International Symposium on Photoelectronic Detection and Imaging 2011

Advances in Infrared Imaging and Applications

Jeffery J. Puschell
Junhao Chu
Haimei Gong
Jin Lu
Editors

Organized by
Photoelectronic Technology Professional Committee, CSA (China)
Tianjin Jinhang Institute of Technical Physics, CASIC (China)
Science and Technology on Low Light Level Night Vision Laboratory (China)

Sponsored by
Chinese Society of Astronautics (China)

Volume 8193
# Contents

## Part One

- xix Symposium Committee
- xxi Conference Committee
- xxiii Introduction
- xxv Cooperating Organizations

## ADVANCES IN INFRARED IMAGING AND APPLICATIONS

<table>
<thead>
<tr>
<th>Proc. No.</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>8193 02</td>
<td>A method for real-time implementation of HOG feature extraction (Invited Paper) [8193-01]</td>
<td>H. Luo, Shenyang Institute of Automation (China), Key Lab. of Optical-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China); X. Yu, Shenyang Institute of Automation (China), Graduate Univ. of the Chinese Academy of Sciences (China), Key Lab. of Optical-Electronics Information Processing (China), Key Lab. of Image Understanding and Computer Vision (China), and AVIC Hongdu Aviation Industry Group Ltd. (China); H. Liu, AVIC Hongdu Aviation Industry Group Ltd. (China); Q. Ding, Republic of China Air Force (China)</td>
</tr>
<tr>
<td>8193 03</td>
<td>Study on the temporal and spatial characteristics of high-speed turbulent flow field and its optical transmission effects (Invited Paper) [8193-02]</td>
<td>C. Chen, Beijing Electronic System Engineering Institute (China); J. Fei, Beijing Simulation Ctr. (China); S. Yi, National Univ. of Defense Technology (China); W. Tang, Beijing Electronic System Engineering Institute (China)</td>
</tr>
<tr>
<td>8193 04</td>
<td>Shearlet-based hard-thresholding for interfered infrared image denoising [8193-03]</td>
<td>R. Zou, C. Shi, E. Mao, Beijing Institute of Technology (China)</td>
</tr>
<tr>
<td>8193 05</td>
<td>An improved triangle star pattern recognition algorithm with high identification probability [8193-04]</td>
<td>L. Du, Y. Zhao, Beihang Univ. (China)</td>
</tr>
<tr>
<td>8193 06</td>
<td>Anomaly detection using background prediction in hyperspectral images [8193-05]</td>
<td>D. Liu, G. He, J. Zhang, Xidian Univ. (China)</td>
</tr>
<tr>
<td>8193 08</td>
<td>Simulation of realistic infrared texture of aeolian sand ripples [8193-07]</td>
<td>Q. Liu, Shenyang Institute of Automation (China), Graduate Univ. of the Chinese Academy of Sciences (China), Key Lab. of Opto-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China); F. Zhu, Shenyang Institute of Automation (China), Key Lab. of Opto-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China); X. Long, Office of Air Force (China); Y. Hao, S. Fu, Shenyang Institute of Automation (China), Key Lab. of Opto-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China)</td>
</tr>
</tbody>
</table>
A field transition particle filter tracking algorithm [8193-08]
D. Xu, Graduate Univ. of the Chinese Academy of Sciences (China), Shenyang Institute of Automation (China), Key Lab. of Optical-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China); Z. Shi, Shenyang Institute of Automation (China), Key Lab. of Optical-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China); X. Yu, AVIC Hongdu Aviation Industry Group Ltd. (China); Q. Ding, Equipment Academy of Air Force (China); H. Luo, Shenyang Institute of Automation (China), Key Lab. of Optical-Electronics Information Processing (China), and Key Lab. of Image Understanding and Computer Vision (China)

The design research of a spinel dome [8193-09]
H. Zhao, T. Hou, B. Zhu, Q. Huang, Z. Gao, Southwest Institute of Technical Physics (China)

The ship-borne infrared searching and tracking system based on the inertial platform [8193-10]
Y. Li, H. Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China)

The research of the coupling of circuit and chip [8193-11]
Y. Wang, H. Yuan, G. Xu, Shanghai Institute of Technical Physics (China)

Two-step local Wiener filter using dual-tree complex wavelet transform [8193-12]
X. Zhang, Xianyang Normal Univ. (China) and Xidian Univ. (China); X. Feng, Xidian Univ. (China)

A new recurrent wavelet neural networks for adaptive equalization [8193-13]
Y. Sun, Y. Chen, X. Luo, X. Lin, J. Lu, Tianjin Jinhang Institute of Technology Physics (China)

Study on image jamming effect of infrared imaging system induced by CO2 laser [8193-14]
J. Che, D. Wang, H. Zhang, L. Zhang, L. Zhang, Z. Dong, People’s Liberation Army (China)

Performance degradation of space Stirling cryocoolers due to gas contamination [8193-15]
X. Liu, Hangzhou Dianzi Univ. (China); Y. Wu, Shanghai Institute of Technical Physics (China); S. Yang, X. Zhang, Ministry of Information Industry (China); G. Lu, Shanghai Institute of Technical Physics (China); L. Zhang, Hangzhou Dianzi Univ. (China)

Fabrication and low temperature characteristics of InGaAs detector [8193-16]
Y. Lv, Luoyang Opto-electro Technology Development Ctr. (China); Q. Meng, Henan Univ. of Science and Technology (China)

Research on method of infrared spectral imaging based on thermal imager [8193-17]
K. Huan, X. Shi, W. Wu, F. Zheng, X. Liu, Changchun Univ. of Science and Technology (China)

Performance analysis of quantum dots infrared photodetector [8193-18]
H. Liu, Xidian Univ. (China) and Shanxi Datong Univ. (China); F. Zhang, Xi’an Univ. of Technology (China); J. Zhang, G. He, Xidian Univ. (China)

Design of reimaging F/1.0 long-wavelength infrared optical system [8193-19]
X. Zhang, B. Liu, H. Jia, Changchun Institute of Optics, Fine Mechanics and Physics (China)
Numerical analysis and experimental research on active infrared thermographic NDT in composite materials [8193-20]
C. Wu, SICON OPTO-Electonic Ltd. (China), Northwestern Polytechnical Univ. (China), and Xi'an Research Institute of Hi-Tech (China); W. Wang, Q. Yuan, SICON OPTO-Electonic Ltd. (China); Y. Li, Northwestern Polytechnical Univ. (China); W. Zhang, Xi'an Research Institute of Hi-Tech (China); X. Zhang, No. 203 Research Institute of China Ordnance Industries (China)

Research on multi-angle near infrared spectral-polarimetric characteristic for polluted water by spilled oil [8193-21]
H. Shen, Anhui Univ. of Architecture (China); P. Zhou, Hefei New Star Applied Technology Research Institute (China); S. Feng, Anhui Univ. of Architecture (China)

Research on quantitative relationship between NIIRS and the probabilities of discrimination [8193-22]
H. Bai, Engineering College of Armed Police Force (China)

The electrical characteristics of the HgInTe crystal and Pt/HgInTe Schottky contacts [8193-23]

A cryogenic temperature eight-cell CMOS differential current amplifier for IR detectors [8193-24]
H. Yuan, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); Y. Chen, S. Chen, Q. Liu, X. Xu, Shanghai Institute of Technical Physics (China)

Analysis on quantitative relationship between design parameters of infrared remote sensor and NIIRS [8193-25]
Y. Jin, Northwest Univ. (China) and Engineering College of Armed Police Force (China); H. Bai, Engineering College of Armed Police Force (China)

Moving object detection based on segmentation of optical flow field in IR image sequence [8193-26]
H. Lu, T. Zhang, Huazhong Univ. of Science and Technology (China)

Noise research of microbolometer array under temperature environment [8193-27]
Y. Gao, Nanyang Institute of Technology (China) and Nanjing Univ. of Science and Technology (China); H. Chen, Nanyang Institute of Technology (China); Y. Xu, Nanyang Institute of Technology (China) and Nanjing Univ. of Science and Technology (China); X. Sun, B. Chang, Nanjing Univ. of Science and Technology (China)

Optimal design of UAV's pod shape [8193-28]
Q. Wei, H. Jia, Changchun Institute of Optics, Fine Mechanics and Physics (China)

A theoretical structure calculation of MWIR HgCdTe e-APD [8193-29]
R. Gu, C. Shen, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); L. Chen, Shanghai Institute of Technical Physics (China)
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>81930V</td>
<td>Evaluation of the operating range for ground-based infrared imaging tracking system</td>
<td>B. Zhang, Z. Zhang, S. Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China)</td>
</tr>
<tr>
<td>81930W</td>
<td>The algorithm of small and weak linear target detection</td>
<td>Z. Han, H. Zheng, Y. Zhao, L. Guo, Air Defense Forces Command Academy (China)</td>
</tr>
<tr>
<td>81930X</td>
<td>Infrared camera based on optical-readout bi-material FPA</td>
<td>Y. Kong, R. Liu, B. Jiao, D. Chen, Institute of Microelectronics (China) and Kunshan MicroOptica Electronic Co. Ltd. (China)</td>
</tr>
<tr>
<td>81930Y</td>
<td>The effect of flash power on the measurement of thermal effusivity using thermal wave imaging</td>
<td>Z. Zeng, Chongqing Normal Univ. (China) and Capital Normal Univ. (China); N. Tao, L. Feng, Y. Li, C. Zhang, Capital Normal Univ. (China)</td>
</tr>
<tr>
<td>81930Z</td>
<td>High-throughput median filter for high-performance infrared imaging system</td>
<td>X. Qin, Y. Ma, H. Li, J. Bo, Huazhong Univ. of Science and Technology (China)</td>
</tr>
<tr>
<td>819310</td>
<td>Discriminative region extraction and feature selection based on the combination of SURF and saliency</td>
<td>L. Deng, Institute of Optics and Electronics (China), Key Lab. of Adaptive Optics (China), and Graduate Univ. of the Chinese Academy of Sciences (China); C. Wang, C. Rao, Institute of Optics and Electronics (China) and Key Lab. of Adaptive Optics (China)</td>
</tr>
<tr>
<td>819311</td>
<td>Dislocation cell structures in CdZnTe substrates and its behavior of threading into HgCdTe LPE epilayers</td>
<td>X. Cui, W. Fang, Y. Wei, C. Zhang, H. Xu, S. Sun, J. Yang, Shanghai Institute of Technical Physics (China)</td>
</tr>
<tr>
<td>819312</td>
<td>Comparison of two types of optical systems for space-borne staring IR sensors</td>
<td>Y. Li, G. Zheng, Beijing Institute of Space Mechanics and Electricity (China)</td>
</tr>
<tr>
<td>819313</td>
<td>Design of infrared imaging system for inner-formation flying system</td>
<td>D. Han, L. Xiao, National Univ. of Defense Technology (China); Z. Wang, Tsinghua Univ. (China); K. Liu, National Univ. of Defense Technology (China)</td>
</tr>
<tr>
<td>819314</td>
<td>Water spray parameters study with the minimum infrared transmission in the atmospheric windows</td>
<td>Z. Chen, C. Li, L. Zhang, L. Zhang, Naval Academy of Armament (China); H. Chen, Attached Middle School of Hebei Normal College for Nationalities (China)</td>
</tr>
<tr>
<td>819315</td>
<td>Defects detection in crystalline silicon solar cells based on electroluminescence imaging</td>
<td>X. Jiang, C. Wang, X. Wang, Y. Zong, C. Pei, Academy of Armored Force Engineering (China)</td>
</tr>
</tbody>
</table>
A new design of ROIC with CDS and programmable arbitrary line selection [8193-41]
P. Wang, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); R. Ding, Shanghai Institute of Technical Physics (China); G. Chen, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); H. Chen, Shanghai Institute of Technical Physics (China); L. Hao, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China)

A high performance readout circuit (ROIC) with BDI structure for SWIR FPAs [8193-42]
L. Hao, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); R. Ding, A. Huang, H. Chen, C. Zhou, Shanghai Institute of Technical Physics (China); P. Wang, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China)

An efficient method for infrared small target detection [8193-43]
Z. Su, D. Zhao, J. Qi, Beihang Univ. (China)

The application of pulsed thermography in the inspection of wind turbine blades [8193-44]
N. Tao, Capital Normal Univ. (China); Z. Zeng, Capital Normal Univ. (China) and Chongqing Normal Univ. (China); L. Feng, Capital Normal Univ. (China); X. Li, Beijing Waiteksin Advanced Technology Co., Ltd. (China); Y. Li, Sinomatech Wind Power Blades Co., Ltd. (China); C. Zhang, Capital Normal Univ. (China)

Mechanism and implementation of bidirectional IR scene simulation system based on the Peltier effect [8193-45]
Y. Feng, Y. Lu, J. Shen, Electronic Engineering Institute (China)

The LQG/LTR controller design for miniaturized infrared stabilizing platform [8193-46]
R. Xiao, Kunming Univ. of Science and Technology (China); T. Li, Kunming Univ. of Science and Technology (China) and Kunming Shipbuilding Equipment Co., Ltd. (China); P. Zhang, Kunming Institute of Physics (China); X. Jia, Kunming Univ. of Science and Technology (China); Y. Qin, C. Xian, Kunming Univ. of Science and Technology (China) and Kunming Shipbuilding Equipment Co., Ltd. (China)

IR line scanner on UAV [8193-47]
S. Liu, J. Qin, H. Qi, G. Xiao, Shanghai Institute of Technical Physics (China)

The detection of chlorophyll content for salt stress of the wheat seedling by hyperspectral imaging [8193-48]
Q. Wu, Jilin Univ. (China) and Beijing Research Ctr. for Information Technology in Agriculture (China); D. Zhu, C. Wang, Z. Ma, D. Zhang, Beijing Research Ctr. for Information Technology in Agriculture (China); K. Chen, Jilin Univ. (China); J. Wang, Jilin Univ. (China) and Beijing Research Ctr. for Information Technology in Agriculture (China)

Removing impulsive noise for infrared image with difference images and adaptive filter [8193-49]
J. Zhao, H. Feng, Z. Xu, Q. Li, Zhejiang Univ. (China)
<table>
<thead>
<tr>
<th>8193 IF</th>
<th>As\textsubscript{2}/Ga flux ratios and low-temperature annealing dependence of Ga\textsubscript{1-x}Mn\textsubscript{x}As films by x-ray absorption spectroscopy [8193-50]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X. C. Cao, G. S. Yao, L. X. Zhang, L. W. Wang, Y. Q. Lv, Z. Y. Peng, Luoyang Optoelectronic Institute (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IG</th>
<th>Thermal imaging experiments of motor vehicles under low visibility at night [8193-51]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X. Wang, Institute of Chemical Defense (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IH</th>
<th>Analysis to stray radiation of infrared detecting system [8193-52]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>J. Niu, North China Univ. of Water Conservancy and Electric Power (China) and Xi'an Institute of Optics and Precision Mechanics (China); S. Shi, North China Univ. of Water Conservancy and Electric Power (China); R. Zhou, Xi'an Institute of Optics and Precision Mechanics (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 II</th>
<th>An FPGA-based heterogeneous image fusion system design method [8193-53]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L. Song, Y. Lin, Y. Chen, M. Zhao, Tianjin Univ. (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IJ</th>
<th>Dim moving target detection method based on time-frequency analysis [8193-54]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Z. Li, L. Tian, W. Zheng, Y. Zhang, Chongqing Univ. (China); G. Jin, China Aerodynamics Research and Development Ctr. (China) and Institute of Optics and Electronics (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IK</th>
<th>Correlation recognition device based on spatial light modulator for infrared imaging system [8193-55]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y. Wang, Communication Univ. of China (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IL</th>
<th>IR image synthesis for small target under sky background [8193-56]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q. Cao, Y. Shen, J. An, People's Liberation Army (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IM</th>
<th>Improved particle filtering algorithm based on the multi-feature fusion for small IR target tracking [8193-57]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E. Ji, G. Gu, W. Qian, L. Bai, X. Sui, Nanjing Univ. of Science and Technology (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IN</th>
<th>The research and implementation of CFAR in infrared small target detection [8193-58]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F. Xu, G. Gu, W. Qian, Nanjing Univ. of Science and Technology (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IO</th>
<th>Noninvasive blood glucose sensing on human body with near-infrared reflection spectroscopy [8193-59]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Z. Huang, C. Hao, L. Zhang, Y. Huang, Y. Shi, G. Jiang, J. Duan, Shanghai Jiaotong Univ. (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IP</th>
<th>A new registration method of infrared and visible images based on improved edge extraction and revised measure function [8193-60]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>J. Han, T. Huang, Y. Zhang, L. Bai, Nanjing Univ. of Science and Technology (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8193 IQ</th>
<th>Design of antireflection film for underwater laser imaging system [8193-61]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X. Zhang, Heilongjiang Institute of Science and Technology (China) and Harbin Engineering Univ. (China); J. Sun, Harbin Engineering Univ. (China)</td>
</tr>
<tr>
<td>Index</td>
<td>Title</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8193 1R</td>
<td>Design of high ratio middle infrared continuous zoom optical system</td>
</tr>
<tr>
<td>8193 1S</td>
<td>Analysis and research on the thermal stress of detector affected by packaging accuracy</td>
</tr>
<tr>
<td>8193 1T</td>
<td>The technology of generating infrared image based on electric heating film technology</td>
</tr>
<tr>
<td>8193 1U</td>
<td>Design of catadioptric middle infrared continuous zoom lens for uncooled infrared detector</td>
</tr>
<tr>
<td>8193 1V</td>
<td>A millimeter wave image fusion algorithm design and optimization based on CDF97 wavelet transform</td>
</tr>
<tr>
<td>8193 1W</td>
<td>Jamming efficiency evaluation of the IR smoke screen against high-orbit IR detector</td>
</tr>
<tr>
<td>8193 1X</td>
<td>Strain-compensated InP-based InGaAsInAlAs quantum cascade infrared detectors for a 3~5µm atmospheric window</td>
</tr>
<tr>
<td>8193 1Y</td>
<td>The background suppression algorithm based on the two-dimensional velocity vector histogram and the estimated risk</td>
</tr>
<tr>
<td>8193 1Z</td>
<td>BP network identification technology of infrared polarization based on fuzzy c-means clustering</td>
</tr>
<tr>
<td>8193 20</td>
<td>Investigation on the optical properties of sulfur-doped diamond thin films</td>
</tr>
<tr>
<td>8193 21</td>
<td>Detection of IR target by fusing multispectral IR data</td>
</tr>
<tr>
<td>8193 22</td>
<td>Study on reliability enhancement testing for InSb focal plane array detector</td>
</tr>
</tbody>
</table>
The accelerated vacuum life test research of Dewar [8193-74]
Y. Zhang, X. Wang, S. Zhu, H. Gong, Shanghai Institute of Technical Physics (China)

A wavelet-based adaptive fusion algorithm of infrared polarization imaging [8193-75]
W. Yang, G. Gu, Q. Chen, H. Zeng, Nanjing Univ. of Science and Technology (China)

Research on portable intelligent monitoring system based on video server [8193-76]
G. Song, Y. Na, F. Yang, S. Cao, Changchun Univ. of Science and Technology (China)

Enhancement algorithm for real-time infrared image processing [8193-77]
T. Si, L. Wang, Ningbo Dahongying Univ. (China); Y. Tian, Guizhou Univ. (China); J. Zhang, Nanjing Univ. of Science and Technology (China)

Analyzing the CO₂ column amount in China with GOSAT data [8193-78]
C. Gong, Y. Zhou, Y. Hu, Shanghai Institute of Technical Physics (China)

Research on bad pixel variation of IRFPA by high temperature storage and temperature shock [8193-79]
W. Wang, Northwestern Polytechnical Univ. (China) and Luoyang Opto-electro Technology Development Ctr. (China); Y. Fan, Northwestern Polytechnical Univ. (China); Y. Fu, J. Wang, W. Wu, J. Wang, Q. Guo, J. Liu, Luoyang Opto-electro Technology Development Ctr. (China)

The research of real-time image stabilization in the focal plane based on motion detection [8193-80]
W. Zhou, C. Tan, L. Ding, H. Pei, Shanghai Institute of Technical Physics (China)

Performance evaluation of imaging seeker tracking algorithm based on multi-features [8193-81]
Y. Li, J. Yan, Beijing Institute of Technology (China) and China North Industries Group (China)

X-ray diffraction analysis of high quality InAs/GaSb Type II superlattices grown by MBE [8193-82]
Y. Zhou, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); J. Chen, Q. Xu, L. He, Shanghai Institute of Technical Physics (China)

Response characteristic of InSb IRFPA under high reverse bias condition [8193-83]
J. Liu, Q. Guo, W. Wang, Z. Peng, Luoyang Opto-electro Technology Development Ctr. (China)

Application of multiple projector technologies for HWIL simulations [8193-84]
H. Yu, J. Fei, Z. Yang, H. Du, Y. Gao, Y. Zhang, Beijing Simulation Ctr. (China)

The evaluation of curved extended electrodes for off-area bonding of HgCdTe photocathodes [8193-85]
D. Qian, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); J. Jia, Y. Tang, Shanghai Institute of Technical Physics (China); F. Liu, X. Ma, L. Zhang, F. Liu, B. Ye, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); H. Qiao, L. Zhu, X. Li, Shanghai Institute of Technical Physics (China)
The study of a linear optimal location the typhoon center automatic from IR satellite cloud image [8193-86]
Y. Li, Southeast Univ. (China) and PLA Univ. of Science and Technology (China); X. Chen, PLA Univ. of Science and Technology (China); S. Fei, Southeast Univ. (China); K.-F. Mao, K. Zhou, PLA Univ. of Science and Technology (China)

A real-time gray projection algorithm for electronic image stabilization [8193-87]
W. Yang, Z. Zhang, Y. Zhang, X. Lu, J. Li, Z. Shi, National Univ. of Defense Technology (China)

Part Two

Design of a low noise and high accuracy readout integrated circuit for infrared detectors [8193-88]
D. Yang, H. Zhou, J. Wang, Tianjin Jinhang Institute of Technology Physics (China)

The new approach for infrared target tracking based on the particle filter algorithm [8193-89]
H. Sun, Changchun Institute of Optics, Fine Mechanics and Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); H. Han, Changchun Institute of Optics, Fine Mechanics and Physics (China)

Research on infrared dim-point target detection and tracking under sea-sky-line complex background [8193-90]
Y. Dong, Y. Li, H. Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China)

Study of SF6 gas decomposition products based on spectroscopy technology [8193-91]
J. Cai, Y. Na, W. Ni, G. Li, K. Feng, G. Song, Changchun Univ. of Science and Technology (China)

High quality mid-infrared InAs film grown on (100) GaSb substrate by LPE using a ternary melt [8193-92]
C. Sun, S. Hu, Q. Wang, J. Wu, N. Dai, Shanghai Institute of Technical Physics (China)

Research on an Al\ SINx bi-material thermal-mechanical uncooled infrared FPA pixel [8193-93]
X. Zhang, Communication Univ. of China (China); D. Zhang, Peking Univ. (China)

Based on momentum method BP neural network in the target recognition research and application [8193-94]
X. Zhang, North Univ. of China (China); Y. Gao, National Key Lab. for Electronic Measurement Technology (China)

Research on I-V temperature characteristic for InSb IRFPA [8193-95]
Q. Guo, J. Liu, W. Wang, J. Si, J. Wang, Luoyang Opto-electro Technology Development Ctr. (China)

Effects of thermal annealing on HgCdTe/CdTe/Si(211) by MBE [8193-96]
C. Shen, R. Gu, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); X. Fu, W. Wang, Y. Guo, L. Chen, G. Wang, F. Yang, L. He, Shanghai Institute of Technical Physics (China)
The sequence measurement system of the IR camera [8193-97]
A. Geng, H. Han, H. Zhang, Changchun Institute of Optics, Fine Mechanics and Physics (China)

Improved sum-of-squared-differences tracking algorithm for thermal vision systems [8193-98]
G. Bieszczad, T. Sosnowski, H. Madura, Military Univ. of Technology (Poland)

Preparation and characteristics of PLZT (8/65/35) thin films by sol-gel method [8193-99]
X. Sun, W. Liu, S. Zhou, J. Luo, Xi'an Technological Univ. (China)

Compact middle infrared zoom lens design [8193-100]
X. Zhang, M. Jiao, Y. Luan, W. Chang, T. Sun, Xi'an Institute of Applied Optics (China)

Accuracy assessment for infrared camera laboratory radiometric calibration [8193-101]
X. Xie, Harbin Institute of Technology (China) and Heilongjiang Institute of Science and Technology (China); W. Zhang, H. Nie, Y. Cao, Q. Wang, H. Wang, Harbin Institute of Technology (China)

A new FOD recognition algorithm based on multi-source information fusion and experiment analysis [8193-102]
Y. Li, G. Xiao, Shanghai Jiaotong Univ. (China)

Ground experiment of infrared characteristics of space target [8193-103]
W. Ke, G. Cai, D. Zhu, W. Shen, Beihang Univ. (China); J. Liu, W. Wang, L. Yuan, National Key Lab. of Science and Technology (China)

Photoelectron characteristics of HgInTe detector [8193-104]
L. Zhang, X. L. Zhang, W. G. Sun, Z. X. Lu, Luoyang Optoelectronic Technology Development Ctr. (China)

The underwater camera calibration based on virtual camera lens distortion [8193-105]
D. Qin, T. Mao, Southwest Petroleum Univ. (China); P. Cheng, Z. Zhang, The Chinese People's Liberation Army (China)

Anomalous hall effect in arsenic-doped HgCdTe grown by Te-rich LPE [8193-106]
G.-Y. Qiu, C.-J. Zhang, Y.-F. Wei, X.-J. Chen, Q.-Q. Xu, J.-R. Yang, Shanghai Institute of Technical Physics (China)

Distribution of thermal discharge from a power station based on HJ-1B and FY-3 thermal infrared data [8193-107]
Y. Zhou, C. Gong, Y. Hu, Q. Chen, Shanghai Institute of Technical Physics (China)

Research of spectral curvature correction method for hyperspectral images [8193-108]
L. Li, Y. Hu, Y. Wang, Shanghai Institute of Technical Physics (China)

The research of piezoelectric actuator for cryogenic scanning application [8193-109]
X. Zhang, G. Zhao, M. Pan, Shanghai Institute of Technical Physics (China)
8193 33  Measurement of defect depth by peak second derivative method in pulse thermography  
[8193-110]  
L. Feng, R. He, Y. Zhang, Capital Normal Univ. (China)

8193 34  Risk analysis on fabrication process of IRFPA  [8193-111]  
H. Wang, Northwestern Polytechnical Univ. (China) and Luoyang Opto-electro Technology Development Ctr. (China); X. Qin, Northwestern Polytechnical Univ. (China)

8193 35  Study of the characteristics of VLWIR HgCdTe photovoltaic detectors in variable-area diode test structures  [8193-112]  
X. Xie, H. Hua, G. Qiu, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); Q. Liao, X. Hu, Shanghai Institute of Technical Physics (China)

8193 36  A detecting algorithm of infrared armor target under complex ground background based on morphological wavelet  [8193-113]  

8193 37  Pulsed thermography detection of water and hydraulic oil intrusion in the honeycomb sandwich structure composite  [8193-114]  
S. Zhao, Beijing Univ. of Aeronautics and Astronautics (China); C. Zhang, Capital Normal Univ. (China); N. Wu, Beijing Univ. of Aeronautics and Astronautics (China)

8193 38  Fabrication of vanadium dioxide polycrystalline films with higher temperature coefficient of resistance  [8193-115]  
J. Li, N. Yuan, M. Jiang, L. Kun, Changzhou Univ. (China)

8193 39  Research on readout circuit for PVDF pyroelectric infrared detector  [8193-116]  
B. Ye, Shanghai Institute of Technical Physics (China) and Graduate Univ. of Chinese Academy of Sciences (China); Y. Yuan, Shanghai Institute of Technical Physics (China); F. Liu, Shanghai Institute of Technical Physics (China) and Graduate Univ. of Chinese Academy of Sciences (China); X. Li, J. Sun, X. Meng, Shanghai Institute of Technical Physics (China); N. Cai, Shanghai Key Lab. of Criminal Scene Evidence (China)

8193 3A  Characterization of CdTe passivation layers grown by evaporation with thermal treatments  [8193-117]  
J. Xu, H. Li, X. Chen, Y. Wei, C. Lin, J. Yang, Shanghai Institute of Technical Physics (China)

8193 3B  The effect of depth on the quantitative estimation of defect size using pulsed thermography  [8193-118]  
T. Feng, C. Zhang, L. Feng, Capital Normal Univ. (China)

8193 3C  Stripe noise reduction in MODIS data: a variational approach  [8193-119]  
N. Ma, Southeast Univ. (China) and PLA Univ. of Science & Technology (China); Z. Zhou, PLA Univ. of Science & Technology (China); L. Luo, Southeast Univ. (China); M. Wang, PLA Univ. of Science & Technology (China)
Analysis of pn-junction degeneration in heating process for extended wavelength InGaAs detectors [8193-120]
Y. Zhu, H. Deng, P. Wei, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); X. Li, H. Gong, Shanghai Institute of Technical Physics (China)

Recognition of distorted target based on Mexican hat optimum trade-off maximum average correlation height algorithm [8193-121]
J. Shang, C. Chen, W. Wang, Changchun Univ. of Science and Technology (China)

In-field stray light due to surface scattering effects in infrared imaging systems [8193-122]
K. Sun, H. Jiang, X. Cheng, National Univ. of Defense Technology (China)

Bonding quality evaluation of wind turbine blades by pulsed thermography [8193-123]
R. He, D. Kong, Capital Normal Univ. (China); Z. Zeng, Chongqing Normal Univ. (China); N. Tao, C. Zhang, L. Feng, Capital Normal Univ. (China)

Design of infrared telephoto lenses for joint transform correlator [8193-124]
Y. Zhang, J. Shang, Z. Li, W. Wang, Changchun Univ. of Science and Technology (China)

A novel junction profile measurement in HgCdTe epilayer by laser beam induced current [8193-125]
H. Li, J. Xu, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); S. Zhou, C. Lin, L. He, Shanghai Institute of Technical Physics (China)

A novel 512×8 ROIC with time-delayed-integration for MW infrared focal plane array [8193-126]
J. Zhang, Q. Feng, H. Chen, A. Huang, R. Ding, Y. Ni, Shanghai Institute of Technical Physics (China)

Identification of spilled oils by NIR spectroscopy technology based on KPCA and LSSVM [8193-127]
A. Tan, W. Bi, Yanshan Univ. (China)

The design and simulation of single detector MIR spectrometer based on MEMS scanning mirror [8193-128]
Z. Zhang, Z. Wen, T. Zeng, K. Wei, Chongqing Univ. (China)

The research of infrared image segmentation based on mathematical morphology [8193-129]
Y. Wang, Electronic Engineering Institute (China); S. Yin, Electronic Engineering Institute (China) and Tsinghua Univ. (China); X. Wu, Electronic Engineering Institute (China)

Research on IRST operating range model for point target based on natural sky background [8193-130]
J. Wang, W. Jin, Z. Gao, X. Wang, Beijing Institute of Technology (China)

Research on the sampling performance of the focal plane array thermal imaging systems [8193-131]
J. Cui, J. Wang, W. Jin, Z. Gao, T. Bai, Beijing Institute of Technology (China)
The effect of infrared and visible image fusion on object tracking using correlation matching [8193-132]
S. Yin, L. Cao, G. Jin, Tsinghua Univ. (China)

Analysis and design of a low-noise ROIC for hybrid InGaAs infrared FPA [8193-133]
W. Zhang, S. Huang, Z. Huang, J. Fang, Shanghai Institute of Technical Physics (China)

Infrared imaging based on quantum dot optical phase modulation [8193-134]
G. Chen, Chongqing Univ. (China); T. Yang, Stevens Institute of Technology (United States); C. Peng, Chongqing Univ. (China); R. Martini, Stevens Institute of Technology (United States)

Construction, parameters, and research results of thermal weapon sight [8193-135]
T. Sosnowski, H. Madura, G. Bieszczad, M. Kastek, K. Chmielewski, Military Univ. of Technology (Poland)

Study of polishing of HgCdTe wafers [8193-136]
L. Zhang, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); H. Qiao, J. Xu, X. Li, Shanghai Institute of Technical Physics (China)

A new small and dim targets detection and recognition algorithm based on infrared dual bands imaging system [8193-137]
B. Wang, G. Lu, Xidian Univ. (China); L. Bai, China Academy of Electronics and Information Technology (China); Q. Li, Institute of Microelectronics (China); S. Liu, Xidian Univ. (China)

Design of readout integrated circuit structure for single and dual band infrared detector with variable integration time [8193-138]
T.-P. Sun, Y.-C. Lu, H.-L. Shieh, S.-S. Shiu, Y.-T. Liu, National Chi Nan Univ. (Taiwan); S.-F. Tang, W.-J. Lin, Chung-Shan Institute of Science & Technology (Taiwan)

Electro-optical system for gunshot detection: analysis, concept, and performance [8193-139]
M. Kastek, R. Dulski, H. Madura, P. Trzaskawka, G. Bieszczad, T. Sosnowski, Military Univ. of Technology (Poland)

Multisensor systems for security of critical infrastructures: concept, data fusion, and experimental results [8193-140]
M. Kastek, R. Dulski, M. Życzkowski, M. Szustakowski, W. Ciurapiński, K. Firmanty, N. Pałka, G. Bieszczad, Military Univ. of Technology (Poland)

Spectral measurements of muzzle flash with multispectral and hyperspectral sensor [8193-141]
M. Kastek, R. Dulski, P. Trzaskawka, T. Piątkowski, H. Polakowski, Military Univ. of Technology (Poland)

Nonuniformity correction algorithm based on Gaussian mixture model [8193-142]
X. Mou, G. Zhang, R. Hu, X. Zhou, Huazhong Univ. of Science and Technology (China)
8193 40 Adaptive infrared image enhancement algorithm based on improved UM technique [8193-143]
X. Wang, Q. Wu, W. Wang, M. He, Air Defense Forces Command Academy (China); Y. Liu, Air Defense Forces Command Academy (China) and Zhejiang Univ. (China)

8193 41 The modulated photocurrent of amorphous HgCdTe thin films [8193-144]
L. Yu, Y. Shi, J. Zhuang, X. Li, G. Deng, L. Yang, W. He, Kunming Institute of Physics (China)

8193 42 Infrared image enhancement algorithm based on multiscale retinex with adaptive surround space constant [8193-145]
Y. Liu, Zhejiang Univ. (China) and Air Defense Forces Command Academy (China); X. Wang, J. He, M. He, Y. Zhang, Air Defense Forces Command Academy (China)

8193 43 Analysis and simulation of the infrared characteristics of the aerial target [8193-146]
S. Ma, X. Li, N. Zhao, Electronic Engineering Institute (China)

8193 44 The characteristic analysis and optimization design for HgCdTe TDI infrared detector array [8193-147]
M. Dong, X. Chen, G. Qiu, X. Xie, Shanghai Institute of Technical Physics (China)

8193 45 Algebraic nonuniformity correction algorithm based on multiscale optical flow [8193-148]
M. He, X. Wang, Q. Wu, Air Defense Forces Command Academy (China); Y. Liu, Air Defense Forces Command Academy (China) and Zhejiang Univ. (China); H. Xu, D. Guo, Air Defense Forces Command Academy (China)

8193 46 Modify model for infrared dim target detection [8193-149]
R. Hu, X. Zhou, Huazhong Univ. of Science and Technology (China); G. Zhang, Luoyang Institute of Electro-optical Equipment (China); G. Zhang, Huazhong Univ. of Science and Technology (China)

8193 47 Spray coater technology in HgCdTe third-generation infrared focal plane arrays [8193-150]
W. Yin, Shanghai Institute of Technical Physics (China) and Graduate Univ. of the Chinese Academy of Sciences (China); Z. Ye, W. Ma, Y. Chen, X. Hu, Shanghai Institute of Technical Physics (China)

8193 48 Quantitative measurement of screening rate by a thermal imager [8193-151]
X. Li, S. Ma, N. Zhao, Y. Guo, Electronic Engineering Institute (China)

8193 49 Linear-mode characters of near-infrared wavelength InGaAs APDs for optical communication [8193-152]
W. He, K. Du, C. Wang, Z. Sun, Y. Jiang, G. Zhai, Ctr. for Space Science and Applied Research (China)

8193 4A The different electrical responses of HgCdTe and InSb photovoltaic infrared detectors under pulsed laser irradiation [8193-153]
X. Zheng, X. Cheng, T. Jiang, H. Jiang, National Univ. of Defense Technology (China)

8193 4B Small target detection in infrared clutter using dark channel prior and improved local entropy [8193-154]
Z. Mao, L. Sun, Beijing Univ. of Technology (China); Y. Mao, Univ. of Central Lancashire (United Kingdom); A. Gao, Y. Qin, Beijing Univ. of Technology (China)
8193 4C An inversion algorithm for retrieval of aerosol optical and physical properties from ground-based solar and sky radiance [8193-155]  
L. Qie, Anhui Institute of Optics and Fine Mechanics (China) and Graduate School of the Chinese Academy of Sciences (China); Q. Xu, H. Wei, Anhui Institute of Optics and Fine Mechanics (China)

8193 4D Study on infrared detection data read out technologies [8193-156]  
J. Yu, Beihang Univ. (China) and North Univ. of China (China); Y. An, North Univ. of China (China) and Beihang Univ. (China); S. Bi, Beihang Univ. (China)

8193 4E Study on detecting CFRP composites using pulsed infrared thermography [8193-157]  
Y. Huo, Beijing Institute of Technology (China); H.-J. Li, China Aero-Polytechnology Establishment (China); Y.-J. Zhao, Beijing Institute of Technology (China); C.-L. Zhang, Capital Normal Univ. (China)

8193 4F A grayscale image color transfer method based on region texture analysis using GLCM [8193-158]  
Y. Zhao, L. Wang, W. Jin, Y. Luo, J. Li, Beijing Institute of Technology (China)

8193 4G Experimental study on the responsivity enhancement of Mn1.56Co0.96Ni0.48O4 detector under moderate bias field [8193-159]  
W. Zhou, Y. Hou, Y. Q. Gao, L. Zhang, Z. M. Huang, Shanghai Institute of Technical Physics (China)

8193 4H Prediction of time to go of IR imaging GIF [8193-160]  

8193 4I Infrared thermography non-destructive evaluation of lithium-ion battery [8193-161]  
Z. Wang, Z. Li, Q. Liu, Univ. of Electronic Science and Technology of China (China)

8193 4J Study of PZT thick-film infrared detectors prepared by MEMS technology [8193-162]  
X.-P. Qiang, G.-W. Chuan, B.-L. Wen, L.-Z. Wan, Q.-C. Jia, Univ. of Electronic Science and Technology of China (China)

8193 4K Thermal battery infrared monitoring system design based on virtual instrument technology [8193-163]  
Q. Qin, Z. Liu, Shanghai Second Polytechnic Univ. (China); L. Jiang, Shanghai Institute of Space Power Sources (China)

8193 4L Small infrared target detection algorithm based on mathematical morphology [8193-164]  
F. Jiang, M. Jin, L. Song, China Aerospace Science & Industry Corp. (China)

8193 4M Method research on the calculation atmospheric path radiation in foggy weather [8193-165]  
J. Gu, W. Xu, Dalian Maritime Univ. (China)

8193 4N An effective recognition algorithm for multiple targets under sea surface background [8193-166]  
J. Wang, Tianjin Univ. (China) and The JinHang Computational Technology Research Institute (China); B. Zhang, The JinHang Computational Technology Research Institute (China)
Denoising approach for remote sensing image based on anisotropic diffusion and wavelet transform algorithm [8193-167]
X. Wang, W. Lai, North China Electric Power Univ. (China)

An airborne thematic thermal infrared and electro-optical imaging system [8193-168]
X. Sun, Flight Landata, Inc. (United States); P. Shu, NASA Goddard Space Flight Ctr. (United States)

A fast algorithm for wide baseline match basing on feature points filtration [8193-169]
Z. Zhang, Z. Cao, Huazhong Univ. of Science and Technology (China)

A real-time restoring method for infrared images degraded by high-speed airflow [8193-170]
Q. Mi, J. Fei, C. Chen, Beijing Institute of Electronic Engineering (China)

Author Index
Symposium Committee

Symposium Chairs

Guofan Jin, Tsinghua University (China)
Liwei Zhou, Beijing Institute of Technology (China)
Jingshan Jiang, Center for Space Science and Applied Research (China)
Jianquan Yao, Tianjin University (China)
Shouhuan Zhou, North China Research Institute of Electro-optics (China)
Lianghui Chen, Institute of Semiconductors (China)
Dianyuan Fan, Shanghai Institute of Optics and Fine Mechanics (China)
Junhao Chu, Shanghai Institute of Technical Physics (China)
Qifeng Yu, National University of Defense Technology (China)
Erqi Liu, Academy of Chinese Aerospace Science and Industry Feihang Technology (China)

Organizing Committee

Jinxue Wang, Chair, Raytheon Vision Systems (United States)
Yuping Cui, Chair, Academy of Chinese Aerospace Science and Industry Feihang Technology (China)
Zhixin Wu, Chair, Tianjin Jinhang Institute of Technical Physics (China)
Xiaopeng Wang, Chair, Xi’an Institute of Applied Optics (China)
Weibiao Chen, Shanghai Institute of Optics and Fine Mechanics (China)
Haimei Gong, Shanghai Institute of Technical Physics (China)
Yuelin Zhang, State Key Laboratory of Transducer Technology (China)
Zhaojun Liu, Beijing Institute of Space Mechanics and Electricity (China)
Bo Liu, Beijing Huahang Radio Measurement and Research Institute (China)
Nianjiang Chen, North China Research Institute of Electro-optics (China)
Guangjun Zhang, Beihang University (China)
Jiancheng Fang, Beihang University (China)
Qian Chen, Nanjing University of Science and Technology (China)
Ping Wei, Beijing Institute of Technology (China)
Pu Wang, Beijing University of Technology (China)
Kecong Ai, Xi’an Institute of Applied Optics (China)
Heguang Liu, Key Laboratory of Microwave Remote Sensing (China)
Jindong Fei, Beijing Simulation Center (China)
Program Committee

Guofan Jin, Chair, Tsinghua University (China)
Jingshan Jiang, Chair, Center for Space Science and Applied Research (China)
Jianquan Yao, Chair, Tianjin University (China)
Junhao Chu, Chair, Shanghai Institute of Technical Physics (China)
Qifeng Yu, Chair, National University of Defense Technology (China)
Zhihong Wang, North Night Vision Technology Company, Ltd. (China)
Yuelin Wang, State Key Laboratory of Transducer Technology (China)
Pu Wang, Beijing University of Technology (China)
Jin Lu, Tianjin Jinhang Institute of Technical Physics (China)
Kecong Ai, Xi’an Institute of Applied Optics (China)
Feng Liu, Tianjin Jinhang Institute of Technical Physics (China)
Nanjian Wu, Institute of Semiconductors (China)
Guangjun Zhang, Beijing University of Aeronautics and Astronautics (China)
Cunlin Zhang, Capital Normal University (China)
Jianfeng Yang, Xi’an Institute of Optics and Precision Mechanics (China)
Weibiao Chen, Shanghai Institute of Optics and Fine Mechanics (China)
Qian Chen, Nanjing University of Science and Technology (China)
Jiancheng Fang, Beijing University of Aeronautics and Astronautics (China)
Chunqing Gao, Beijing Institute of Technology (China)
Haimei Gong, Shanghai Institute of Technical Physics (China)
Rong Shu, Shanghai Institute of Technical Physics (China)
Tianyu Xie, Peking University (China)
Conference Committee

Conference Chairs

Jeffery J. Puschell, Raytheon Space and Airborne Systems (United States)
Junhao Chu, Shanghai Institute of Technical Physics (China)
Haimei Gong, Shanghai Institute of Technical Physics (China)
Jin Lu, Tianjin Jinhang Institute of Technology Physics (China)

Program Committee

H. C. Liu, Shanghai Jiao Tong University (Canada)
Masafumi Kimata, Ritsumeikan University (Japan)
Daniel K. Zhou, NASA Langley Research Center (United States)
Xu Liu, NASA Langley Research Center (United States)
Allen Larar, NASA Langley Research Center (United States)
Allen Huang, University of Wisconsin Space Science Engineering Center (United States)
Dayan Ban, University of Waterloo (Canada)
S. Sivananthan, University of Illinois at Chicago (United States)
Yanli Shi, Kunming Institute of Physics (China)
Haibo Luo, Shenyang Institute of Automation (China)
Jinwen Tian, Huazhong University of Science and Technology (China)
Jindong Fei, Science and Technology on Space System Simulation Laboratory, Beijing Simulation Center (China)
Qian Chen, Nanjing University of Science and Technology (China)
Wei Lu, Shanghai Institute of Technical Physics (China)
Wenquan Ma, Institute of Semiconductors (China)
Jianxin Chen, Shanghai Institute of Technical Physics (China)
Introduction

We have had the great honor to organize the 4th International Symposium on Photoelectronic Detection and Imaging in Beijing; it follows ISPDI2009 held also in Beijing in 2009. More than 1000 participants attended ISPDI 2011. The symposium provided a forum for the participants to report and review ideas and up-to-date comprehensive progress and developments and to discuss the novel approaches to application areas in the field of photoelectronic detection and imaging.

There were 720 papers accepted for presentation at ISPDI 2011, contributed by over 1,200 authors from nearly 20 countries, including: United States, Canada, Russia, United Kingdom, Germany, Ireland, Belgium, Poland, Czech Republic, South Africa, Australia, Korea, Japan, India, Malaysia, Singapore, China, and so on. We have nearly 100 international famous scientists and experts as invited speakers. The invited papers covered topics such as sensor and micromachined optical device technologies, laser sensing and imaging, infrared imaging and applications, imaging detector and applications, terahertz wave technologies and applications, space exploration technologies and applications, and related technologies and applications. It is sincerely hoped that the research and development in photoelectronic detection and imaging will be promoted, and the international cooperation sharing the common interest will be enhanced.

I would like to heartily to thank our sponsors and cooperative organizations for all they have done for the symposium. Thanks also to all the authors for their contributions to these proceedings, to all of the participants and friends for their interest and efforts in helping to make the symposium possible, to the organizing committee and the program committee for their effective work an valuable advice, especially the ISPDI2011 Secretariat, and to the SPIE staff for their tireless effort and outstanding service in preparing and publishing the conference proceedings.

Again, we extend our warmest greetings to you and hope you have had a rewarding and exciting stay during ISPDI 2011.

Guofan Jin
Local Cooperating Organizations of ISPDI 2011

Shanghai Institute of Optics and Fine Mechanics, CAS (China)
Shanghai Institute of Technical Physics, CAS (China)
Beijing Institute of Space Mechanics and Electricity (China)
Beijing Huahang Radio Measurement and Research Institute (China)
North China Research Institute of Electro-optics (China)
Beijing University of Aeronautics and Astronautics (China)
Nanjing University of Science and Technology (China)
Beijing Institute of Technology (China)
Beijing University of Technology (China)
State Key Laboratory of Transducer Technology (China)
Science and Technology on Micro-system Laboratory (China)
The Key Laboratory of Microwave Remote Sensing, CAS (China)
Science and Technology on Space System Simulation Laboratory, Beijing Simulation Center (China)