



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

## PRELIMINARY 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 II

Random Thoughts on the Physics of HgCdTe

Mike Kinch, DRS, Bolingbrook, IL, US

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

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 - 9:30 AM / Mezzanine 2<sup>nd</sup> Floor

#### Welcoming Remarks

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

#### Keynote

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

K.1: TBD (9:00 AM)

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

#### Session 1: Industrial Overview I

Chair: TBD

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

1.1: **Invited Paper** (9:30 AM)

Fikri Aqariden, DRS, Bolingbrook, IL, US

1.2: **Invited Paper** (10:00 AM)

Oguz Altun, ASELSAN, Inc., Ankara, Turkey

#### BREAK (10:30 AM)

#### Session 2: Devices I

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

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: **Impact of Al<sub>2</sub>O<sub>3</sub> and HfO<sub>2</sub> 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: **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)**

### **Session 3: Materials I**

**1:15 PM - 2:30 PM / San Antonio II**

**Chair:** *Dan Lofgreen, Raytheon Technologies*

- 3.1: Accelerated Crucible Rotation Growth of CdZnTe (1:15 PM)**  
*Santosh Swain, Washington State University, Pullman, WA, US*
- 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: Growth Recipe Optimization for HgCdTe Molecular Beam Epitaxy Using Dual Autoencoder Architecture (1:45 PM)**  
*Zaheer Ahmad, EPIR, Bolingbrook, IL, US*
- 3.4: Etch Pit Density Determination in HgCdTe from Nomarski Microscope Images of As-Grown Layers (2:00 PM)**  
*Zaheer Ahmad, EPIR, Bolingbrook, IL, US*
- 3.5: Microstructural Evolution of and Nanostructure Formation on Epitaxial Hg<sub>1-x</sub>Cd<sub>x</sub>Te Surfaces Under Nonequilibrium Conditions- (2:15 PM)**  
*Borzoyeh Shojaei, Teledyne Imaging Sensors, Camarillo, CA, US*

## **BREAK (2:30 PM)**

### **Session 4: Modeling and Simulation**

**2:45 PM - 4:00 PM / San Antonio II**

**Chair:** *TBD*

- 4.1: High Operating Temperature SWIR HgCdTe APDs (2:45 PM)**  
*Johan Rothman, CEA-LETI, Grenoble, France*
- 4.2: Characterization of HgCdTe Avalanche Photodiodes formed by Plasma-induced Type Conversion for 2- $\mu$ m Wavelength Applications (3:00 PM)**  
*Gilberto Umana Membreno, The University of Western Australia, Perth, Australia*
- 4.3: The Effects of Focal Plane Parameters on eSWIR Imaging System Performance (3:15 PM)**  
*Angus Hendrick, University of Arizona, Tucson, AZ, US*
- 4.4: Noise Characterization of InGaAs/GaAsSb TWSL SWIR Detectors (3:30 PM)**  
*Armando Gil, University of Michigan, Ann Arbor, MI, US*
- 4.5: Design and Simulation of Metalens Arrays for Enhanced MWIR HgCdTe Infrared Detector Performance (3:45 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 - 9:30 AM / Mezzanine 2<sup>nd</sup> Floor**

### **Welcoming Remarks**

**8:45 AM - 9:00 AM / San Antonio II**

### **Plenary Session**

**9:00 AM - 9:30 AM / San Antonio II**

- P.1: TBD (9:00 AM)**  
*Phil Perconti, DRS, Bolingbrook, IL, US*

### **Session 5: Industrial Overview II**

**9:30 AM - 10:30 AM / San Antonio II**

**Chair:** *Fikri Aqariden, DRS*

- 5.1: Invited Paper (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 (10:30 AM)**

### **Session 6: Materials II**

**10:45 AM - 12:15 PM / San Antonio II**

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

- 6.1: Invited Paper (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: **Unsupervised Neural Network Model for Predictive Analytics in Semiconductor Manufacturing (11:45 AM)**  
*Zaheer Ahmad, EPIR Inc., Bolingbrook, IL, US*
- 6.5: **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)

### Session 7: Heteroepitaxy

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

Chair: *Eric Piquette, Teledyne Scientific & Imaging*

- 7.1: **Invited Paper (1:30 PM)**  
*Kevin Doyle, Raytheon Technologies, Santa Maria, CA, US*
- 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: **Epitaxy Solution of the III-V Antimonides/Arsenides Quantum Well Heterostructure for IR Detector Applications: TNL-EpiGrow Simulator (2:15 PM)**  
*Praveen Saxena, Tech Next Lab Pvt Ltd., Lucknow, India*
- 7.4: **MOCVD Epitaxy Solution of HgCdTe Heterostructures for Infrared Detectors through An Innovative Simulation Technique (2:30 PM)**  
*Praveen Saxena, Tech Next Lab Pvt Ltd., Lucknow, India*

## BREAK (2:45 PM)

### Session 8: Materials III

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

Chair: *TBD*

- 8.1: **An Electron Beam Induced Current study on Reactive Ion Etch Induced pn Junctions in Mercury Cadmium Telluride (3:00 PM)**  
*Daniel Morley, Transformative Meta-Optical Systems WA Node, Perth, Australia*
- 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: **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 - 9:30 AM / Ballroom Foyer

### Welcoming Remarks

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

### Session 9: Devices III

9:00 AM – 10:00 AM / San Antonio II

Chair: *Priyatal Wijewarnasuriya, Teledyne Imaging Sensors*

- 9.1: **Invited Paper: Progress in HgCdTe APDs (9:00 AM)**  
*Pradip Mitra, 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 - 12:00 PM / San Antonio II

Chair: *Priyatal 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: **Understanding Thermo-mechanical Reliability of Packaging Assemblies for IRFPAs (11:30 AM)**

*Sushant Sonde, EPIR, Inc., Bolingbrook, IL, US*

**9.7: 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 (12:00 PM)**