Paper) [11112-13]
11112 0G	Optimized illumination for high-throughput ptychography [11112-15]
SESSION 4	NOVEL METHODS
11112 01	X-ray Fourier ptychography for out-of-focus measurements [11112-17]

SESSION 6	NOVEL INSTRUMENTATION AND OPTICS
11112 0M	X-ray microscopy instrumentation developments at NSLS-II: recent progress and future directions (Invited Paper) [11112-21]
11112 ON	Mechanical design of a flexural nanopositioning stage system for hard x-ray nanofocusing at the Advanced Photon Source 32-ID-C station [11112-22]
11112 00	Focusing of hard x-rays with monolithic two-dimensional multilayer Laue lenses: technical challenges and current status [11112-23]
SESSION 5	LAB-BASED INSTRUMENTS
11112 OR	Phase-contrast x-ray tomography of neuronal tissue at laboratory sources with sub-micron resolution (Invited Paper) [11112-26]
11112 OS	Virtual histology of dried and mummified biological samples by laboratory phase-contrast tomography [11112-27]
11112 OT	Biological laboratory x-ray microscopy [11112-28]
11112 0V	Nanoimaging using a compact laser plasma soft x-ray source based on a gas puff target [11112-30]