



II-VI Workshop 2024
September 30 – October 3, 2024
Drury Plaza Hotel River Walk, San Antonio, TX, US

PROGRAM

MONDAY, SEPTEMBER 30, 2024

Registration

4:00 PM - 7:00 PM / San Antonio I Pre-Function

Tutorials

5:00 PM - 6:00 PM / San Antonio I

Random Thoughts on the Physics of HgCdTe

Mike Kinch, DRS, Bolingbrook, IL, US

6:00 PM - 7:00 PM / San Antonio I

Analyzing Single Color Detector Test Data

David Rhiger, Raytheon Vision Systems, Goleta, CA, US

TUESDAY, OCTOBER 1, 2024

Registration

7:30 AM - 6:00 PM / San Antonio I Pre-Function

Continental Breakfast

7:30 AM - 9:00 AM / Mezzanine 2nd Floor

Welcoming Remarks

8:45 AM - 9:00 AM / San Antonio I

Keynote

9:00 AM - 9:30 AM / San Antonio I

K.1: Enabling Technologies for Future Army High Performance Imaging (9:00 AM)

Mike Groenert, US Army/C5ISR, Aberdeen, MD, US

Session 1: Industrial Overview I

Chair: Dan Lofgreen, Raytheon

9:30 AM - 10:30 AM / San Antonio I

1.1: *Invited Paper:* High Density Vertically Integrated Photodiode (HDVIP) Technology for Small Pitch, Two-Color, High Throughput Production of

Infrared Focal Plane Arrays (9:30 AM)

Fikri Aqariden, DRS, Bolingbrook, IL, US

1.2: *Invited Paper:* Recent Developments at Leonardo UK on APDs, HOT FPAs, and 2-Color Programs (10:00 AM)

James Wilson, Leonardo, Southampton, United Kingdom

BREAK (10:30 AM)

Session 2: Devices I

10:45 AM - 12:00 PM / San Antonio I

Chair: Silviu Velicu, EPIR

2.1: *Invited Paper:* An Overview of LWIR HgCdTe Detector Performance for Astronomical Space Observatory Missions (10:45 AM)

Borzoyeh Shojaei, Teledyne Imaging Sensors, Camarillo, CA, US

2.2: **Observation of Fundamental Defect Free Current Mechanisms in Mid-wavelength P+n HgCdTe Arsenic Implanted Devices (11:15 AM)**

Priyalal Wijewarnasuriya, Teledyne Imaging Sensors, Camarillo, CA, US

2.3: *Student Paper:* Impact of Al₂O₃ and HfO₂ Gate Dielectrics on Photoresponse of Graphene Channel Field-Effect MWIR Photodetectors with HgCdTe Absorber (11:30 AM)

Md Fazle Rabbe, Virginia Commonwealth University, Richmond, VA, US

2.4: *Student Paper:* Extraction of Traps Parameters in HgCdTe P/N and N/P MWIR Focal Plane Arrays Using Photocurrent Transients Induced by Optical Excitation (11:45 AM)

Hugo Rousset, CEA-LETI, Grenoble, France

LUNCH

12:00 PM – 1:30 PM / Mezzanine 2nd Floor

Session 3: Materials I

1:30 PM - 2:30 PM / San Antonio I

Chair: *Dan Lofgreen, Raytheon*

3.1: WITHDRAWN

3.2: **Selective Area Epitaxy of In-Plane HgTe nanowires on CdTe(001) Substrate (1:30 PM)**
Philippe Ballet, CEA-LETI, Grenoble, France

3.3: WITHDRAWN

3.4: WITHDRAWN

3.5: **Microstructural Evolution of and Nanostructure Formation on Epitaxial Hg_{1-x}CdxTe Surfaces Under Nonequilibrium Conditions- (2:15 PM)**
Borzoyeh Shojaei, Teledyne Imaging Sensors, Camarillo, CA, US

BREAK (2:00 PM)

Session 4: Modeling and Simulation

2:45 PM - 4:00 PM / San Antonio I

Chair: *Enrico Bellotti, Boston University*

4.1: **High Operating Temperature SWIR HgCdTe APDs (2:45 PM)**
Johan Rothman, CEA-LETI, Grenoble, France

4.2: WITHDRAWN

4.3: **Student Paper: The Effects of Focal Plane Parameters on eSWIR Imaging System Performance (3:15 PM)**
Angus Hendrick, University of Arizona, Tucson, AZ, US

4.4: WITHDRAWN

4.5: **Design and Simulation of Metalens Arrays for Enhanced MWIR HgCdTe Infrared Detector Performance (3:30 PM)**
Wenwu Pan, The University of Western Australia, Perth, Australia

TABLETOP EXHIBITS/WINE & CHEESE RECEPTION (4:00 – 6:00 PM)

WEDNESDAY, OCTOBER 2, 2024

Registration

7:30 AM - 4:30 PM / San Antonio I Pre-Function

Continental Breakfast

7:30 AM - 9:00 AM / Mezzanine 2nd Floor

Welcoming Remarks

9:00 AM - 9:15 AM / San Antonio I

Session 5: Industrial Overview II

9:15 - 10:15 AM / San Antonio I

Chair: *Fikri Aqariden, DRS*

5.1: **Invited Paper: Raytheon Vision Systems: Making the Low-Cost Focal Plane Array (9:30 AM)**
Dan Lofgreen, Raytheon Technologies, Santa Maria, CA, US

5.2: **Invited Paper (10:00 AM)**
Michael Carmody, Teledyne Imaging Sensors, Camarillo, CA, US

BREAK (10:15 AM)

Session 6: Materials II

10:45 AM - 12:15 PM / San Antonio I

Chair: *Tony Almeida, U.S. Army CCDC C5ISR NVESD*

6.1: **Invited Paper: Analysis of HgCdTe/CdZnTe Defects (10:45 AM)**
Dave Benson, US Army/C5ISR, Aberdeen, MD, US

6.2: **A Computational Study of Radiation Damage in HgCdTe (11:15 AM)**
Jamal Mustafa, Raytheon Vision Systems, Goleta, CA, US

6.3: **Two-Photon Absorption Behavior of HgCdTe Material (11:30 AM)**
Yong Chang, EPIR Inc., Bolingbrook, IL, US

6.4: WITHDRAWN

6.5: **Student Paper: First-Principles Study of the Electronic Properties of Strained and Unstrained HgCdTe and CdZnTe Alloys (12:00 PM)**
Fatimah Alowa, Boston University, Boston, MA, US

LUNCH

12:15 PM – 1:30 PM / Mezzanine 2nd Floor

Session 7: Heteroepitaxy

1:30 PM - 2:45 PM / San Antonio I

Chair: *Eric Piquette, Teledyne Scientific & Imaging*

7.1: **WITHDRAWN**

7.2: **Residual Compositional Inhomogeneities in MOCVD Grown HgCdTe Using Interdiffused Multilayer Process (2:00 PM)**

Jan Sobieski, Vigo Photonics, Ożarów Mazowiecki, Poland

7.3: **WITHDRAWN**

7.4: **WITHDRAWN**

BREAK (2:45 PM)

Session 8: Materials III

3:00 PM - 4:00 PM / San Antonio I

Chair: *Nibir Dhar, Virginia Commonwealth University*

8.1: **WITHDRAWN**

8.2: **Atoms-to-Circuits Modeling of Radiation Damage in Infrared Photodetectors (3:15 PM)**

Anthony Ciani, Sivananthan Laboratories, Inc., Bolingbrook, IL, US

8.3: **Student Paper: Study of External Mechanical Stress on a FPA in the MWIR Spectral Range (3:30 PM)**

Antoine Claret, CEA Grenoble, Grenoble, France

8.4: **In-Situ Stress Analyzes of Alternative Substrates for HgCdTe Infrared Detector Applications (3:45 PM)**

Ergi Donercark, ASELSAN Inc. Ankara, Turkey

THURSDAY, OCTOBER 3, 2024

Registration

8:00 AM - 12:00 PM / Ballroom Foyer

Continental Breakfast

7:30 AM - 9:00 AM / Mezzanine 2nd Floor

Welcoming Remarks

8:45 AM - 9:00 AM / San Antonio I

Session 9: Devices III

9:00 AM – 10:00 AM / San Antonio I

Chair: *Priyalal Wijewarnasuriya, Teledyne Imaging Sensors*

9.1: **Invited Paper: Progress in HgCdTe APDs (9:00 AM)**

Duke Anderson, Leonardo DRS, Dallas, TX, US

9.2: **Invited Paper: Current Advancements in Performance, Pitchsize and Format of MCT-based Bispectral Detectors at AIM (9:30 AM)**

Eric Reutter, AIM Infrarot-Module GmbH, Heilbronn, Germany

BREAK (10:00 AM)

Session 9: Devices III (cont.)

10:15 AM - 12:15 PM / San Antonio I

Chair: *Priyalal Wijewarnasuriya, Teledyne Imaging Sensors*

9.3: **Invited Paper: A New Generation of MCT-Based p-on-n Technology for Focal-Plane Arrays Ranging from SWIR to VLWIR (10:15 AM)**

Clement Lobre, CEA Grenoble, Grenoble, France

9.4: **Invited Paper: Low SWaP Solutions for Adaptive Multi-Spectral Infrared Imaging (10:45 AM)**

Lorenzo Faraone, The University of Western Australia, Perth, Australia

9.5: **Enhanced Quantum Efficiency of Colloidal Quantum Dot MWIR Photodiodes (11:15 AM)**

Matthew Ackerman, QDIR Inc., Chicago, IL, US

9.6: **WITHDRAWN**

9.7: **Invited Paper: Assessment of Passivation Annealing Conditions on Arsenic Ion Implanted LWIR HgCdTe FPAs (11:45 AM)**

Beril Ugur, ASELSAN Inc., Ankara, Turkey

CASSELMAN/SPICER BEST STUDENT PAPER AWARD (12:15 PM)