

PROCEEDINGS OF SPIE

*International Symposium on Photoelectronic
Detection and Imaging 2013*

Imaging Sensors and Applications

**Jun Ohta
Nanjian Wu
Binqiao Li**
Editors

**25–27 June 2013
Beijing, China**

Organized by

Photoelectronic Technology Committee, Chinese Society of Astronautics • Tianjin Jinhang
Institute of Technical Physics (China) • Science and Technology on Low Light Level Night
Vision Laboratory (China) • Science and Technology on Optical Radiation Laboratory
(China) • Science and Technology on Electromagnetic Scattering Laboratory (China)

Sponsored by

SPIE • The Optical Society • European Optical Society • Chinese Society of Astronautics

Published by

SPIE

Volume 8908

Proceedings of SPIE 0277-786X, V. 8908

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

International Symposium on Photoelectronic Detection and Imaging 2013: Imaging Sensors
and Applications, edited by Jun Ohta, Nanjian Wu, Binqiao Li, Proc. of SPIE Vol. 8908,
890801 © 2013 SPIE · CCC code: 0277-786X/13/\$18 · doi: 10.1117/12.2042886

Proc. of SPIE Vol. 8908 890801-1

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *International Symposium on Photoelectronic Detection and Imaging 2013: Imaging Sensors and Applications*, edited by Jun Ohta, Nanjian Wu, Binqiao Li, Proceedings of SPIE Vol. 8908 (SPIE, Bellingham, WA, 2013) Article CID Number.

ISSN: 0277-786X

ISBN: 9780819497772

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 © 2013, 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/13/\$18.00.

Printed in the United States of America.

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



SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first 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, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID Number.

Contents

xiii	Conference Committee
xv	Introduction

IMAGING SENSORS AND APPLICATIONS

8908 02	A new electromagnetic positioning method for tracking invaded medical devices using MARG sensors [8908-2] S. Wang, X. Chen, C. Du, Y. Wang, D. Yu, Tianjin Univ. (China)
8908 03	The monocular visual imaging technology model applied in the airport surface surveillance [8908-3] Z. Qin, J. Wang, C. Huang, Civil Aviation Univ. of China (China)
8908 04	The realization of network video monitoring system [8908-5] Z. Hou, Y. Qiu, Xi'an Institute of Optics and Precision Mechanics (China);
8908 05	Precise optical method for three dimensional ship deformations measurement [8908-8] Y. Gao, National Univ. of Defense Technology (China); X. Lu, Beijing Institute of Tracking and Telecommunication Technology (China); X. Wang, C. Hu, W. Wu, National Univ. of Defense Technology (China)
8908 06	Research of sub-pixel sub-division location algorithm for spot center of digital aerial survey camera image [8908-12] X. Yu, National Calibration Ctr. for Electro-optical Distance Meter (China); X. Pang, China Univ. of Mining and Technology (China); A. Fang, W. Qi, National Calibration Ctr. for Electro-optical Distance Meter (China)
8908 07	Analysis of the size dependent SERS active of Au@SiO₂ core-shell nanoparticles by 3D-FDTD simulation [8908-13] M.-L. Wang, X.-L. Jing, L. Shen, Yanshan Univ. (China)
8908 09	Propagation model for non-line-of-sight ultraviolet communication [8908-15] Y. Luo, X. Tang, Shanghai Institute of Technical Physics (China)
8908 0A	SPICE modeling for single photon avalanche diode [8908-16] D. Huang, R. Zhu, S. Liu, W. Sun, J. Wu, Southeast Univ. (China); D. Ma, China Airborne Missile Academy (China)
8908 0B	Parallel binocular stereo vision measurement system based on camera calibration [8908-17] C. Lv, X. Wang, Y. Shen, H. Ren, Communication Univ. of China (China)
8908 0C	Research on method of sensor self-calibration based on the characteristic of rectangular vanishing point [8908-18] Z. Zeng, X. Cheng, H. Chen, C. Huang, The Academy of Equipment (China)

- 8908 0D **A new primary mirror based on topology optimization** [8908-19]
X. Wang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); W. Wang, Xi'an Institute of Optics and Precision Mechanics (China)
- 8908 0E **Interface circuit design and control system programming for an EMCCD camera based on Camera Link** [8908-20]
B. Li, X. Rao, J. Yan, D. Li, Kunming Univ. of Science and Technology (China); Y. Zhang, Kunming Univ. of Science and Technology (China) and Yunnan Observatory (China)
- 8908 0F **Design and optimization of integrated pixel for the energy-harvesting CMOS image sensor on SOI wafer** [8908-21]
Y. Ding, C. Shi, Q. Zhang, L. Tian, H. Wang, S. Feng, Shanghai Advanced Research Institute (China)
- 8908 0G **Characterization and optimization of the stacked-PN junction photodiodes structure for energy harvesting CMOS image sensor** [8908-22]
C. Shi, C. Liu, Q. Zhang, L. Tian, H. Wang, S. Feng, Shanghai Advanced Research Institute (China)
- 8908 0H **Resolution performance of the extra ultraviolet telescopes** [8908-23]
H. Fu, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); S. Zhou, Xi'an Institute of Optics and Precision Mechanics (China); K. Jiang, C. Mei, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China)
- 8908 0I **A novel unified coding analytical method for Internet of Things** [8908-24]
H. Sun, J. Zhang, Univ. of Shanghai for Science and Technology (China) and Shanghai Key Lab. of Modern Optical System (China)
- 8908 0J **Application in casting defect lossless examination based on surf** [8908-25]
Y. Fan, H. Sun, The Academy of Equipment (China); H. Wang, Xidian Univ. (China)
- 8908 0K **A novel weighted-direction color interpolation** [8908-26]
J. Tao, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); J. Yang, B. Xue, Xi'an Institute of Optics and Precision Mechanics (China); X. Liang, Y. Qi, F. Wang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China)
- 8908 0L **Real-time measurement system for in-plane displacement and strain based on vision** [8908-27]
T. Luo, Y. Jin, Y. Zhu, C. Zhai, Univ. of Science and Technology of China (China)
- 8908 0M **Advances and accuracy performance of the star trackers** [8908-29]
L. Ma, C. Hu, X. Wang, D. Dai, National Univ. of Defense Technology (China)
- 8908 0N **The algorithm of regionally compensating nonlinear response of photo detector to improve the quality of image reconstruction for compressed sensing** [8908-30]
J. Zhuang, Nanjing Univ. of Science and Technology (China) and Science and Technology on Low-Light-Level Night Vision Lab. (China); Q. Chen, Nanjing Univ. of Science and Technology (China); Z. Miao, Science and Technology on Low-Light-Level Night Vision Lab. (China); W. He, W. Feng, Nanjing Univ. of Science and Technology (China)

- 8908 0O **Research on the performance test for fabrication of helical-core fiber based on the centroid method** [8908-31]
C. Tong, X. Guo, T. Geng, H. Chen, J. Li, R. Xue, Z. Liu, Harbin Engineering Univ. (China)
- 8908 0P **Resolution enhancement of aerial image based on higher order cumulant wavelet transformation** [8908-33]
L. Gang, Air-force Aviation Univ. (China); R. Wang, Jilin Institute of Architecture and Civil Engineering (China); S. Jia, Air-force Aviation Univ. (China)
- 8908 0Q **Analysis of output signal to noise ratio's uniformity for low light level image intensifier assembly** [8908-34]
X. Bai, L. Yin, W. Hu, Y. He, F. Wang, Science and Technology on Low-Light-Level Night Vision Lab. (China) and North Night-Vision Science and Technology Group Co., Ltd. (China)
- 8908 0R **Research on the method of fast photoelectric diagnostics based on ordinary CCD** [8908-35]
B. Zhu, Y. Bai, B. Liu, B. Wang, X. Bai, Y. Gou, J. Qin, W. Yang, Xi'an Institute of Optics and Precision Mechanics (China)
- 8908 0S **Design of real-time remote sensing image compression system** [8908-36]
W. Wu, N. Lei, K. Wang, Q. Wang, T. Li, Beijing Institute of Space Mechanics and Electricity (China)
- 8908 0T **Investigation of the square pattern in dielectric barrier discharge by high speed camera** [8908-37]
Y. Wang, L. Dong, W. Liu, Y. Li, Hebei Univ. (China)
- 8908 0U **Research of SERS-active substrate on metal particles** [8908-38]
L. Shen, Y.-X. Hou, M.-L. Wang, Yanshan Univ. (China)
- 8908 0V **Design and implementation of an intelligent passenger counting system based on the Kinect sensor** [8908-41]
C. Dong, D. Lu, R. Kan, Z. Yin, Nanjing Univ. of Science and Technology (China)
- 8908 0W **Research on harmonic radar's output data re-triggering DAQ and data processing technology** [8908-42]
H. Song, R. Zhang, D. Feng, L. Wang, X. Li, Institute of Applied Electronics (China)
- 8908 0X **Passenger flow statistics across the field of view based on the depth map of the double Xtion sensors** [8908-43]
Z. Yin, G. Gu, Nanjing Univ. of Science and Technology (China); X. Bai, Science and Technology on Low-Light-Level Night Vision Lab. (China); T. Zhao, Xi'an Sicong Chuangwei Opto-Electronic Co., Ltd. (China); H. Chen, Nanjing Univ. of Science and Technology (China)
- 8908 0Y **The fast and accurate 3D-face scanning technology based on laser triangle sensors** [8908-44]
J. Wang, T. Chang, B. Ge, Q. Tian, Y. Chen, B. Kong, Tianjin Univ. (China)
- 8908 0Z **TCAD simulations of a novel UV and blue-extended photodiode** [8908-45]
C. Chen, X. Jin, X. Zhou, H. Yang, Xiangtan Univ. (China); J. Luo, Shanghai Univ. (China)

- 8908 10 **An adaptive algorithm for low contrast infrared image enhancement** [8908-48]
S. Liu, C. Peng, The National Key Lab. of Computational Mathematics and Experimental Physics (China) and Beijing Institute of Space Long March Vehicle (China); M. Wang, Z. Wu, Changchun Institute of Optics, Fine Mechanics and Physics (China); J. Liu, The National Key Lab. of Computational Mathematics and Experimental Physics (China) and Beijing Institute of Space Long March Vehicle (China)
- 8908 11 **Field-programmable gate array-based hardware architecture for high-speed camera with KAI-0340 CCD image sensor** [8908-49]
H. Wang, S. Yan, Z. Zhou, J. Cao, A. Yan, L. Tang, Y. Lei, Xi'an Institute of Optics and Precision Mechanics (China)
- 8908 12 **Verilog-A modeling of SPAD for circuit simulations** [8908-50]
H. Yang, X. Jin, X. Zhou, C. Chen, Xiangtan Univ. (China); J. Luo, Shanghai Univ. (China)
- 8908 13 **Review of polarization imaging for international military application** [8908-51]
J. Duan, Q. Fu, C. Mo, Y. Zhu, D. Liu, Changchun Univ. of Science and Technology (China)
- 8908 14 **Automatic test of optical axes parallelism for low-frequency narrow pulse laser** [8908-52]
Z. Chen, M. Xue, Y. Liu, B. Liu, Institute of Mechanical Technology (China)
- 8908 15 **Simulation of electro-optical imaging system based on OpenGL** [8908-54]
Y. Zhu, Q. Fu, J. Duan, W. Jing, Changchun Univ. of Science and Technology (China)
- 8908 16 **Image responses to x-ray radiation in ICCD camera** [8908-55]
J. Ma, Xidian Univ. (China) and Northwest Institute of Nuclear Technology (China); B. Duan, Y. Song, G. Song, C. Han, M. Zhou, J. Du, Q. Wang, Northwest Institute of Nuclear Technology (China); J. Zhang, Xidian Univ. (China)
- 8908 17 **Design of no blind area perimeter intrusion recognition system based on fisheye lens** [8908-57]
J. Dai, W. Han, Changchun Univ. of Science and Technology (China)
- 8908 18 **Research on the electrical characteristics of the Pt/CdS Schottky diode** [8908-58]
J. Ding, X. Zhang, G. Yao, Luoyang Optoelectronic Technology Development Ctr. (China)
- 8908 19 **A new testing method of SNR for cooled CCD imaging camera based on stationary wavelet transform** [8908-59]
Y. Liu, Q. Liu, F. Yu, Zhejiang Univ. (China)
- 8908 1A **A model updating algorithm based on moving area analyze** [8908-60]
W. Liu, Changchun Institute of Optics, Fine Mechanics and Physics (China)
- 8908 1B **A deployable telescope imaging system with coilable tensegrity structure for microsatellite application** [8908-61]
C. Zhao, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); C. Li, Xi'an Institute of Optics and Precision Mechanics (China); N. Zhou, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China)

- 8908 1C **The research of TDI-CCDs imagery stitching using information mending algorithm** [8908-62]
W. Meng, S. Zhu, B. Zhu, Information Engineering Univ. (China); S. Bian, Beijing Novel-Supertv Digital TV Technology Co. Ltd (China)
- 8908 1D **The high speed low noise multi-data processing signal process circuit research of remote sensing** [8908-64]
L. Su, H. Jiang, D. Wang, Beijing Institute of Space Mechanics and Electricity (China)
- 8908 1E **Readout architectures for high speed CMOS image sensor** [8908-66]
C. Ma, J. Li, X. Wang, Changchun Institute of Optics, Fine Mechanics and Physics (China)
- 8908 1F **A MPEG-4 encoder based on TMS320C6416** [8908-68]
G. Li, W. Liu, Changchun Institute of Optics, Fine Mechanics and Physics (China)
- 8908 1G **Camouflaged target separation by spectral-polarimetric imagery fusion with shearlet transform and clustering segmentation** [8908-69]
P. Zhou, C. Liu, Hefei New Star Applied Technology Research Institute (China)
- 8908 1H **Optical flows method for lightweight agile remote sensor design and instrumentation** [8908-70]
C. Wang, F. Xing, H. Wang, Z. You, Tsinghua Univ. (China)
- 8908 1I **Study on global control network precision positioning method in visual shape measurement** [8908-72]
C. Long, J. Zhu, Tianjin Univ. (China)
- 8908 1J **Introduction to the development of intraocular lens** [8908-73]
Y. Li, R. Peng, S. Hu, M. Wei, J. Chen, Univ. of Shanghai for Science and Technology (China)
- 8908 1K **Research and implementation of velocity and position measurement method of projectile** [8908-74]
Y. Zhang, Z. Wang, Z. Zha, L. Bai, Nanjing Univ. of Science and Technology (China)
- 8908 1L **Design and implementation of high sensitive CCD on gallium arsenide based miniaturized spectrometer** [8908-75]
J. Zheng, J. Shen, F. Guo, East China Normal Univ. (China)
- 8908 1M **Research on calibration technology of ultraviolet sensors** [8908-76]
H. Sun, Y. Chen, G. Sun, Z. Sui, J. Li, J. Wei, S. Li, J. Wang, Y. Zhang, Beijing Zhenxing Institute of Metrology and Measurement (China)
- 8908 1N **The research of moving object detection based on background difference compensation** [8908-77]
Y. Song, J. Ying, L. Lu, Univ. of Shanghai for Science and Technology (China)
- 8908 1O **Using compressive measurement to obtain images at ultra-low-light-level** [8908-80]
J. Ke, P. Wei, Beijing Institute of Technology (China)

- 8908 1P **Improved design of support for large aperture space lightweight mirror** [8908-82]
C. Wang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); P. Ruan, Xi'an Institute of Optics and Precision Mechanics (China); Q. Liu, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China)
- 8908 1Q **The characteristic performance of an extreme ultraviolet MCP-based photon-counting imaging detector** [8908-83]
Q. Ni, K. Song, Changchun Institute of Optics, Fine mechanics and Physics (China)
- 8908 1R **Improved design of a pseudo-cassegrain optical system** [8908-84]
H. Yang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); R. Chen, K. Liu, G. Lei, Xi'an Institute of Optics and Precision Mechanics (China)
- 8908 1S **Real-time video exploitation system for small UAVs** [8908-85]
A. Su, Y. Zhang, J. Dong, Y. Xu, X. Zhu, X. Zhang, National Univ. of Defense Technology (China)
- 8908 1T **A programmable computational image sensor for high-speed vision** [8908-86]
J. Yang, C. Shi, X. Long, N. Wu, Institute of Semiconductors (China)
- 8908 1U **Accurate focusing of knife-edge imaging optical system based on the area under MTF curve** [8908-87]
B. Wu, Science and Technology on Electronic Test and Measurement Lab. (China) and The 41st Institute of China Electronics Technology Group Corp. (China); L. Li, The 41st Institute of China Electronics Technology Group Corp. (China); S. Liu, Xidian Univ. (China); C. Ying, K. Chen, The 41st Institute of China Electronics Technology Group Corp. (China)
- 8908 1V **A high-precision earth sensor with three separated FOVs for aircraft application** [8908-88]
H. Wang, F. Xing, P. Fan, C. Wang, Z. You, Tsinghua Univ. (China)
- 8908 1W **Independent pose measurement using monocular vision based on laser projection** [8908-90]
F. Liu, Tianjin Univ. (China); P. Gao, Nankai Univ. (China); H. Zhao, N. Yan, W. Jing, Tianjin Univ. (China)
- 8908 1X **Implicit prosody mining based on the human eye image capture technology** [8908-91]
P. Gao, Nankai Univ. (China); F. Liu, Tianjin Univ. (China)
- 8908 1Y **InGaAs/InP single photon avalanche diodes with low tunneling current** [8908-92]
Q. Zeng, W. Wang, W. Hu, N. Li, Shanghai Institute of Technical Physics (China)
- 8908 1Z **An experimental calibration method for digital Abbe refractometer** [8908-93]
H. Liu, K. Yang, W. Guo, J. Dai, J. Ye, W. Li, M. Xia, Huazhong Univ. of Science and Technology (China)
- 8908 20 **A scheme for parameter calibration in super-size two-dimensional scale events sensing and positioning system using binocular stereo vision** [8908-94]
J. Wang, Civil Aviation Univ. of China (China); X. Wang, F. Liu, Tianjin Univ. (China); Z. Qin, X. Guo, S. Li, Civil Aviation Univ. of China (China)

- 8908 21 **Axis extraction method of symmetry object under unilateral illumination condition in optical measurement images** [8908-95]
S. Ding, X. Zhang, P. Guo, National Univ. of Defense Technology (China); K. Wang, Beijing Institute of Tracking and Telecommunication Technology (China)
- 8908 22 **Reflectance colorimetry measurement system using scanning spectrometer with array detector** [8908-96]
R. Sun, Y. Ma, C. Dai, X. Chen, National Institute of Metrology (China)
- 8908 23 **Technologies of diffractive imaging system for high-resolution earth observation from geostationary orbit** [8908-97]
X. Chen, Y. Su, J. Jiao, Beijing Institute of Space Mechanics and Electricity (China)
- 8908 24 **Characterization of single photon avalanche diodes fabricated by 0.13 μ m CMOS technology** [8908-98]
J. Guo, C. Chen, L. Feng, X. Pu, X. Ji, F. Yan, Nanjing Univ. (China)
- 8908 25 **Design and implementation of the parallel processing system of multi-channel polarization images** [8908-99]
Z. Li, Q. Huang, New Star Institute of Applied Technology (China)
- 8908 26 **A new depth measuring method for stereo camera based on converted relative extrinsic parameters** [8908-100]
X. Song, Zhongyuan Univ. of Technology (China); L. Yang, Zhongyuan Univ. of Technology (China) and Tianjin Univ. (China); Y. Wu, Z. Liu, Zhongyuan Univ. of Technology (China)
- 8908 27 **Diffraction effect in the calibration of the spectroradiometer** [8908-101]
Z. Wu, C. Dai, J.-L. Yu, National Institute of Metrology (China)
- 8908 28 **Calibration method of absolute orientation of camera optical axis** [8908-102]
Y. Xu, P. Guo, X. Zhang, S. Ding, A. Su, National Univ. of Defense Technology (China) and Hunan Key Lab. of Videometrics and Vision Navigation (China); L. Li, Beijing Aerospace Control Ctr. (China)
- 8908 29 **Full-Stokes imaging polarimetry using a combination of a retarder and a polarizer** [8908-103]
X. Meng, J. Li, Y. Zhang, R. Zhu, Nanjing Univ. of Science and Technology (China)
- 8908 2A **Large-area arrayed polarimeters with modulated polarization state of light beam based on electrically controlling liquid crystal architecture for integrating sensor array** [8908-104]
Q. Tong, X. Zhang, National Key Lab. of Science and Technology on Multispectral Information Processing (China) and Huazhong Univ. of Science and Technology (China); H. Sang, National Key Lab. of Science and Technology on Multispectral Information Processing (China); C. Xie, Huazhong Univ. of Science and Technology (China)
- 8908 2B **Reliability design of CMOS image sensor for space applications** [8908-105]
N. Xie, S. Chen, Y. Chen, Shanghai Institute of Technical Physics (China)

- 8908 2C **Solid state ultrafast all-optical x-ray imaging sensor enabling picosecond temporal resolution** [8908-107]
B. Wang, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); Y. Bai, Xi'an Institute of Optics and Precision Mechanics (China); P. Xu, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China); B. Liu, B. Zhu, W. Yang, X. Bai, J. Qin, Xi'an Institute of Optics and Precision Mechanics (China); Y. Gou, Xi'an Institute of Optics and Precision Mechanics (China) and Univ. of Chinese Academy of Sciences (China)
- 8908 2D **High-accuracy and compact quenching circuit for InGaAs SPADs** [8908-108]
J. Wu, S. Xi, S. Bao, C. Zhou, L. Zheng, S. Liu, W. Sun, Southeast Univ. (China)
- 8908 2E **A low-power column-parallel ADC for high-speed CMOS image sensor** [8908-111]
Y. Han, Q. Li, C. Shi, L. Liu, N. Wu, Institute of Semiconductors (China)
- 8908 2F **Ship candidates extraction for optical color imagery** [8908-113]
X. Yu, Z. Shi, Beihang Univ. (China)
- 8908 2G **Design of prototype high speed CMOS image sensors** [8908-115]
Z. Cao, Y. Zhou, Q. Li, Q. Qin, N. Wu, Institute of Semiconductors (China)
- 8908 2H **Adaptive and accelerated tracking-learning-detection** [8908-117]
P. Guo, X. Li, S. Ding, Z. Tian, X. Zhang, National Univ. of Defense Technology (China)
- 8908 2I **3D TCAD simulation of the pixel for TOF** [8908-118]
S. Di, Z. Cao, Y. Zhou, N. Wu, Institute of Semiconductors (China)
- 8908 2J **The research of image sensor systems based on single photon detection** [8908-119]
C. Guo, Q. Ding, Luoyang Institute of Electro-Optical Equipment (China); L. Zhou, Beijing Institute of Technology (China); H. Liu, Luoyang Institute of Electro-Optical Equipment (China)
- 8908 2K **Forest smoke detection in video images based on constant speed rotating platform** [8908-120]
B. Lei, Z. Zhang, S. Yue, C. Wang, Huazhong Institute of Electro-Optics (China)
- 8908 2L **A new way in intelligent recognition improves control accuracy and efficiency for spacecrafts' rendezvous and docking** [8908-121]
J. Wang, Y. Lu, J. Wang, Beijing Institute of Opto-electronic Technology (China)
- 8908 2M **Phase unwrapping algorithms in laser propagation simulation** [8908-122]
R. Du, L. Yang, National Univ. of Defense Technology (China)
- 8908 2N **High dynamic range imaging and local adaptive tone mapping (Invited Paper)** [8908-123]
M. Ikebe, Hokkaido Univ. (Japan)
- 8908 2O **Dynamic characteristics of laser-induced vapor bubble formation in water based on high speed camera** [8908-124]
X. Zhang, W. Guo, Z. Zhan, S. Xie, Fujian Normal Univ. (China)
- 8908 2P **Single-photon sources based on InAs/GaAs QDs for solar cell** [8908-125]
W. Jia, Z. Liu, X. Wang, Shanghai Institute of Space Power-Sources (China)

- 8908 2Q **A device for examining the imaging plane's illumination nonuniformity of wide FOV and short-focus optical imaging system** [8908-126]
D. Kang, C. Jiang, L. Yuan, Xi'an Institute of Applied Optics (China); J. Lin, Beijing Institute of Technology (China); H. Yang, X. Zheng, Y. Guo, S. Ma, Xi'an Institute of Applied Optics (China)
- 8908 2R **Verification and analysis of positioning accuracy of RPC model of TH-1 three-line imagery** [8908-127]
J. Liu, T. Jiang, G. Jiang, B. Jia, Information Engineering Univ. (China)

Author Index

Conference Committee

Conference Chairs

Konstantin Vodopyanov, Stanford University (United States) and CREOL,
The College of Optics and Photonics, University of Central Florida
(United States)
Guofan Jin, Tsinghua University (China)
Songlin Zhuang, University of Shanghai for Science and Technology
(China)

Local Organizing Committee

Jiaqi Wang, Changchun Institute of Optics, Fine Mechanics and Physics
(China)
Zuyan Xu, Technical Institute of Physics and Chemistry (China)
Zunqi Lin, Shanghai Institute of Optics and Fine Mechanics (China)
Dianyuan Fan, Shanghai Institute of Optics and Fine Mechanics (China)
Jingshan Jiang, Center for Space Science and Applied Research (China)
Liwei Zhou, Beijing Institute of Technology (China)
Shouhuan Zhou, North China Research Institute of Electro-optics (China)
Desheng Jiang, Wuhan University of Technology (China)
Jianquan Yao, Tianjin University (China)
Qingxi Tong, Institute of Remote Sensing and Digital Earth (China)
Junhao Chu, Shanghai Institute of Technical Physics (China)
Yongqi Xue, Shanghai Institute of Technical Physics (China)

Program Committee

Junhao Chu, *Chair*, Shanghai Institute of Technical Physics (China)
Jinxue Wang, *Chair*, Raytheon Company (United States)
Min Gu, Swinburne University of Technology (Australia)
Andreas Tünnermann, Friedrich-Schiller-Universität Jena (Germany)
Connie Chang, University of California, Berkeley (United States)
Shibin Jiang, AdValue Photonics Inc. (United States)
H. C. Liu, Shanghai Jiao Tong University (China)
Xiaocong Yuan, Nankai University (China)
Wei Shi, Tianjin University (China)
Min Qiu, Zhejiang University (China)
Nanjian Wu, Institute of Semiconductors (China)

Session Chairs

Jun Ohta, Nara Institute of Science and Technology (Japan)
Nanjian Wu, Institute of Semiconductors (China)
Binqiao Li, Tianjin University (China)

Introduction

We have had the great honor of organizing the Fifth International Symposium on Photoelectronic Detection and Imaging (ISPD1) in Beijing. It was truly a great pleasure for us to greet the more than 1,200 participants from many different countries attending ISPD1 2013! I firmly believe that the symposium will become an important international event in the field of photoelectronic detection and imaging technology.

ISPD1 2013 was sponsored by SPIE, The Optical Society, European Optical Society, and the Chinese Society of Astronautics, and was organized by the Photoelectronic Technology Committee, Chinese Society of Astronautics, Tianjin Jinhang Institute of Technical Physics, Science and Technology on Low Light Level Night Vision Laboratory, Science and Technology on Optical Radiation Lab. and Science and Technology on Electromagnetic Scattering Lab. There were 26 cooperating organizations that supported the meeting. Nearly 850 papers were accepted for presentation at ISPD1 2013, contributed by over 1,370 authors from more than 10 countries, including the United States, United Kingdom, Germany, France, Norway, Australia, Canada, Japan, Korea, Russia, China, and so on. We had seven plenary speeches and 135 famous scientists and experts from home and abroad to present the invited talks at 10 different conferences.

The purpose of ISPD1 2013 is to provide a forum for the participants to report and review the innovative ideas and up-to-date progress and developments, and discuss the novel approaches to applications in the field of photoelectronic detection and imaging. It is sincerely hoped that the research and developments in optical and photoelectronic fields will be promoted, and that international cooperation and the sharing of common interests will be enhanced.

On behalf of Prof. Konstantin Vodopyanov, and the other conference chairs, and the Organization Committee of ISPD1, I would like to heartily thank our sponsors and cooperating organizations for all they have done for the meeting. Thanks also to all the authors for their contributions to the proceedings, to all of the participants and friends for their interest and efforts in helping us make the symposium possible, to the Program Committee for their effective work and valuable advice, and especially the ISPD1 2013 Secretariat and the SPIE staff for their tireless effort and outstanding service in preparing the meeting and publishing the conference proceedings.

Guofan Jin

