## PROCEEDINGS OF SPIE

# Ultra-High-Definition Imaging Systems VI

Seizo Miyata Toyohiko Yatagai Yasuhiro Koike Editors

1–2 February 2023 San Francisco, California, United States

Sponsored and Published by SPIE

**Volume 12444** 

Proceedings of SPIE 0277-786X, V. 12444

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

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 SPIEDigitalLibrary.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 *Ultra-High-Definition Imaging Systems VI*, edited by Seizo Miyata, Toyohiko Yatagai, Yasuhiro Koike, Proc. of SPIE 12444, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510659933

ISBN: 9781510659940 (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.



**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**

Conference Committee

	DATA STORAGE
12444 02	Bifocal-polarization holographic lens made from volume hologram (Invited Paper) [12444-3]
12444 03	Deep learning image segmentation method based on coding characteristics (Invited Paper) [12444-4]
12444 04	Phase reconstruction based on deep learning with high pass filtering for holographic data storage [12444-5]
	UHD DISPLAY AND IMAGES I
12444 05	High bandwidth holographic imaging (Invited Paper) [12444-8]
12444 06	Brightness and vividness lead to better viewing for UHD, HDR programming (Invited Paper) [12444-9]
12444 07	Silicon photonic chip-based biosensor for COVID-19 and flu detection with high sensitivity and specificity (Invited Paper) [12444-10]
	UHD DISPLAY AND IMAGES II
12444 08	High-definition imaging by super-resolution holographic optical microscopy [12444-11]
12444 09	The effect of PQ concentration on holographic data storage in PQ/PMMA material [12444-13]
	ULTRA-HIGH-DEFINITION SYSTEMS
12444 0A	8K-UHD medical image remote transmission with low latency encoding and decoding (Invited Paper) [12444-22]
	POSTER SESSION
12444 OB	Three-dimensional projection from multi-layered light field [12444-23]

#### **DIGITAL POSTER SESSION**

12444 0C Gi-POF optical fiber connecting technologies and all-optical network with glass optical fiber (Invited Paper) [12444-17]

#### **Conference Committee**

#### Symposium Chairs

Sonia M. García-Blanco, Universiteit Twente (Netherlands)
Bernd Witzigmann, Friedrich-Alexander-Universität Erlangen-Nürnberg
(Germany)

#### Symposium Co-chairs

**Ulrich T. Schwarz**, Technische Universität Chemnitz (Germany) **Karin Hinzer**, University of Ottawa (Canada)

#### **Program Track Chairs**

**Liang-Chy Chien**, Kent State University (United States)

#### Conference Chairs

Seizo Miyata, Tokyo University of Agriculture and Technology (Japan)
Toyohiko Yatagai, Utsunomiya University Center for Optical Research
& Education (Japan)

Yasuhiro Koike, Keio University (Japan)

#### Conference Program Committee

Partha P. Banerjee, University of Dayton (United States)

Liangcai Cao, Tsinghua University (China)

Janglin Chen, Industrial Technology Research Institute (Taiwan)

**Ray T. Chen**, The University of Texas at Austin (United States)

Toshio Chiba, Kairos Co., Ltd. (Japan)

**Namho Hur**, Electronics and Telecommunications Research Institute (Korea, Republic of)

Norihiko Ishii, NHK Japan Broadcasting Corporation (Japan)

**Toru Iwane**, Nikon Corporation (Japan)

Bahram Javidi, University of Connecticut (United States)

Kyuheon Kim, Kyung Hee University (Korea, Republic of)

Gauthier Lafruit, University Libre de Bruxelles (Belgium)

**Byoungho Lee**, Seoul National University (Korea, Republic of)

Shiuan-Huei Lin, National Chiao Tung University (Taiwan)

Kenta Muramoto, Keio University (Japan)

Wolfgang Osten, Institut für Technische Optik (Germany)

No-Cheol Park, Yonsei University (Korea, Republic of)

**Ifor D. W. Samuel**, University of St. Andrews (United Kingdom)

Mark Schubin, Hollywood Post Alliance (United States)

Okihiro Sugihara, Utsunomiya University (Japan)
Xiaodi Tan, Fujian Normal University (China)
Kenkichi Tanioka, Medical Imaging Consortium (Japan)
Din Ping Tsai, City University of Hong Kong (Hong Kong, China)
Kenji Yamamoto, National Institute of Information and
Communications Technology (Japan)
Hiromasa Yamashita, Air Water Inc. (Japan)
Whitney R. White, Chromis Fiberoptics Inc. (United States)