

# PROGRAM AT-A-GLANCE

WEDNESDAY AM

EMC Awards Ceremony and Plenary Session			Archie M. Griffin West Ballroom
8:20 am			Awards Ceremony
8:30 am	Susan Trolier-McKinstry	PL01*	New Materials for Three Dimensional Ferroelectric Microelectronics
9:20 am			BREAK
A: Group III-Nitrides—Power Diodes			Great Hall Meeting Room 3
10:00 am	Lincoln Lauhon	A01	Correlated Nanoscale Imaging of Doping, Conductivity, and Cathodoluminescence in GaN p-n Junctions Prepared by Selected Area Regrowth
10:20 am	Russell Dupuis	A02	1.3 kV Vertical GaN p-i-n Rectifier with Nitrogen-Implanted Field Guard Ring Edge Termination
10:40 am	Andrew M. Armstrong	A03	1.6 kV Etched-and-Regrown GaN pn-Diodes Realized by Mitigation of Plasma Etch-Enhanced Deep Level Defects
11:00 am	Matthew Alexander Porter	A04	(Student) Design, Manufacturability and Optimization of Hybrid Guard Ring-JTE Edge Terminations via Nitrogen Implantation in Epitaxial GaN PN Power Diodes
11:20 am	Christopher M. Matthews	A05	(Student) AlN Homojunction PN Diodes—The Highest Bandgap Semiconductor Diodes Ever Demonstrated
11:40 am	Vincent E. Meyers	A06	(Student) Defect Microstructural and Diffusion Studies of Implant-Gyrotron Microwave Annealed GaN:Mg—Effect of Sequential High- and Moderate-Temperature Annealing
B: Silicon Carbide—Devices and Reliability			Archie M. Griffin West Ballroom
10:00 am	Sami El Hageali	B01	(Student, Late News) Structural and Optical Characterization of Trapezoidal Defects in 4H-SiC Epilayers and Their Effect on MOSFETs Reliability
10:20 am	Shengnan Zhu	B02	(Student) JFET Region Design for 650 V 4H-SiC Planar Power MOSFETs
10:40 am	Suman Das	B03	(Student) Channel Hole Scattering Processes in 4H-SiC MOSFETs
11:00 am	Suvendu Nayak	B04	(Student) Process-Induced Variability of SiC DMOSFET Short Circuit Capability
11:20 am	Hema Lata Rao Maddi	B05	Characterization of SiC-SiO <sub>2</sub> Interface States in Commercial 4H-SiC Power MOSFETs from Cryogenic to High Temperature
11:40 am	Ashton Purcell	B06	(Student) Recombination Centers in 4H-SiC pin Diodes Observed by Electrically Detected Magnetic Resistance and Near-Zero Field Magnetoresistance
C: Wearable Electronics and Biosensors			Ohio Staters Inc. Founders Room
10:00 am	Nam-In Kim	C01	(Student) Stress Hormone Detection by Single-Crystalline III-N Piezoelectric Thin-Film-Based Sensor
10:20 am	Dongseop Lee	C02	(Student) Recessed AlGaIn/GaN HEMT Biosensors with High Sensitivity and Linearity for Detection of Microcystin-LR
10:40 am	Nam-In Kim	C03	(Student) Pressure Monitoring at Extremely High-Temperature Range Using Highly Flexible Piezoelectric Sensor Made of Ultrawide-Bandgap III-N Thin Film
11:00 am	Julia Isidora Salas Toledo	C04	(Student) Flexible Modified Carbon Nanotube/Nanofiber-Based Triboelectric Nanogenerator
11:20 am	Lauren Brady	C05	(Student) Detection of the Nitrogen Cycle Using the Metabolic Activity of Shewanella Oneidensis MR-1
11:40 am	Nam-In Kim	C06	(Student) Wearable Eye Movement Sensors Using Flexible and Biocompatible III-N Thin Films for Personal Safety, Healthcare Monitoring and Abnormality Diagnosis
D: Gallium Oxide Devices			Ohio Staters Inc. Traditions Room
10:00 am	Nidhin Kurian Kalarickal	D01	(Student) Demonstration of Self-Aligned Delta Doped MISFETs with Current Density > 550 mA/mm
10:20 am	Marko Tadjer	D02	Growth and Electrothermal Characterization of $\beta$ -(Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> /Ga <sub>2</sub> O <sub>3</sub> Heterostructure Field-Effect Transistors
10:40 am	Ashok Vedantum Dheenan	D03	(Student) $\beta$ -Ga <sub>2</sub> O <sub>3</sub> MESFETs with Insulating Mg-Doped Buffer Grown by MBE
11:00 am	Zhenwei Wang	D04	Electrical Characteristics and Band Alignment of n-Si/n-Ga <sub>2</sub> O <sub>3</sub> Heterojunction Fabricated by Surface-Activated Bonding
11:20 am	Joseph Spencer	D05	(Student) Beta-Gallium Oxide Junction Barrier Schottky Diodes with Sputtered P-Type Nickel Oxide
11:40 am	Zhe Ashley Jian	D06	(Student, Late News) Heterogeneous Integration of Single-Crystal $\beta$ -Ga <sub>2</sub> O <sub>3</sub> and N-Polar GaN Substrates with ZnO Interlayer Deposited by Atomic Layer Deposition
E: Dielectrics and Multifunctional Oxides			Senate Chamber
10:00 am	Aminat Oyiza Suleiman	E01	The Role of Thermal Vibrational Disorder in the Structural Phase Transition of VO <sub>2</sub> Probed by Raman Spectroscopy
10:20 am	Samuel Marks	E02	High Transparent Conductor Figure-of-Merit for SrVO <sub>3</sub> Grown by Solid-Phase Epitaxy
10:40 am	Micah Haseman	E03	(Student) Correlation of Native Point Defects with Piezoelectric Voltage in Strained ZnO Microwires
11:00 am	Brenton A Noesges	E04	(Student) Controlling Charge Distributions Near Complex Oxide Interfaces via Defect Engineering
11:20 am	Lyndon E Smith	E05	(Student, Late News) Mechanochemical Synthesis and Characterization of Ti-Doped Bismuth Ferrite Using Nano-Agitator Milling Process
11:40 am	Tetyana V. Torchynska	E06	On the Impact of Impurities' Nature and Annealing Conditions on Structural and Optical Properties of Hafnia-Based Thin Films
F: Point Defects, Doping, and Extended Defects			Rosa M. Ailabouni Room
10:00 am	Rafael Jaramillo	F01	Small Defects, Big Deal—Using Point Defects to Control Giant Opto-Mechanical Effects and to Engineer New Resistive Switches
10:20 am	Eamonn T Hughes	F02	(Student) Dislocations Altering the Microstructure and Luminescence of InAs Quantum Dots on Silicon
10:40 am	Yekan Wang	F03	(Student) Defects with Mg Segregation in Mg-Implanted GaN After Ultra-High-Pressure Annealing
11:00 am	Fatih Furkan Ince	F04	(Student) Growth of High Indium Percentage InGaSb on InP Substrates Using the Interfacial Misfit Dislocation Array Growth Mode.
11:20 am	Chunyi Huang	F05	(Student) Remote Si Doping of InGaAs Nanowires for Topological Quantum Computing

\*Plenary Talk

# PROGRAM AT-A-GLANCE

WEDNESDAY PM

G: 2D Material Devices and Sensors			Great Hall Meeting Room 1 & 2
1:30 pm	Sarbashis Das	G01	(Student) Multifunctional MoTe <sub>2</sub> Transistors for Analog, Digital, Neuromorphic and Modulation Primitives
1:50 pm	Akhil Dodda	G02	(Student) Near Sensor Security Based on Multifunctional Monolayer MoS <sub>2</sub> FETs
2:10 pm	Zhihui Cheng	G03	Are Two-Dimensional Interfaces Really Flat?
2:30 pm	Rafael Jaramillo	G04	The (Mostly) Unwelcome Guest in Transition Metal Chalcogenides—Native Oxidation and the Effects of Oxygen During Processing MoS <sub>2</sub> , TiS <sub>2</sub> and Zr(S,Se) <sub>2</sub>
2:50 pm	Yuanyue Liu	G05	(Late News) What Limits Electronic Transport in 2D Transition Metal Dichalcogenides—Phonons or Defects?
3:10 pm			BREAK
3:30 pm	Jenifer R Hajzuz	G06	Comparison of Epitaxial Graphene Electrodes for Electrochemical Detection and Identification of Heavy Metals in Seawater
3:50 pm		G07	Discussion Time
4:10 pm	Hirandeep Reddy Kuchoor	G08	Improved Density of GaAsSb Nanowires on Monolayer Graphene/SiO <sub>2</sub> /Si for Near-Infrared Photodetector Application
4:30 pm	Elisabeth Mansfield	G09	Degradation of CVD-Grown MoS <sub>2</sub> Subjected to DC Electrical Stress
4:50 pm	Emanuel Ber	G10	(Student, Late News) Reducing Schottky Barrier Height vs Width—Which is Most Effective in Improving Contact Resistance to Atomically Thin Semiconductors?
H: Group III-Nitrides— Power Diodes and HEMTs			Great Hall Meeting Room 3
1:50 pm	Yekan Wang	H01	(Student) Defect Characteristics Under Devices and Reverse Leakage Current Investigated Using X-Ray Topography
2:10 pm	Yafei Liu	H02	(Student) Investigation of the Nature and Origins of Area Defects in Gallium Nitride Substrate Wafers
2:30 pm	James C Gallagher	H03	Effects of Surface Defects on Vertical GaN Diode Performance
2:50 pm	Yuxuan Zhang	H04	(Student) Correlating Optical Characteristics and Electrical Performance of Vertical GaN-on-GaN PN Diodes
3:10 pm			BREAK
3:30 pm	Caleb Glaser	H05	(Student) Interface Trap Density Characterization of ALD Gate Dielectrics for GaN Power MOSFETs
3:50 pm		H06	Discussion Time
4:10 pm	Md Didarul Alam	H07	(Student) Fabrication of Flexible AlGaIn/GaN HEMTs Using Laser Liftoff
4:30 pm	Alan G Jacobs	H08	Efficient N-Type Ion Implantation Activation in GaN with High Mobility
4:50 pm	Zexuan Zhang	H09	(Student) N-Polar GaN/AlGaIn High Electron Mobility Transistor Structures on Single-Crystal AlN Substrates
I: Silicon Carbide Materials and Characterization			Archie M. Griffin West Ballroom
1:30 pm	Daniel J Pennachio	I01	Exploring SiC CVD Growth Parameters Compatible with Remote Epitaxy on Epitaxial Graphene Substrates
1:50 pm	Nadeemullah Mahadik	I02	Expansion of BPDs from Star-Shaped Defects in 4H-SiC
2:10 pm	Zeyu Chen	I03	(Student) Analysis of Strain Gradient in High Energy Implanted 4H-SiC Epi Wafer by Synchrotron X-Ray Rocking Curve Topography
2:30 pm	Hongyu Peng	I04	Analysis of Dislocations in 4H-SiC Wafers Using Synchrotron X-Ray Topography
2:50 pm	Qianyu Cheng	I05	(Student) Determination of Effective Penetration Depths on Synchrotron X-Ray Topographic Images of Dislocations Lying on the Basal Plane in 4H-SiC Crystals
3:10 pm			BREAK
J: Nanoscale Characterization			Archie M. Griffin West Ballroom
3:30 pm	Luis Miaja Avila	J01	EUV Pulsed Atom Probe Tomography of β-Ga <sub>2</sub> O <sub>3</sub> Semiconductor Materials
3:50 pm	Moritz Hansemann	J02	(Student) STM Simulation of High Aspect Ratio Tunneling Behavior on the Example of <i>in situ</i> Harvested GaAs Nanowire
4:10 pm	Seth Shields	J03	(Student) Atomic Resolution Scanning Tunneling Microscopy Studies of Oxidized Cu(100) Surfaces
4:30 pm	Dorothee Sophie Rosenzweig	J04	(Student) GaAs(110) Surface Modifications by Adsorption Hydrogen at Room Temperature and Above
4:50 pm	Fedor V Sharov	J05	(Student) A Near-Adiabatic Rapid-Sweep (NARS) Approach to Electrically Detected Magnetic Resonance (EDMR) and Near-Zero-Field Magnetoresistance (NZFMR)



## CONFERENCE BADGE

Badges must be worn at all times within the Conference venue, including all receptions.



## RECORDING/PHOTO POLICY

Recording or photographing Conference presentations, posters or displays is strictly prohibited without prior permission of the presenter.

## Americans with Disabilities Act (ADA) Compliance

The Materials Research Society (MRS), its meeting partners and event venues, are responsible for complying with the Americans with Disabilities Act (“ADA”) including the “readily achievable” removal of physical barriers to access meeting rooms, sleeping rooms and common areas. This may also include reasonable provisions for auxiliary aids and services when necessary and where achievable without undue burden. MRS will make every attempt to ensure that disabled individuals are accommodated so that they can receive the full benefit of participation in our events, and will modify, where possible, the policies, practices and procedures as necessary to provide goods and services to disabled individuals. On-site needs will be met to the extent possible.

K: Metasurfaces and Structured Photonics			Ohio Staters Inc. Founders Room
1:30 pm	Hanyu Zheng	K01	(Student) Meta-Optic Accelerators for Object Classifiers
1:50 pm	Milan Palei	K02	Probing Long-Range Coupling in Plasmonic Metasurfaces via Far-Field Diffraction
2:10 pm	Gilbert Carranza	K03	(Student) Electromagnetics and Photonics in the Age of Digital Manufacturing
2:30 pm	Anjali Chaudhary	K04	Electroplated Helical Slow-Wave Structures for Millimeter-Through-THz Vacuum Electronic Devices
L: Gallium Oxide Growth			Ohio Staters Inc. Traditions Room
1:30 pm	Takeki Itoh	L01	(Student) Epitaxial Growth on $\beta$ -Ga <sub>2</sub> O <sub>3</sub> (110) Substrate by Plasma-Assisted Molecular Beam Epitaxy
1:50 pm	Thaddeus J Asel	L02	Source Material Oxidation Challenges in Ge-Doped $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Grown via Plasma-Assisted Molecular Beam Epitaxy
2:10 pm	Tianchen Yang	L03	(Student) Characterization of $\beta$ -Phase MgGaO Thin Films Grown by Molecular Beam Epitaxy
2:30 pm	A F M Anhar Uddin Bhuiyan	L04	(Student) MOCVD growth of Si Doped (010) $\beta$ -(Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> Films—Structural and Electrical Properties
2:50 pm	Lingyu Meng	L05	(Student) MOCVD Epitaxy of $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Thin Films on (100) $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Substrate
3:10 pm			BREAK
3:30 pm	Kunyao Jiang	L06	(Student) Phase Composition and Microstructure of $\kappa$ -Ga <sub>2</sub> O <sub>3</sub> Heteroepitaxial Films Grown by MOCVD
3:50 pm	Kenny Huynh	L07	(Student) Inhomogeneous Aluminum Incorporation in (-201) $\beta$ -(Al <sub>x</sub> Ga <sub>1-x</sub> ) <sub>2</sub> O <sub>3</sub> Films Grown on c-Plane and Miscut Sapphire Substrates
4:10 pm	A F M Anhar Uddin Bhuiyan	L08	(Student) MOCVD Development and Bandoffsets of $\epsilon$ -Ga <sub>2</sub> O <sub>3</sub> on GaN, AlN, YSZ and c-Sapphire Substrates
4:30 pm	Jani Jesenovc	L09	(Student) Electronic and Optical Properties of Rare-Earth Doped $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Crystals
4:50 pm	Jonathan McCandless	L10	(Student, Late News) Si-Doping in MBE-Grown Beta-Ga2O3 with Room Temperature Mobility > 125 cm <sup>2</sup> /Vs
M: Solar Cell Materials and Devices			Senate Chamber
1:30 pm	Bora Kim	M01	(Student, Late News) GaAs Laser Power Converters for Cryogenic Applications
1:50 pm	Rafael Jaramillo	M02	Time-Resolved Photoluminescence Studies of Perovskite Chalcogenides
2:10 pm	Mohammed Alaani	M03	(Student) An Optical Response Analysis of Cadmium Telluride-Based Solar Cell Structures Incorporating High Resistivity Transparent Layers of Magnesium-Zinc Oxide
2:30 pm	Intuon Chatratin	M04	(Student) Group-V Acceptors and Their AX Centers in CdTe
2:50 pm	Marzieh Savadkoohi	M05	(Student) Investigation of Spin-Based Photovoltaic Effect in a Magnetic Tunnel Junction-Based Molecular Spintronic Devices (MTJMSDs)
3:10 pm			BREAK
3:30 pm	Alexander A Milder	M06	(Student) A New Family of Hybrid Thiocyanate-Halide Compounds: A2Cd(SCN)2X2
3:50 pm	Soubantika Palchoudhury	M07	Designing New Sustainable Semiconductor Materials with Cu-Chalcogenide Nanocrystals
4:10 pm	Samba Gaye	M08	(Student, Late News) Solar Cell Effect with Magnetic Metamaterials Produced by Combining Magnetic Tunnel Junction and Magnetic Molecules
DRC Session 11: Heterogeneous Integration			U.S. Bank Conference Theater
10:00 am	Mario Lanza	11.1	Hybrid 2D/CMOS Microchips
10:40 am	Marko Radosavljevic	11.2	Large-Scale Heterogeneous Device Integration
11:20 am	Rahul Pendurthi	11.3	Monolithic and Heterogeneous Integration of Atomically Thin Semiconductors for non-von Neumann CMOS
11:40 am		11.4	LATE NEWS
DRC Session 12: Wide Bandgap III - III-N HEMTs			U.S. Bank Conference Theater
1:20 pm	Siddharth Rajan	12.1	Ultra-Wide Bandgap Semiconductor Transistors for mm-wave Applications
2:00 pm	Bohao Wu	12.2	Modeling of the Charge-Voltage Characteristics of AlScN/AlN/GaN Heterostructures
2:20 pm	Tuofu Zhama	12.3	Improved On/Off Current Ratio of TiO <sub>2</sub> /AlGaIn/GaN MIS-HEMTs with N <sub>2</sub> O Surface Treatment on TiO <sub>2</sub> Layer
2:40 pm	Eungkyun Kim	12.4	First demonstration of N-polar GaN/AlGaIn/AlN HEMT on Single Crystal AlN Substrates

# POSTER SESSION

WEDNESDAY PM | PERFORMANCE HALL, 1ST FLOOR

## General Viewing

Wednesday  
3:10 pm – 3:30 pm

Poster Session  
6:00 pm – 8:00 pm

Thursday  
10:00 am – 10:20 am  
3:10 pm – 3:30 pm

## Poster Set-up

Wednesday, 9:30 am – 3:00 pm

## Poster Tear Down

Thursday, no later than 5:30 pm

Remaining posters will be discarded.

Poster presenters should be standing with their poster.

Student poster presenters must attend from 6:00 pm to 8:00 pm to present poster and answer questions to be eligible for the Best Student Poster Presentation award.

Presenter	Paper #	Title
Majid Aalizadeh	PS01	(Student) Growth and Characterization of High-Temperature Nitrogen-Polar InAlN Films and HEMTs Using Plasma Assisted Molecular Beam Epitaxy
Elizabeth Favela	PS02	(Student) Ni/Au and Co/Au Schottky Contacts on $\beta$ -Ga <sub>2</sub> O <sub>3</sub> and Effects of Annealing
Farnood Mirkhosravi	PS03	(Student) Comparison of Electrical Behavior in Ga-Polar and N-Polar GaN n-Type Schottky Diodes After Fast and Thermal Neutron Irradiation
Kenneth McAfee	PS04	(Student) Leveraging Thermoelectric Anisotropy in Single Crystal Antimony for Novel Heat Flux Sensing Devices
Ryan Schalip	PS05	Growth of Iron Selenide Thin Films on c-Al <sub>2</sub> O <sub>3</sub> (0001) via Molecular Beam Epitaxy
Akshay Wali	PS06	(Student) A Machine Learning Attack Resilient True Random Number Generator Based on Stochastic Programmability in Two-Dimensional Transistors
Harish Kumarasubramanian	PS07	(Student) <i>In situ</i> Chemical Analysis of Complex Oxide Interfaces via Auger Electron Spectroscopy
Vikrant Kumar	PS08	(Student) Design and Fabrication of ITO Based Transparent and Flexible Electrode Array for Simultaneous 2-Photon Imaging and Electrophysiology
Hayden Brown	PS09	(Student) Impact of Biquadratic Exchange Coupling via Molecule on Magnetic Tunnel Junction Based Molecular Spintronics Devices with Competing Molecule Induced Inter-Electrode Coupling
Andrew Christopher Grizzle	PS10	(Student) Spin Fluctuations in Molecule-Electrode Magnetic Tunnel Junction-Based Spintronics Devices
Andoniaina Mariah Randriambololona	PS11	(Student) A Comparison Between Heisenberg and Biquadratic Exchange Coupling Effects on Magnetic Tunnel Junction Molecular Spintronics Devices (MTJMDS)
Pranshu Tyagi	PS12	(Student) A Monte Carlo Study of Paramagnetic Nanostructure Coupled with Two Ferromagnetic Electrodes of a Cross-Junction Shaped Spintronics Device At Different Thermal Energies
Katja Sofia Diaz-Granados	PS13	(Student) Influence of Crystallographic Orientation on the Asymmetric Emission of Calcite
Bishnu R Dahal	PS14	Magnetic Anisotropy Effect on the Magnetic Tunnel Junction-Based Molecular Spintronics Devices
Rodneycia Taylor	PS16	(Student) Spatial and Thermal Properties of Magnetic Tunnel Junction Based Molecular Spintronics Device (MTJMDS) Due to Magnetic Anisotropy
Joseph T. Race	PS17	(Student) The Design and Synthesis of Lead-Free Layered Hybrid Perovskites as Room-Temperature Ferroelectrics
Annatoma Arif	PS18	(Student) Characterization of Aqueous Lead Sensing Performance of Bismuth Functionalized 3D Inkjet Printed Electrochemical Electrodes
Arush Guliani	PS19	(Student) Spin Fluctuation Effect on Magnetic Tunnel Junction-Based Molecular Spintronics Devices (MTJMDS)
Yao Li	PS20	(Student) Phase Equilibria in the Metal-Sc-N Systems and Their Relevance for Contacts to ScN, ScGaN and ScAlN
A B M Hamdul Islam	PS21	Effect of Distributed Bragg Reflectors on the Optical Crosstalk in InGaN-Based Flip-Chip Micro-LED Arrays
Rabin Pokharel	PS23	Epitaxial GaAs/GaAsSb Separate Absorption Multiplication (SAM) Avalanche Nanowire Photodetector
Rebekah De Penning	PS24	(Student) Flexible Electrochemically Reduced Graphene Oxide Sensors for Lead and Cadmium Detection
Ghanshyam Das Varma	PS25	Superconducting Properties of Fe (Te, Se) Thin Film on YSZ Substrate Using Pulsed Laser Deposition (PLD) Technique
Paul Gaurav G. Nalam	PS26	(Student) Phase-Control Enabled Tunable Optical Properties of Nanostructured GeO <sub>2</sub> Wide Band Gap Semiconductor Thin Films
Kendall Deon Dawkins	PS27	(Student) Optimized Light Absorption in GaAsSb(N) Nanowires for Photodetector Application
Tetyana V. Torchynska	PS28	Impact of Double Donor In and Ga Doping on Self-Compensating Process in ZnO Nanocrystal Films
Brahim El Filali	PS29	(Student) Structure, Emission and Resistivity Variation with Al and In Co-Doping of ZnO Films Grown by Spray Pyrolysis
Benjamin L Dutton	PS30	(Student) Growth and Characterization of (Ba <sub>x</sub> Ca <sub>1-x</sub> )TiO <sub>3</sub> Single Crystals in Ir, Pt, and Mo Crucibles
M. Jasim Uddin	PS32	Force Spun PVDF-TPU/Au Nanofiber Based TENG for Flexible Energy Harvesting and Bio Mechanical Motion Sensor
Bhoj Gautam	PS33	Effect of Radical on Morphology and Charge Generation in Polymer Non-Fullerene Solar Cells
Jian Liu	PS34	(Student) Micro-Sized Si-Based Anodes Characterization and Optimization Using <i>in situ</i> Atomic Force Microscopy

Presenter	Paper #	Title
Adesewa Oluwaseun Maselugbo	PS35	(Student) Magnetic Modification of Boron Nitride Nanotubes for Alignment in Thermal Interface Composite
Andres Vercik	PS36	A Universal Expression for Transport in Nanostructured Materials and Devices
Pius Suh	PS37	(Student) Intra-Molecular Coupling on the Magnetic Properties of Magnetic Tunnel Junction-Based Molecular Spintronics Devices
Sk Md Ali Zaker Shawon	PS38	Modified ZnSnO <sub>3</sub> Structure in the Smart Helmet as a Promising Human Motion Sensor
Debabrata Das	PS39	Tunable Optical Response by Anion Engineering in Crystalline Gallium Oxynitride Thin Film
Mahir Abrar	PS40	(Student) A Numerical Study of Perovskite Solar Cells by Bandgap Tuning of Active Materials and Operating Temperature Variances
Mauro Caballero Victorio	PS41	(Student) Towards a High-Modulation Reconfigurable Filter for Photodetectors via an Electrochromic Device
Luis F Hernandez Camas	PS42	Simulation and Modeling of Perovskite Solar Cells for Renewable Energy Application
Mohammed Mohammed Abdullah Al-Ghorbani	PS43	2D Material Based Ag-ZnO-CeO <sub>2</sub> Heterostructure for Solar-Driven CO <sub>2</sub> Reduction
Irina Buyanova	PS45	(Late News) Wurtzite Crystalline Structure Enhances Second-Harmonic Generation in GaAs Nanowires
Rahayana Ruth Bautista	PS46	(Student, Late News) Revealing the Electronic Heterogeneity and Inhomogeneity in Perovskite CsPbBr <sub>3</sub> Nanowires Using Contactless Dielectric Force Microscopy
Narin Sunthornpan	PS49	(Student, Late News) Realizing an atomically flat surface of Ge (111) thin film at low temperature (220°C) by gold-induced layer exchange
Sanjee Lamsal	PS50	(Student, Late News) Aerosol Printed Asymmetric Coupled Stripline (ACS) fed Microstrip Antenna for Biomedical Applications
Wondwosen Fekadu Demisse	PS51	(Student, Late News) Design and development of additively manufacture passive heat sink for electronics cooling
Nabil AlZaqri	PS52	(Late News) Rhodium Nanoparticles Incorporated Mesoporous Silica as an Active Catalyst for Cyclohexene Hydrogenation under Ambient Conditions
Yuxing Ren	PS53	(Student) MBE Growth of Cr:BixSb1-xTe for Enhancing Spin-Orbital-Torque Switching and Stabilizing Quantum Anomalous Hall Effect
Wentao Cai	PS54	(Student) Enhancing the External Quantum Efficiency of Micro-LEDs via Optimized Dry Etching Condition

## Journal of Electronic Materials

A special issue of the *Journal of Electronic Materials (JEM)*\* will be published with peer-reviewed papers from the 64th Electronic Materials Conference.

- Article submission date is **August, 31, 2022**.
- Contact the 2022 Special Issue Editors listed below.

The *Journal of Electronic Materials* reports monthly on the science and technology of electronic materials, while examining new applications for semiconductors, magnetic alloys, dielectrics, nanoscale materials and photonic materials. The Journal welcomes articles on methods for preparing and evaluating the chemical, physical, electronic and optical properties of these materials. Specific areas of interest are materials for state-of-the-art transistors, nanotechnology, electronic packaging, detectors, emitters, metallization, superconductivity and energy applications. Review papers on current topics enable individuals in the field of electronics to keep abreast of activities in areas peripheral to their own.

Manuscripts for the EMC 2022 collection will be evaluated according to the same high standards as would be applied to any article submitted to the Journal. Authors are encouraged to read carefully and comply with the "Instructions for Authors" on the [springer.com/journal/11664](https://www.springer.com/journal/11664). Submission of a manuscript implies that the work described has not been previously published and is not under consideration for publication elsewhere.

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**TMS**

\* A journal of The Minerals, Metals & Materials Society (TMS).  
Editor-in-Chief—Shadi Shahedipour-Sandvik

# PROGRAM AT-A-GLANCE

THURSDAY AM

N: 2D Materials Growth and Surfaces			Great Hall Meeting Room 1 & 2
8:20 am	Cooper Augustus Voigt	N01	(Student) Molecular Beam Epitaxy Synthesis of $\text{In}_2\text{Se}_3$ Thin-Films on Graphite in the Temperature Range 150°C – 250°C and 500°C – 700°C
8:40 am	Yuan Li	N02	(Student) Molecular Beam Epitaxy Growth of Monolayer Hexagonal Boron Nitride on Nickel Substrates Incorporated with Oxygen Atoms
9:00 am	Nicholas Trainor	N03	(Student) Kinetics of Wafer-Scale Epitaxial Growth of $\text{MoS}_2$ on Sapphire
9:20 am	Shanchuan Liang	N04	(Student, Late News) Facile Integration of Giant Exchange Bias in 2D Magnet/Oxide Heterostructures
9:40 am	Wouter Mortelmans	N05	Fast and Easy Optical Imaging and Epitaxial Growth Control of Rotational Domains in SnSe Thin Films
10:00 am			BREAK
10:20 am	Daniel Lewis	N06	(Student) Electron Emission Sources from Quasi-Freestanding Epitaxial Graphene Planar Devices
10:40 am	Subrata Das	N07	(Student) Hot Electron Laser Assisted Cathode Using Electronically Tunable Negative Electron Affinity Silicon Surface
11:00 am	Tony Varghese	N08	Additive Manufacturing of Interface Engineered Colloidal 2D-Crystals for Flexible Thermoelectric Energy Harvesting
11:20 am	William Henry Koll	N09	Scanning Tunneling Microscopy of Monolayer Hexagonal Boron Nitride Monolayer Nanoribbons on Graphene
O: Group III-Nitrides—MOCVD Growth			Great Hall Meeting Room 3
8:20 am	Jack Almeter	O01	(Student) Facet Control by Supersaturation in III-Nitrides
8:40 am	Bingjun Li	O02	Growth Evolution in Non-Planar GaN Selective Area Epitaxy
9:00 am	Yuto Ando	O03	Crack Suppression in High Al-Mole-Fraction AlGaN Beyond the Critical Layer Thickness via Non-Planar Growth Approach on Patterned GaN Platforms
9:20 am	Benjamin McEwen	O04	(Student) Effect of Growth Parameters on Be Incorporation Efficiency in MOCVD GaN:Be
9:40 am	Shashwat Rathkanthiwar	O05	Chemical Potential Control in p-Type N-Polar GaN
10:00 am			BREAK
10:20 am	Wenbo Li	O06	(Student) Characterization of Traps in High-Growth-Rate MOCVD GaN
10:40 am	Bingjun Li	O07	High-Speed MOCVD Growth of GaN Assisted by TBCI
11:00 am	Vineeta R Muthuraj	O08	(Student) High to Ultrahigh Si-Doped GaN Grown by Metalorganic Chemical Vapor Deposition at 550°C for Heterogeneous Integration
11:20 am	Tianhai Wu	O09	(Student) Demonstration of Single Crystal InN and GaN/InN Heterostructures by MOCVD
11:40 am	Tim Mirabito	O10	(Student) Effects of Pre-Metallization on the MOCVD Growth and Properties of Ge-Doped AlGaN on AlN Templates
P: Quantum, Strongly Correlated and Topological Materials			U.S. Bank Conference Theater
8:40 am	Kevin Daniel Vallejo	P0.5	Tensile-Strained InGaAs Quantum Dots with Interband Emission in the Mid-Infrared
9:00 am	Jennifer E DeMell	P01	(Student) Nonlocal Measurement as a Probe of the Spin Hall Effect in Topological Insulators
9:20 am	Ian C Nodurft	P03	Entanglement of Circularly Polarized Light with the Quantum Zeno Effect
9:40 am	Mahnaz Islam	P04	(Student) Visible Light Emission During Electrical Threshold Switching of $\text{NbO}_2$ Mott Switches
10:00 am			BREAK
10:20 am	Patrick Taylor	P05	MBE Growth of $\text{Bi}_2\text{Se}_3$ with Reduced Twin Defect Density
10:40 am	Shuyu Cheng	P06	(Student) Epitaxial Growth of Kagome Ferromagnet $\text{Fe}_3\text{Sn}_2$ and Sn-Modulated Heterostructures
11:00 am	Logan Riney	P07	(Student) Fermi Level Tuning and Band Alignment in Mn Doped InAs/GaSb
11:20 am	Quoc Dai Ho	P08	(Student) Confinement-Induced Topological Phase Transition in Thin-Film Rare-Earth Pnictides
11:40 am	Dhruv Chimanbhai Desai	P09	(Student) Charge Transport in a Dirac Semimetal, $\text{Na}_3\text{Bi}$

# PROGRAM AT-A-GLANCE

THURSDAY AM

Q: Oxide Semiconductor Devices, Defects and Transport			Ohio Staters Inc. Traditions Room
8:20 am	Sarah L Swisher	Q01	Large-Area Photonic Lift-off Process for Flexible Thin-Film Transistors
8:40 am	Dong Hun Lee	Q02	(Student) Facile Processing and Properties of P-Type SnO <sub>x</sub> and Oxide-Based p-n Heterojunction Application with n-InGaZnO
9:00 am	Eli Powell	Q03	(Student) Separation of Defect States and Intrinsic Channel Mobility on the Electrical Operation of IGZO TFTs
9:20 am	Kishwar Mashooq	Q04	(Student) Investigation of p-Type SnO Sub-Bandgap Defects by Comparing Experimental Transistor Data to Numerical Device Simulations
9:40 am	Vincent Gambin	Q05	Materials Characterization of LaCoO <sub>3</sub> Grown by Optimized Reactive DC Magnetron Sputtering and Evaluation of Contact Metal Resistivities by Transmission Line Measurement Technique
10:00 am			BREAK
10:20 am	Kingsley Egbo	Q06	Controlling the p-Type Conductivity of SnO (001) Films by Group-III Doping During Molecular Beam Epitaxy
10:40 am	Apurba De	Q07	(Student) Defects, Doping and Electronic Structure Correlations of Indium Tin Oxide (ITO) Thin Films
11:00 am	Kishwar Mashooq	Q08	(Student) Study of Hole Scattering Mechanisms in P-Type Cu <sub>2</sub> O
11:20 am	Yaoqiao Hu	Q09	(Student) Electron Transport Mechanism and Mobility Prediction in Amorphous In <sub>2</sub> O <sub>3</sub> for BEOL Transistors
R: Detectors and Narrow Bandgap Materials			Senate Chamber
8:20 am	Mark Wistey	R01	Undoing Band Anticrossing in Highly Mismatched Alloys
8:40 am	Ellie Yilien Wang	R02	(Student) Growth and Characterization of Al <sub>x</sub> In <sub>1-x</sub> As <sub>y</sub> Sb <sub>1-y</sub> Digital Alloys Grown on InP
9:00 am	Jarod Meyer	R03	(Student) Exploring the Impact of Sn Alloying on Structure and Luminescence in PbSnSe Epitaxial Films on GaAs
9:20 am	Rachel Corey White	R04	(Student) Growth of InAsSbBi on InSb Towards Lattice-Matched Longwave-Infrared Optoelectronics
9:40 am	Amberly Ricks	R05	(Student) Growth and Characterization of AlInSbBi for Wide-Bandgap Barriers on InSb
10:00 am			BREAK
10:20 am	Leland Joseph Nordin	R06	Low Growth Temperature Epitaxial PbSe for Heterogeneous Mid-Infrared Emitters
10:40 am	Mariah Lauren Schwartz	R07	(Student) Investigation of Polarity of Unintentionally Doped AlGaAsSb and AlInAsSb Avalanche Photodiodes on InP Substrates
11:00 am	Alexander Timothy Newell	R08	(Student) Majority Carrier Concentration and Minority Carrier Lifetime in Mid-wave Infrared InGaAs/InAsSb and InAs/InAsSb Superlattice nBn Detectors
11:20 am	Abhilasha Kamboj	R09	(Student) Guided-Mode Resonance Enhanced Room-Temperature Infrared Detectors
11:40 am	Yinan Wang	R10	(Student) High-Speed Long-Wave Infrared Ultrathin nBn T2SL Detectors
S: Emerging Epitaxial Materials			Cartoon Room 1
8:40 am	Ke Zou	S01	Wafer-Scale Ferromagnetic Fe <sub>3</sub> GeTe <sub>2</sub> Thin Films by Molecular Beam Epitaxy
9:00 am	Mythili Surendran	S03	(Student) Epitaxial Thin Films of Chalcogenide Perovskites and Related Phases
9:20 am	Yongchen Liu	S04	(Student) High-Quality van der Waals Material on a Semiconductor Substrate
9:40 am	Rafael Jaramillo	S05	Making Chalcogenide Perovskite Semiconductor Thin Films by Gas-Source Molecular Beam Epitaxy
10:00 am			BREAK
T: Epitaxial Growth of Highly Mismatched Alloys			Cartoon Room 1
10:40 am	Tuhin Dey	T02	(Student) Molecular Beam Epitaxy Growth of Highly Tensile Strained GeSnC Alloys up to 4% Sn and 3% C
11:00 am	Augustus Arbogast	T03	(Student) MBE Growth and Characterization of GeSnC/Ge Multiple Quantum Well Structure
11:20 am	Qian Meng	T04	(Student) Mechanical and Electronic Effect of B on the Band Structure of BGaAs Alloys
11:40 am	Harry Lewis	T05	(Student, Late News) Impact Ionization Coefficients and Excess Noise in Al <sub>0.85</sub> Ga <sub>0.15</sub> As <sub>0.56</sub> Sb <sub>0.44</sub> Avalanche Photodiodes

# PROGRAM AT-A-GLANCE

THURSDAY PM

U: Nano-Magnetic, Magnetic Memory and Spintronic Materials			Great Hall Meeting Room 1 & 2
1:30 pm	Alexander J Bishop	U01	Spin-Polarized Scanning Tunneling Microscopy of Epitaxial Fe <sub>3</sub> GeTe <sub>2</sub>
1:50 pm	Wenyi Zhou	U02	(Student) Kinetically-Controlled Epitaxial Growth of vdW Fe <sub>3</sub> GeTe <sub>2</sub> Ferromagnets and Their Heterostructures with Topological Insulators
2:10 pm	Brad Goff	U03	(Student) Spin Polarized STM Imaging of Magnetic Skyrmions in Metallic Thin-Film Heterostructures
2:30 pm	Shuyu Cheng	U04	(Student) Tuning Magnetic Properties of [Pt/Co/Cu] Multilayers
2:50 pm	Richard Harry	U05	(Student, Late News) Electromagnetic Interference (EMI) Shielding Techniques for Simulated PVDF-TrFE/Fe304 Multiferroic Monopolar Antenna
3:10 pm			BREAK
3:30 pm	Marzieh Savadkoohi	U06	(Student) The Effect of Spin Fluctuations on Temporal and Spatial Evolution of Magnetic Moment in A Magnetic Tunnel Junction-Based Molecular Spintronic Device (MTJMDS)
3:50 pm	Eva Mutunga	U07	Design of Experiment Approach for Harnessing Robust Molecular Spintronic Devices
4:10 pm	Igor Lyalin	U08	(Student) Spin-Orbit Torque in Bilayers of Kagome Ferromagnet Fe <sub>3</sub> Sn <sub>2</sub> and Pt
4:30 pm	Yueguang Shi	U09	(Student) Magnetic Properties of Doped and Undoped Organic Magnetic Semiconductors—V(TCNE) <sub>2</sub> , Cr(TCNE) <sub>2</sub> and Nb(TCNE) <sub>2</sub>
4:50 pm	Weimin Chen	U10	(Late News) Generating Room-Temperature Electron Spin Polarization Exceeding 90% in an Opto-Spintronic Semiconductor Nanostructure
V: Group III-Nitrides — Light Emitting Diodes			Great Hall Meeting Room 3
1:50 pm	Mohammad Awwad	V02	(Student) Impact of Photon Recycling on Absorption Losses in Tunnel Junction-Based III-Nitride LEDs
2:10 pm	Wentao Cai	V03	(Student) High In-Content InGaN Platelets as Underlayer for Light-Emitting Diodes Toward Long Wavelength Application
2:30 pm	Miad Yarali	V04	(Student) Significant Improvement in Quantum Efficiencies and Wall-Plug Efficiency of Flexible AlGaIn-Based Deep-Ultraviolet Light-Emitting Diodes
W: Group III Nitrides—MBE, CVD and Sputtering			Great Hall Meeting Room 3
3:30 pm	Keisuke Motoki	W01	(Student) Observation of Compositional Modulation in AlGaIn Self-Assembled Superlattices by Transmission Electron Microscopy
3:50 pm	Qihua Zhang	W02	(Student) Molecular Beam Epitaxial Growth of AlGaIn Epilayers on Si Using a Nanowire Template
4:10 pm	Mina Moradnia	W03	(Student) Transition-Metal-Alloyed Group-III-Nitride Piezoelectric Thin Films Grown by Hybrid Chemical Vapor Deposition and Sputtering Deposition Techniques
4:30 pm	Morton Greenslit	W04	(Student) Use of a TiN Seed Layer to Enhance (0002) Epitaxy and Piezoelectric Coupling of AlN Thin Films
4:50 pm	Joshua Nordlander	W05	(Student) Sputter Deposition of III-N Thin Films
X: Low-Dimensional Materials and Nanofabrication			U.S. Bank Conference Theater
1:30 pm	Ruiqi Hu	X01	(Student) Density Functional Theory Calculations of Rare-Earth Mono-Pnictides Embedded in III-Vs
1:50 pm	Sadhvikas Addamane	X02	Ga(As)Sb Nanostructures Formed by Arsenic-Induced Etching of III-Sb Surfaces
2:10 pm	Takafumi Moriyama	X03	(Student) Structural Analysis of Highly Luminescent and Narrow Bandwidth Cl-Doped InP/ZnSe/ZnS Quantum Dot Heterostructures
2:30 pm	Hirandeep Kuchoor	X04	(Student) Study of Al <sub>2</sub> O <sub>3</sub> Dielectric on Ga-Assisted MBE Grown GaAs <sub>1-x</sub> Sb <sub>x</sub> Nanowires
2:50 pm	Alireza Abrand	X05	(Student) Tuning Selective Narrowband Infrared Absorption Using Coaxial InAs-GaAs <sub>0.1</sub> Sb <sub>0.9</sub> Nanowires with Partial Shell Segment Coverage
3:10 pm			BREAK
3:30 pm	Michael Pedowitz	X06	(Student) Growth and Transformation of Mixed Valence Manganese Oxide Nanostructures on Epitaxial Graphene-Silicon Carbide Heterostructures
3:50 pm	Kyle G Tezanos	X07	(Student) Enhancement of Visible Photoluminescence Through Atomic Layer Deposition Surface Passivation of Porous Silicon Nanowire Arrays Fabricated by Metal-Assisted Chemical Etching
4:10 pm	Benjamin Diroll	X08	Intraband Optical Gain in Colloidal Nanoplates
4:30 pm	Laura Biedermann	X09	Development of Granular Metals for High Voltage Applications
Y: Materials Processing and Integration			Ohio Staters Inc. Traditions Room
1:30 pm	Glenn Packard	Y01	(Student) Chromium Segregation in Silicon Thin Films During Wide Area Sub-Millisecond Melting and Recrystallization
1:50 pm	Michael Evan Liao	Y02	(Student) Interfacial Thermal Transport of Thinned and Chemical Mechanical Polished (-201) β-Ga <sub>2</sub> O <sub>3</sub> Direct Wafer Bonded to (001) Si
2:10 pm	Leunam Fernandez-Izquierdo	Y03	Ionic Exchange in Perovskite Thin Films Using Solid-State Reactions
2:30 pm	Leunam Fernandez-Izquierdo	Y04	Planar and 3D Microstructured CsPbBr <sub>3</sub> Perovskite Devices for Neutron Detection



# PROGRAM AT-A-GLANCE

THURSDAY PM

Z: Heterogeneous Integration Technologies			Ohio Staters Inc. Traditions Room
3:30 pm	Chenziyi Mi	Z01	(Student) Heterogeneous Integration of Blue GaN Laser Diode Using Electrochemical Etching
3:50 pm	Sherman Peek	Z02	(Student) Electronic Packaging and Interconnect Technologies for Cryogenic and Superconducting Applications
4:10 pm	Rebecca A Wheeling	Z03	Indium Microbump Interface Evolution with Varying Underbump Metallurgy Stack-Ups
4:30 pm	Yuri Piro	Z04	(Student) UV Curable Ink Composition for Novel Direct Ink Writing Processes
4:50 pm	Bhushan Lohani	Z05	(Student) Additive Microfabrication of System in Package for Heterogenous Integration with Semiconductor Dies
AA: Plasmon and Surface Phonon Polaritons			Senate Chamber
1:30 pm	Angela Cleri	AA01	(Student) Lateral Permittivity Patterning by Ion Irradiation in CdO Thin Films for Mid-IR Plasmonics
1:50 pm	Kurt Eyink	AA02	MBE Growth of Delta Doped Si:InAsSb/GaSb HMM and Their Hyperbolic Response
2:10 pm	Seyedeh Maryam Vaghefi Esfidani	AA03	(Student) Understanding Organ Pipe Resonances in SPhP Trenches for Spectroscopic Sensing
2:30 pm	Ryan Spangler	AA04	(Student) Physical Vapor Transport Growth of $\alpha$ -MoO <sub>3</sub> Sheets for Hypersonic Thermal Transport via Hyperbolic Phonon Polaritons
2:50 pm	Sean McSherry	AA05	(Student) Control of Thermal Transport at Ultrahigh Temperatures by Immiscible Oxide Heterostructures
3:10 am			BREAK
3:30 pm	Aaron J. Muhowski	AA06	Plasmon-Enhanced Distributed Bragg Reflectors
3:50 pm	Morgan Berghold	AA07	(Student) All-Epitaxial Ultra-Thin Long-Wave Infrared Plasmonic Detectors
4:10 pm	Wilder Acuna	AA08	(Student) ErAs:InGaAlBiAs for 1.55 $\mu$ m-pumped Terahertz Photoconductive Switches
4:30 pm	Quang To	AA09	Plasmon-Phonon-Intersubband Transition Interactions at THz Frequency in Bi <sub>2</sub> Se <sub>3</sub> -GaAs Heterostructures
4:50 pm	Saadia Nasir	AA10	(Student) In-Plane Plasmon Coupling in Topological Insulator Bi <sub>2</sub> Se <sub>3</sub> Thin Films
BB: Electrochemical Energy Storage and Conversion			Cartoon Room 1
1:50 pm	Soonil Lee	BB01	(Student) High Performance Wafer-Scale Metal-Insulator-Semiconductor Photoanodes for Solar-Driven Water Splitting
2:10 pm	Song Xu	BB03	PiFM (Photo Induced Force Microscopy) Based Nanoscale IR Spectroscopy and Imaging in Energy Research
2:30 pm	Michael Lee	BB04	(Student) Porous Current Collector Network Materials for High-Loading Li-Ion Battery Cathodes
2:50 pm	Lalith Rao	BB05	(Student) Strategy to Passivate High-Voltage Spinel Cathode-Electrolyte Interfaces (CEI)
3:10 pm			BREAK
3:30 pm	Zach Levy	BB06	(Student) Study of V <sub>2</sub> O <sub>5</sub> /LiPON Interface Using Depth-Resolved Cathodoluminescence Spectroscopy
3:50 pm	Jun Wei Yap	BB07	(Student) Comparing Performance Enhancement by Different Carbon Additives for Si Anodes in Lithium-Ion Batteries
4:10 pm	Yuxuan Zhang	BB08	(Student) Enabling High-Rate Long-Lifespan Lithium-Sulfur Batteries via Stereolithography Technique and Oxidative Chemical Vapor Deposition
4:30 pm	Zhenghuan Tang	BB09	(Student) Optimization of Li <sub>3</sub> BO <sub>3</sub> Interlayer for Garnet-Based All-Solid-State Lithium Metal Batteries
4:50 pm	Edward Gillan	BB10	(Late News) Rapid Thermochemical Solvent-Free Synthesis of Crystalline Metal Borides and Their Investigation as Water Splitting Electrocatalysts
5:10 pm	Yuanyue Liu	BB11	(Late News) Atomistic Simulations of Reaction Kinetics at Electrochemical Interface

# PROGRAM AT-A-GLANCE

FRIDAY AM

CC: Neuromorphic + Late News			Great Hall Meeting Room 1 & 2
8:40 am	Colton Duprey	CC02	(Student, Late News) Effects of Small Molecule Dopants in Piezoresistive Sensing PAAMPSA/PANI/PA Polymer Complex
9:00 am	Fei Qin	CC03	(Student) Influence of Oxygen Vacancy and Top Electrode on Switching Behavior of InGaZnO Based Resistive Random Access Memory
9:20 am	Sanghyeon Choi	CC04	(Student) SiO <sub>x</sub> Nanorod Memristive Neuron for Probabilistic Inference Applications
9:40 am	Joshua Gabriel	CC05	(Late News) Silicon Carbide Growth Reaction Engineering for Quantum Sensing—Impact of Thermodynamic Model Uncertainty on Product Distributions
10:00 am			BREAK
10:20 am	Akhil Dodda	CC06	(Student) A Low-Power, Bio-inspired, Adaptive Machine Vision Based on Atomically Thin Memtransistors
10:40 am	Dipanjan Sen	CC07	(Student) Spike-Timing Based Adaptive Photo Encoder Considering Monolayer MoS <sub>2</sub> Based Memtransistors
11:00 am	Ragib Ahsan	CC08	(Student) Ultralow-Power Photoactivated Spiking Silicon Neurons
11:20 am	James C Carter	CC09	Atomic Layer Deposition of Antimony(III) Telluride
11:40 am	Wondwosen Demisse	CC10	(Student, Late News) Electrochemical Additive Manufacturing Producing Composite Materials for Electronics
DD: Group III-Nitrides—Contacts and Novel Devices			Great Hall Meeting Room 3
8:40 am	Cristyan E Quiñones García	DD01	(Student) Role of Point Defects and Compensation in the Formation of Ohmic Contacts to Mg-Doped GaN
9:00 am	Taoufik Slimani Tlemcani	DD03	Development of Low Resistance Ohmic Contacts with Bilayer Ni/Al-Doped ZnO Thin Films to p-Type GaN
9:20 am	Nathaniel O'Neal	DD04	(Student, Late News) HTOL Reliability of Novel Re-GaN Schottky Diodes
9:40 am	Subhajit Mohanty	DD05	(Student, Late News) N-Polar GaN HEMTs with ALD HfO <sub>2</sub> as Gate Dielectric
10:00 am			BREAK
10:20 am	Emma Rocco	DD06	(Student) N-Polar GaN Photocathodes Stabilized with h-BN
10:40 am	Kaitian Zhang	DD07	(Student) Pulsed-Mode MOCVD Growth of ZnSn(Ga)N <sub>2</sub> and Determination of the Valence Band Offset with GaN
11:00 am	Elaheh Kheirandish	DD08	Novel Treatment of Raman and Photoluminescence Spectroscopy Analysis for Assessment of Electrical Characteristics of Mg Implanted-Annealed GaN
EE: Flexible, Printed, and Organic Electronic Materials and Devices			U.S. Bank Conference Theater
8:20 am	William J Scheideler	EE01	Liquid Metal Printing of High Mobility 2D In <sub>2</sub> O <sub>3</sub> for Flexible Electronics
8:40 am	Hyunwoo Choi	EE02	(Student) Surface Morphology Effects of Inkjet-Printed Silver Electrodes on the Contact Resistance of Printed Organic Thin-Film Transistors
9:00 am	Emma J. Renteria	EE03	Semiconductor Nanomembranes for Electromagnetic Interference Shielding Applications
9:20 am	Pushpa Raj Paudel	EE04	(Student) Substrate-Free Organic Electrochemical Transistors Based on Ionic Liquid Crystal Elastomer
9:40 am	Sheida Faraji	EE05	Exploration of New Classes of Solution-Processed High-K Dielectric Materials for Low-Power Electronics
10:00 am			BREAK
10:20 am	Benjamin K. Chang	EE06	(Student) Bandlike and Polaronic Charge Transport in Organic Crystals from First-Principles
10:40 am	Song Xu	EE07	PIFM—Nanoscale Chemical Mapping and Spectroscopy via AFM-IR for Ultrathin Organic Films
11:00 am	Tyler James Wiegand	EE08	(Student) Assessing the Contribution to OPV Efficiency of Energy Transfer in Charge Transfer Coupled H-Aggregates
11:20 am	Buang Zhang	EE09	(Student) Impact of Surfactant Choice on Polymer Emulsions, Thin-Film Morphology and LED Performance
11:40 am	Lucas Beagle	EE10	(Late News) Microwave-Facilitated Few-Layer COF/Monolayer TMD Heterostructures



# PROGRAM AT-A-GLANCE

FRIDAY AM

FF: Gallium Oxide—Material Processing, Characterization and Defects			Ohio Staters Inc. Traditions Room
8:20 am	Sushovan Dhara	FF01	(Student) High Breakdown Field Strength in Molecular Beam Epitaxy-Grown $Al_2O_3/\beta-Ga_2O_3$ Structures
8:40 am	Ming-Hsun Lee	FF02	Ion Implantation Doping for $\beta-Al_xGa_{2-x}O_3$ and the Application for Ohmic Contact Formation
9:00 am	Joseph Spencer	FF03	(Student) Activation of Si, Sn, and Ge Donors in High-Resistivity Halide Vapor Phase Epitaxial $\beta-Ga_2O_3:N$
9:20 am		FF04	Discussion Time
9:40 am	Michael Evan Liao	FF05	(Student) Chemical Mechanical Polishing of (010) $\beta-Ga_2O_3$ Substrates
10:00 am			BREAK
10:20 am	Giulia Carini	FF06	(Student) Observation of Hyperbolic Shear Polaritons in Monoclinic Crystals
10:40 am	Alan G Jacobs	FF07	High Temperature Annealing Effects and Defect Populations of $\beta-Ga_2O_3$
11:00 am	Jacqueline Cooke	FF08	(Student) Effect of Extended Defects on Photoluminescence of Gallium Oxide and Aluminum Gallium Oxide Epitaxial Films
11:20 am	Daram N Ramdin	FF09	(Student) Ultrafast Laser Induced Deep Level Defects and Correlations with Crystallinity in $\beta-Ga_2O_3$
11:40 am	Cassandra Remple	FF10	(Student) Photoluminescence Spectroscopy of $Cr^{3+}$ in $\beta-Ga_2O_3$ and $(Al_{0.1}Ga_{0.9})_2O_3$
GG: Epitaxial Growth on Patterned Substrates			Cartoon Room 1
8:20 am	Alec Mason Skipper	GG01	(Student) Selective Area Epitaxy by MBE for Self-Aligned III-V Devices
8:40 am	Subhashree Seth	GG02	(Student) Molecular Beam Epitaxy for Photonic Crystal Surface Emitting Lasers (PCSELS)
9:00 am	Jun Tao	GG03	(Student) Orientation-Aligned InP on Si by Templated Liquid Phase Growth
9:20 am	Ashlee Garcia	GG04	(Student) Molecular Beam Epitaxy Selective Area Regrowth of High Aspect Ratio Microstructures
9:40 am	Yiteng Wang	GG05	(Student) Monolithic Integration of III-Vs with Silicon Nitride Integrated Photonics by MBE
10:00 am			BREAK
HH: Lattice Mismatched Epitaxial Growth			Cartoon Room 1
10:20 am	Mijung Kim	HH01	(Student) Growth of GaP on Silicon-on-Insulator
10:40 am	Hyun Uk Chae	HH02	(Student) Monolithic III-V Growth Directly on Metal for Device Application
11:00 am	Trent Garrett	HH03	(Student) Integrating GaSb-Based Infrared Detectors with Si Substrates via Interfacial Misfit Arrays
11:20 am	Madison D Drake	HH04	(Student) Heteroepitaxy of GaSb on GaAs (111)A Substrates for Electron Transport Studies
11:40 am	Fatih Furkan Ince	HH05	(Student) High Mobility n and p Pseudomorphic Channels Grown on Interfacial Misfit Dislocation Assisted Growth on GaSb/GaAs