



Division on Engineering and Physical Sciences  
Army Research Laboratory Technical Assessment Board

**Panel on Assessment of Electromagnetics Spectrum Sciences Meeting  
Adelphi Laboratory Center, Maryland**

**July 18-19, 2023**

**Agenda**

**Note:** The data gathering sessions of this meeting are to be held on July 18, 2023, from 9:50 am – 11:45 am EDT and 1:30 pm – 3:30 pm, EDT; July 19, 2023, from 8:00 am – 9:40 am, EDT, 10:40 am – 11:20, EDT, 12:20 pm-4:30 pm, EDT, and 4:50 pm – 5:10 pm, EDT; and July 20, 2023, from 1:00 pm – 2:30 pm, EDT, will not be open to the public under Subsection 15(b)(3) of the Federal Advisory Committee Act, 5 U.S.C. App. The Academy has determined that to open this session to the public would disclose information described in 5 U.S.C. 552(b).

**DAY 1: Tuesday, July 18, 2023**

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Z4D-38, Building207, Adelphi Laboratory Center, Adelphi, MD***

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| 9:20 – 9:30 | (U) Welcome, Introductions, and Logistics, <b>Dr. Romeo del Rosario</b> , Electronics Engineer, Competency Lead, EMSS, and <b>Dr. Joe Qiu</b> , Electronics Engineer, EMSS Competency Lead, EMSS |
| 9:30 – 9:40 | (U) ARL Strategic Discussion, <b>Dr. Patrick Baker</b> , Director of the U.S. Combat Capabilities Development Command (DEVCOM), Army Research Laboratory (ARL)                                   |
| 9:40 – 9:50 | Army Research Directorate (ARD) Overview, <b>Dr. Cynthia Bedell</b> , Director of the Army Research Directorate (ARD)  |

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

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| 11:45 – 12:00 | Working Lunch – Box Lunch Distribution   |
| 12:00 – 12:30 | (U) Atomistic Modeling of Ultrawide Bandgap (UWBG) Materials and Surfaces for RF Electronics, <b>Dr. Mahesh Neupane</b> , Electronics Engineer, ARLW |
| 12:30 – 13:00 | (U) Ultrafast Studies of Thermal and Electric Transport in UWBG Semiconductors, <b>Dr. LeighAnn Larkin</b> , Research Physicist                      |

13:00 – 13:30 (U) Ultraviolet Single-photon Sensing, **Dr. Jonathan Schuster**, Electronics Engineer

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Z4D-38, Building207, Adelphi Laboratory Center, Adelphi, MD***

13:30 – 14:30 Poster Session

Model of High Al Content AlGaIn Active Regions for Device Optimization: lasers vs LEDs, <b>Dr. Greg Rupper</b> (FE)
Epitaxial Growth of III-nitride Materials for High Power Devices by MOCVD and MBE, <b>Dr. Mihee Ji</b> (FE)
Effect of Temperature on the Power Performance of WBG and UWBG semiconductors, <b>Dr. Franklin Nouketcha</b> (FE)
Diamond Materials Growth and Processing at ARL, <b>Dr. Elias Garratt</b> (FE)
Multiscale Modeling of Oxide/Diamond Heterostructures for RF Applications, <b>Dr. Mahesh Neupane</b> (FE)
Modeling Diamond RF FETs for High Power Applications, <b>Dr. Pankaj Shah</b> (FE)
Modeling of Charge Transport and High Frequency Response in Gated 2D Diamond Conduction Channels, <b>Dr. Sergey Rudin</b> (FE)
Electrical Characterization of Charge Trapping in Diamond MOSFETs, <b>Dr. Leo De La Cruz</b> (FE)

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Z4D-38, Building207, Adelphi Laboratory Center, Adelphi, MD***

15:50- 16:20 (U) RF Circuits for Army Applications, **Dr. Ali Darwish**, RF Circuits Team Lead, Electronics Engineer

16:20 – 16:50 (U) WBG and UWBG Power Electronics Development and Reliability, **Dr. Ron Green**, Electronics Engineer

16:50 – 17:20 Panel and EMSS Scientists and Engineers – Discussion and Question and Answer Session

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Sierra Grill, 11619 Beltsville Dr, Beltsville, MD 20705***

19:00 Joint Working Dinner: Panel Members, Presenters, Competency Leads, and Senior ARL Management Engage in Discussions (*Public Distribution Discussions Only*)

**DAY 2: Wednesday, July 19, 2023**

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Z4D-38, Building207, Adelphi Laboratory Center, MD***

- 9:40 – 10:10 (U) Additive Manufacturing for Antennas and RF Devices, **Dr. Gregory Mitchell**, Antennas Team Lead, Electronics Engineer
- 10:10 – 10:40 (U) Multi-function Metasurfaces and Electromagnetic Skins, **Dr. Quang Nguyen**, Electrical Engineer

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Z4D-38, Building207, Adelphi Laboratory Center, MD***

- 11:20 – 11:50 (U) Algorithm Development for SAR, **Dr. Lam Nguyen**, Signal Processing Team Lead, Electronics Engineer

**DATA GATHERING SESSION: OPEN TO THE PUBLIC**

***Location: Z4D-38, Building207, Adelphi Laboratory Center, Adelphi, MD***

- 12:50 – 13:50 Poster Session

Model of High Al Content AlGa <sub>N</sub> Active Regions for Device Optimization: Lasers vs LEDs, <b>Dr. Greg Rupper</b> (FE)
Epitaxial growth of III-nitride Materials for High Power Devices by MOCVD and MBE, <b>Dr. Mihee Ji</b> (FE)
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Diamond Materials Growth and Processing at ARL, <b>Dr. Elias Garratt</b> (FE)
Multiscale Modeling of Oxide/Diamond Heterostructures for RF Applications, <b>Dr. Mahesh Neupane</b> (FE)
Modeling Diamond RF FETs for high-power Applications, <b>Dr. Pankaj Shah</b> (FE)
Modeling of charge transport and high-frequency Response in Gated 2D diamond Conduction Channels, <b>Dr. Sergey Rudin</b> (FE)
Electrical Characterization of Charge Trapping in Diamond MOSFETs, <b>Dr. Leo De La Cruz</b> (FE)
Technology and Techniques for Distributed, Wireless, Coherent Beamforming, <b>Dr. Timothy Garner</b> (FE)
Design of a Scalable and Reconfigurable Wideband Antenna Using Closely Coupled Unit Cells and Pixelated Surfaces, <b>Dr. Seth McCormick</b> (FE)