PROCEEDINGS OF SPIE

AOPC 2020: Optical Spectroscopy and Imaging; and Biomedical Optics

Jianguo Liu Yueming Wang Zongcheng Ling Yujie Sun Dayong Jin Editors

30 November – 2 December 2020 Beijing, China

Sponsored by Chinese Society for Optical Engineering (CSOE) (China)

Technical Sponsor SPIE

Organized by

Chinese Society for Optical Engineering (CSOE) (China) • Academy of Opto-Electronics of Electronics Technology of China (China) • Science and Technology on Low-light-level Night Vision Laboratory (China) • Science and Technology on Electro-Optical Information Security Control (China)

Published by SPIE

Volume 11566

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 AOPC 2020: Optical Spectroscopy and Imaging; and Biomedical Optics, edited by Jianguo Liu, Yueming Wang, Zongcheng Ling, Yujie Sun, Dayong Jin, Proceedings of SPIE Vol. 11566 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510639539

ISBN: 9781510639546 (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 SPIF org

Copyright © 2020, 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/20/\$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

OPTICAL SPECTROSCOPY AND IMAGING; AND BIOMEDICAL OPTICS

11566 02	Improvement of aerosol fine mode fraction retrieval from skylight measurements by degree of linear polarization: information content analysis [11566-1]
11566 03	Variable lateral shearing Sagnac interferometer with dove prism [11566-2]
11566 04	Diagnosis of intraoperative hepatocellular carcinoma based on FTIR vibration spectroscopy using supervised machine learning [11566-3]
11566 05	Degraded image restoration based on quadtree decomposition in scattering media [11566-5]
11566 06	Detection of space target in and out of field of view for continuous image frame [11566-6]
11566 07	Space-based missile warning technology based on fine spectrum of potassium atoms in exhaust plumes [11566-7]
11566 08	An anomaly detection algorithm for hyperspectral imagery based on graph Laplacian [11566-8]
11566 09	Study on infrared radiation characteristics of periodic single-screen ring selective radiator [11566-10]
11566 0A	Statistical-based retrieval of solar-induced chlorophyll fluorescence at proximal and airborne scales using (imaging) spectroscopy data [11566-11]
11566 OB	Research on prediction algorithm of solar activity base on MgII index for FY-3/OMS [11566-13]
11566 OC	Optimization of supercontinuum generation in highly nonlinear fiber for DFG based mid-infrared frequency comb [11566-14]
11566 0D	Knowledge guided classification of airborne hyperspectral images with deep convolutional neural network [11566-16]
11566 0E	Preliminary study on the multispectral measurement simulations of polarized scanning atmospheric corrector image [11566-18]
11566 OF	Sensitivity study of synthetic polarization measurements in UV wavelength bands [11566-19]
11566 0G	Investigation of size-of-source effect of Fourier-transform infrared radiation measurement facility with infrared optical system using direct method [11566-20]
11566 OH	Global sensitivity analysis of soil-vegetation-atmosphere coupled model [11566-21]

11566 OI	Analyzing the influence of atmosphere on optical remote sensing in 400 to 2500 nm wavelength spectrum [11566-23]
11566 OJ	Differentiation of lipsticks using the shifted excitation Raman difference spectroscopy supported by chemometric methods [11566-26]
11566 OK	Diagnosis of hepatocellular carcinoma by FTIR spectroscopy combined with classification tree [11566-27]
11566 OL	Spatially offset Raman spectroscopy detection for the concealed components in non-metallic opaque and translucent containers [11566-29]
11566 OM	Study on temperature fluctuation measurement in alkali vapor cell [11566-30]
11566 ON	Terahertz spectroscopy investigation of monosaccharide polycrystal [11566-31]
11566 0O	Dual channel snapshot compressive spectral polarization imaging technology [11566-32]
11566 OP	Propagation characteristics of incoherent strong beam in the atmosphere [11566-33]
11566 0Q	Spatial heterodyne spectroscopy for long-wave infrared: optical design and laboratory performance [11566-35]
11566 OR	Geometrical optimization of arrayed waveguide grating with low diffraction order [11566-37]
11566 OS	Diffractive optical imaging spectrometer with reference channel [11566-38]
11566 OT	Real-time analysis and simulation of remote sensing photoelectric information from aerospace Fourier transform infrared spectrometer [11566-39]
11566 OU	Advances in laser heating of alkali vapor cells in magnetometers: a review [11566-41]
11566 OV	Low-power two-color STED microscopy based on phasor plot analysis [11566-42]
11566 OW	Combined effect of multiple factors on the photoacoustic detection of glucose solution based on neural networks [11566-43]
11566 OX	Blood pressure evaluation based on photoplethysmography using deep learning [11566-45]
11566 OY	530-580nm optical pumped vertical external cavity surface emitting lasers for laser therapy [11566-46]
11566 OZ	Non-contact heart rate and respiratory monitoring based on imaging photoplethysmography at fingertip [11566-47]
11566 10	Tilted fiber grating with metal nanocoating for calmodulin detection [11566-48]
11566 11	Effects of power density and beam type for ultraviolet B on photoconversion of 7-dehydrocholesterol (7-DHC) into previtamin D ₃ [11566-49]

11566 12	Restoration for fiber bundle endomicroscopy using a fast iterative shrinkage-thresholding algorithm [11566-110]
11566 13	Passive-synchronized picosecond fiber lasers for coherent anti-Stokes Raman imaging [11566-111]
11566 14	Light-sheet flow cytometry for label-free classification of acute and chronic myeloid leukemic cells with machine learning [11566-112]
11566 15	Measurement of human eye aberrations using an optical simulator based on pyramid wavefront sensor [11566-116]