



# Infrared Frontier Physics and Technology

| Sep.23 Saturday, Meeting Room 5, 3F  |   |
|--|---|
| Presider: Weida Hu, Shanghai Institute of Technical Physics, Chinese Academy of Sciences;<br>Jianlu Wang, Fudan University |   |
| 13:30-14:00<br>(Keynote)   | <b>2D materials-based optoelectronic devices from the near-infrared to terahertz wavelengths</b><br>Jianbin Xu<br>The Chinese University of Hong Kong   |
| 14:00-14:20<br>(Invited)   | <b>Infrared Electromagnetic Spectra of 2D Strong Correlated Systems</b><br>Xiaomu Wang<br>Nanjing University  |
| 14:20-14:40<br>(Invited)   | <b>Polarization-Sensitive Photodetector and Image Sensor based on 2D Materials</b><br>Zhongming Wei<br>Institute of Semiconductors, Chinese Academy of Sciences   |
| 14:40-15:00<br>(Invited)   | <b>Two-dimensional material devices for neuromorphic vision</b><br>Shijun Liang<br>Nanjing University   |
| 15:00-15:15  | Coffee Break  |
| Presider: Xiaomu Wang, Nanjing University;<br>Zhongming Wei, Institute of Semiconductors, Chinese Academy of Sciences      |   |
| 15:15-15:35<br>(Invited)   | <b>Superconducting nanowire single photon detectors operating at the far-infrared</b><br>Qingyuan Zhao<br>Nanjing University  |
| 15:35-15:55<br>(Invited)   | <b>Mid-Infrared Photodetection Based on Topological Semimetals</b><br>Dong Sun<br>Peking University   |
| 15:55-16:15<br>(Invited)   | <b>Superconducting strip photon detectors and applications in quantum information processing</b><br>Lixing You<br>Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences (SIMIT, CAS)  |
| 16:15-16:25  | <b>ESIT2023-0809-32</b><br><b>Mid-infrared single-photon 3D imaging</b><br>Jianan Fang, Ben Sun, Tingting Zheng, Yinqi Wang, Kun Huang, Heping Zeng<br>East China Normal University, China  |
| 16:25-16:35  | <b>ESIT2023-0802-5</b><br><b>Analysis of dark current mechanisms for high-operating temperature Si:Ga blocked-impurity-band detectors</b><br>Ke Deng <sup>1,2</sup> , Qing Li <sup>1,2*</sup> , Peng Wang <sup>2</sup> , Ning Li <sup>2,3</sup> , Wei da Hu <sup>1,2</sup><br>1.Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China; 2.State Key Laboratory of Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China; 3.Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, Hangzhou, China |
| 16:35-16:45  | <b>ESIT2023-0817-3</b><br><b>2-bit Boolean Optoelectronic Logic Gates at Communication Band for Chip-integration</b><br>Ting He<br>Hangzhou Institute for Advanced Study, China   |



|   |  |
|---|--|
| 16:45-16:55   | <p><b>ESIT2023-0912-3</b><br/> <b>SDGSAT-1 Thermal Infrared Sensor On-orbit Calibration performance</b><br/>           Zhuoyue Hu<sup>1</sup>, Xiaoyan Li<sup>2</sup>, Fansheng Chen<sup>1</sup><br/>           1.State Key Laboratory of Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China; 2.Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China</p> |
| 16:55-17:05   | <p><b>ESIT2023-0816-4</b><br/> <b>Epitaxial substitution of metal iodides for low-temperature growth of two-dimensional metal chalcogenides</b><br/>           Lijie Zhang<br/>           Wenzhou University</p>   |
| <b>Sep.24 Sunday, Meeting Room 5, 3F</b>  |  |
| Presider: Qingyuan Zhao, Nanjing University; Hugen Yan, Fudan University  |  |
| 8:30-9:00<br>(Keynote)  | <p><b>II-VI and III-V multistage detectors</b><br/>           Piotr Martyniuk<br/>           Institute of Applied Physics, Military University of Technology</p>   |
| 9:00-9:20<br>(Invited)  | <p><b>Near-Infrared Position-Sensitive Detector Based on 2D/3D Heterogeneous Integration</b><br/>           Junpeng Lu<br/>           Southeast University</p>   |
| 9:20-9:40<br>(Invited)  | <p><b>Ferroelectric field effect transistors for electronics and optoelectronics</b><br/>           Jianlu Wang<br/>           Fudan University</p>  |
| 9:40-10:00<br>(Invited)   | <p><b>Recent progress of the blocked impurity band VLWIR photodetector</b><br/>           Peng Wang<br/>           Shanghai Institute of Technical Physics, Chinese Academy of Sciences</p>  |
| 10:00-10:15   | Coffee Break   |
| Presider: Haofei Shi, Chongqing Institute of Chinese Academy of Sciences;<br>Shijun Liang, Nanjing University; Liang Shen, Jilin University |  |
| 10:15-10:35<br>(Invited)  | <p><b>Research on enhancing detector performance at near infrared region with local field structure</b><br/>           Jun Wang<br/>           University of Electronic Science and Technology of China</p>  |
| 10:35-10:45   | <p><b>ESIT2023-0815-3</b><br/> <b>Infrared photodetectors based on Van der Waals heterojunctions</b><br/>           Feng Wu<br/>           Huazhong University of Science &amp; Technology</p>   |
| 10:45-10:55   | <p><b>ESIT2023-0814-2</b><br/> <b>Control over thermal emission for infrared application</b><br/>           Qiang Li<br/>           Zhejiang University</p>  |
| 10:55-11:05   | <p><b>ESIT2023-0809-7</b><br/> <b>Mid-wavelength Infrared photoconductive detectors based on HgCdSe/GaSb thin films grown by molecular beam epitaxy</b><br/>           ZEKAI ZHANG, Wen Lei, Lorenzo Faraone, Wenwu Pan, Gilberto Umana Membreno, Shuo Ma<br/>           University of Western Australia, Australia</p>  |
| 11:05-11:15   | <p><b>ESIT2023-0809-6</b><br/> <b>Research on High Sensitivity Infrared Photodetectors and Applications</b><br/>           Li Qing<br/>           Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China</p>  |



# ESIT 2023

The Second International Conference on Earth & Space: from Infrared to Terahertz 2023

|   |   |
|---|---|
| 11:15-11:25   | <p><b>ESIT2023-0829-4</b><br/> <b>Very long wave infrared quantum cascade detector using diagonal transition miniband</b><br/>           Kai Guo<sup>1,2</sup>, Yi Xuan Zhu<sup>2</sup>, Yu Chen<sup>2</sup>, Kun Li<sup>2</sup>, Jun Qi Liu<sup>2*</sup>, Shen Qiang Zhai<sup>2</sup>, Shu Man Liu<sup>2</sup>, Feng Qi Liu<sup>2</sup>, Xiao Hua Wang<sup>1*</sup>, Zhi Peng Wei<sup>1*</sup><br/>           1.Changchun University of Science and Technology, China; 2.Institute of Semiconductors, Chinese Academy of Sciences, China</p>   |
| 11:25-11:35   | <p><b>ESIT2023-0809-19</b><br/> <b>A three-dimensional cloud detection method by infrared satellite observations and its multi-spectral application in data assimilation in numerical weather prediction</b><br/>           Gang Ma<br/>           Center for Earth System Modeling and Prediction of CMA, China</p>  |
| 11:35-11:45   | <p><b>ESIT2023-0809-10</b><br/> <b>Self-powered Ultrabroad Te Nanowire-Based Photodetectors from Visible to Terahertz Driven by Multiphysical Mechanism</b><br/>           Jiazhen Zhang<sup>1</sup>, Donghai Zhang<sup>2</sup>, Liuping Liu<sup>2</sup>, Delei Liu<sup>2</sup>, Changyi Pan<sup>2,3</sup>, Liu Changlong<sup>2*</sup>, Haibo Shu<sup>4*</sup>, Lin Wang<sup>3</sup>, Xiaoshuang Chen<sup>2,3</sup><br/>           1.Yangtze Delta Region Institute of University of Electronic Science and Technology of China, Huzhou, China; 2.Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China; 3.Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China; 4.China Jiliang University, China</p>   |
| 11:45-11:55   | <p><b>ESIT2023-0829-3</b><br/> <b>VdWs photodetector design for fast and high-sensitive polarized detection</b><br/>           Fang Zhong<br/>           Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China</p>  |
| <p>President: Junpeng Lu, Southeast University;<br/>           Zhijun Ning, School of Physical Science and Technology, ShanghaiTech University;<br/>           Jun Zhao, Kunming Institute of Physics</p> |   |
| 13:30-13:50<br>(Invited)  | <p><b>Infrared Optoelectronic Response of 2D Semiconductors</b><br/>           Hugen Yan<br/>           Fudan University</p>  |
| 13:50-14:10<br>(Invited)  | <p><b>Innovative Optical Payloads and Big Data Technologies Support for High-Precision Quantitative Remote Sensing based on SDGSAT-1 Thermal Infrared Sensor</b><br/>           Fansheng Chen<br/>           Shanghai Institute of Technical Physics of the Chinese Academy of Sciences</p>   |
| 14:10-14:30<br>(Invited)  | <p><b>High Quality Graphene for Hybrid Infrared Photodetector</b><br/>           Haofei Shi<br/>           Chongqing Institute of Chinese Academy of Sciences</p>   |
| 14:30-14:40   | <p><b>ESIT2023-0731-2</b><br/> <b>Multi-physics Field based Numerical Simulation of Hg1-xCd<sub>x</sub>Te Based Photovoltaic Detectors with Composition Gradients</b><br/>           Jiahui Chen<sup>1</sup>, Wangyong Chen<sup>1,2*</sup>, Linlin Cai<sup>1,2*</sup>, Haifeng Chen<sup>1</sup>, Pengling Yang<sup>3</sup>, Dahui Wang<sup>3</sup>, Manling Shen<sup>3</sup>, Xiangyang Li<sup>4</sup>, Hui Qiao<sup>4</sup><br/>           1.School of Microelectronics Science and Technology, Sun Yat-sen University, China; 2.Guangdong Provincial Key Laboratory of Optoelectronic Information Processing Chips and Systems, Sun Yat-sen University, China; 3.Northwest Nuclear Technology Institute, China; 4.Key Laboratory of Infrared Imaging Materials and Detectors, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, China</p> |
| 14:40-14:50   | <p><b>ESIT2023-0731-1</b><br/> <b>Study of high thermal isolation property structure made by electrospun used in Ru-based infrared imaging sensor</b><br/>           Li Song, Yuxuan Dong, Shah Fahad, Xuanzheng Zhou, Min Wang<br/>           Southern University of Science and Technology</p>  |
| 14:50-15:00   | <p><b>ESIT2023-0730-1</b><br/> <b>Effective mass and electrical properties of few-layer 2D h-BN films based on FN tunneling effect</b><br/>           Jiayi Qin, Man Luo, Yuxin Meng, Tiantian Cheng, Yuanze Zu, Xin Wang, Chenhui Yu<br/>           Nantong University, China</p>  |



|  |   |
|--|---|
| 15:00-15:15  | Coffee Break  |
| Presider: Fansheng Chen, Shanghai Institute of Technical Physics of the Chinese Academy of Sciences; Peng Wang, Shanghai Institute of Technical Physics, Chinese Academy of Sciences |   |
| 15:15-15:35<br>(Invited)   | <b>Ultrafast and broadband photodetectors based on a perovskite/organic bulk heterojunction for large-dynamic-range imaging</b><br>Liang Shen<br>Jilin University   |
| 15:35-15:55<br>(Invited)   | <b>Development of New Infrared Detector Technology</b><br>Jun Zhao<br>Kunming Institute of Physics  |
| 15:55-16:15<br>(Invited)   | <b>Digital Infrared Focal Plane Array Technology</b><br>Libin Yao<br>Kunming Institute of Physics, Chinese Academy of Sciences  |
| 16:15-16:35<br>(Invited)   | <b>Colloidal quantum dot based upconversion imaging</b><br>Zhijun Ning<br>School of Physical Science and Technology, ShanghaiTech University  |
| 16:35-16:45  | <b>ESIT2023-0719-1</b><br><b>Hot-carrier infrared detection in lead salts thin film with highly-sensitive and ultrafast response at room temperature</b><br>Wang Qisheng<br>Nanchang University, China  |
| 16:45-16:55  | <b>ESIT2023-0722-1</b><br><b>Study and Optimization of Wide Bandwidth and Low Noise HgCdTe Avalanche photodiodes</b><br>Wenrui Wei<br>Shanghai Institute of Technical Physics, Chinese Academy of Sciences  |
| 16:55-17:05  | <b>ESIT2023-0829-19</b><br><b>HgCdTe e-APD Microscopic-Mesoscopic Monte Carlo Paradigm for Excess Noise Analysis</b><br>Shuning Liu <sup>1,2</sup><br>1. Shanghai Institute of Technical Physics, China; 2. Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, China |
| 17:05-17:15  | <b>ESIT2023-0907-3</b><br><b>Design and Fabrication of Si Microlens Arrays for Infrared Focal Plane Arrays</b><br>Zhijin Hou<br>Fudan University  |
| 17:15-17:25  | <b>ESIT2023-0908-1</b><br><b>Growth and photodetection application of low-dimensional perovskite semiconductors</b><br>Ziqing Li<br>Fudan University  |