# WELCOME TO THE CONFERENCE!

It is with great pleasure that we welcome you to the **55th Electronic Materials Conference (EMC),** being held at the beautiful and historic University of Notre Dame. We expect this Conference to follow in EMC's long tradition of offering premier research on the preparation and characterization of electronic materials. Below we have outlined some highlights we believe will be of interest to you.

**Christian Wetzel** Rensselaer
Conference Organizer

**Andrew Allerman** Sandia National Laboratories
Program Organizer

# CONFERENCE HIGHLIGHTS

## The 55th EMC Program

Scientists from around the world will converge at the University of Notre Dame this week to share ideas, present technical information and contribute to the advancement of electronic materials research. Featuring over **300 oral/poster presentations,** the 55th EMC will offer a strong program with **40 technical sessions** focused on: energy conversion materials; wide-bandgap materials; organic materials and thin-film technology; enabling technologies; and nanoscale science and technology in materials.

## EMC Awards Ceremony and Plenary Session

The 55th EMC kicks off Wednesday morning with the Awards Ceremony and Plenary Session. First, the 2012 Best Oral Presentation Student Award winners **Santino Carnevale,** The Ohio State University, **Hari Nair,** The University of Texas at Austin, and **Christopher Yerino,** Yale University, will be honored and presented their awards. The Plenary Lecture follows, where **R. Stanley Williams,** Hewlett-Packard Laboratories, will give his presentation, *Mott Memristors, Spiking Neuristors and Electronic Action Potentials.*

## Welcome Reception/Poster Session

Join us for a **Welcome Reception and Poster Session** on Wednesday evening from 6:00 pm – 8:00 pm in McKenna Hall. After a full day of technical sessions, this is a great time to enjoy refreshments, meet with old colleagues, make new connections and share information. And if you miss some of the posters this evening, don't worry; posters will also be available for viewing Thursday and Friday.

## Exhibit

Be sure to visit the **EMC exhibitors** Wednesday through Friday in McKenna Hall. Learn more about the latest products and services in the rapidly evolving world of electronic materials. See the Schedule of Events on page 6 for exhibit hours.

## Conference Banquet

Don't miss this year's Conference Banquet, Thursday evening from 6:30 pm – 8:30 pm at the **Center for History and Studebaker National Museum.** These two South Bend landmarks share the same roof—a stately Victorian mansion with original furnishings and stunning woodwork. Enjoy fascinating historical presentations of the people and life in the St. Joseph River Valley area, from the prehistoric era to the present, and 114 years of automotive history, from the Studebaker family's Conestoga Wagon to the last car to roll off the assembly line. Full Conference registration includes one Banquet ticket. Transportation will be provided to and from the Conference Banquet; meet in McKenna Hall beginning at 6:00 pm. Subject to availability, additional Banquet tickets may be purchased at the Registration Desk for $75 per person.

## The Beauty and Spirit of Notre Dame

During the Conference week, make time to explore the University of Notre Dame campus—1,250 acres considered by many to be the most beautiful property owned by any university in the nation. From the collegiate Gothic architecture and park-like landscape, to exquisite outdoor sculptures and breathtaking views, Notre Dame's campus is a visual splendor. **Discover the places that shape Notre Dame's history.** The Basilica of the Sacred Heart, the 14-story Hesburgh Library with its 132-feet-high mural depicting Christ the Teacher, and the University's historic Main Building featuring the famed Golden Dome are among the most widely-known university landmarks in the world.

## Save the Date!

The **56th Electronic Materials Conference** will be held June 25-27, 2014, at the University of California, Santa Barbara. Mark your calendar today!

## TABLE OF CONTENTS



For more program information visit
**www.mrs.org/55th-emc**

EMC is being coordinated with the Device Research Conference, held at the University of Notre Dame from June 23-26. Badges will be accepted for admittance to both Conferences on Wednesday, June 26.

# COMMITTEES

## Executive Committee

| | |
|---|---|
| Conference Organizer | **Christian Wetzel** Rensselaer |
| Program Organizer | **Andrew Allerman** Sandia National Laboratories |
| Secretary | **Jamie Phillips** University of Michigan |
| Treasurer | **David Janes** Purdue University |

## Energy Conversion and Storage Materials

### Photovoltaics—Organic and Hybrid
**David Janes** Purdue University
**Reuben Collins** Colorado School of Mines
**Peter Dinolfo** Rensselaer
**Chris Giebink** The Pennsylvania State University
**David Gundlach** National Institute of Standards and Technology
**Julia Hsu** The University of Texas at Dallas

### Next-Generation Solar-Cell Materials and Devices
**Jerry Woodall** University of California, Davis
**Christian Wetzel** Rensselaer
**Mark Goorsky** University of California, Los Angeles
**Debdeep Jena** University of Notre Dame
**Steve Ringel** The Ohio State University

### Thermoelectrics and Thermionics
**Joshua Zide** University of Delaware
**Mayank Bulsara** Massachusetts Institute of Technology
**Pete Moran** Michigan Technological University
**Tim Sands** Purdue University
**Ali Shakouri** Purdue University

### Ionic Conductors for Solid-Oxide Fuel Cells and Batteries
**Alec Talin** Sandia National Laboratories
**Jerry Woodall** University of California, Davis
**Eric Wachsman** University of Maryland
**Pete Moran** Michigan Technological University

### Highly Mismatched Dilute Alloys
**Doug Hall** University of Notre Dame
**Jamie Phillips** University of Michigan
**Charles Tu** University of California, San Diego
**Rachel Goldman** University of Michigan
**Thomas Kuech** University of Wisconsin
**Kin Man Yu** Lawrence Berkeley National Laboratory

## Wide-Bandgap Materials

### Group-III Nitrides—Growth, Processing, Characterization, Theory and Devices
**Alan Doolittle** Georgia Institute of Technology
**Russ Dupuis** Georgia Institute of Technology
**Mike Manfra** Purdue University
**Huili (Grace) Xing** University of Notre Dame
**Theeradetch Detchprohm** Georgia Institute of Technology
**Edwin Piner** Texas State University
**Fatemeh (Shadi) Shahedipour-Sandvik** University at Albany–SUNY

### Indium Nitride—Growth, Processing, Characterization, Theory and Devices
**Debdeep Jena** University of Notre Dame
**Christian Wetzel** Rensselaer
**Joel Ager** Lawrence Berkeley National Laboratory
**Yasushi Nanishi** Ritsumeikan University

### Silicon Carbide—Growth, Processing, Characterization, Theory and Devices
**Mike Spencer** Cornell University
**Robert Stahlbush** U.S. Naval Research Laboratory
**Joshua Caldwell** U.S. Naval Research Laboratory
**Michael Dudley** State University of New York at Stony Brook

### Oxide Semiconductors—Growth, Doping, Defects, Nanostructures and Devices
**Len Brillson** The Ohio State University
**John Conley** Oregon State University
**Jamie Phillips** University of Michigan
**Steve Durbin** University at Buffalo
**Tom Jackson** The Pennsylvania State University

### Point Defects, Doping and Extended Defects
**Jerry Woodall** University of California, Davis
**Steve Ringel** The Ohio State University
**Christian Wetzel** Rensselaer
**Andrew Armstrong** Sandia National Laboratories
**Eugene Fitzgerald** Massachusetts Institute of Technology
**James Speck** University of California, Santa Barbara

## Enabling Technologies

### Embedded Nanoparticles and Rare-Earth Materials in III-V Semiconductors
**Seth Bank** The University of Texas at Austin
**Joshua Zide** University of Delaware
**Minjoo Larry Lee** Yale University

### Metamaterials and Materials for THz, Plasmonics and Polaritons
**Seth Bank** The University of Texas at Austin
**Huili (Grace) Xing** University of Notre Dame
**Rachel Goldman** University of Michigan
**Rachel Jakubiak** Air Force Research Laboratory
**Dan Wasserman** University of Illinois

### Epitaxial Materials and Devices
**Steve Ringel** The Ohio State University
**Seth Bank** The University of Texas at Austin
**Kei May Lau** The Hong Kong University of Science and Technology
**Kurt Eyink** Air Force Research Laboratory
**Archie Homes** University of Virginia
**Amy Liu** IQE, Inc.
**Charles Lutz** Kopin Corporation, Inc.
**Michael Tischler** OCIS Technology
**Christine Wang** Massachusetts Institute of Technology

### Narrow-Bandgap Materials and Devices
**Brian Bennett** U.S. Naval Research Laboratory
**Bob Biefeld** Sandia National Laboratories
**Ralph Dawson** The University of New Mexico
**Ganesh Balakrishnan** The University of New Mexico
**Suman Datta** The Pennsylvania State University

### Dilute Nitride Semiconductors
**Charles Tu** University of California, San Diego
**Douglas Hall** University of Notre Dame
**Rachel Goldman** University of Michigan
**Thomas Kuech** University of Wisconsin

### Compound Semiconductor Growth on Si Substrates and Si-Based Heterojunctions
**Ralph Dawson** The University of New Mexico
**Jerry Woodall** University of California, Davis
**Kei May Lau** The Hong Kong University of Science and Technology
**Steve Ringel** The Ohio State University
**Eugene Fitzgerald** Massachusetts Institute of Technology
**Sarah Olsen** Newcastle University
**Michael Tischler** OCIS Technology

### Oxide Thin-Film Integration—Alternative Dielectrics, Epitaxial Oxides, Multifunctional Oxides, Superlattices and Metal Gates
**John Conley** Oregon State University
**Alan Doolittle** Georgia Institute of Technology
**Pat Lenahan** The Pennsylvania State University
**Evgeni Gusev** Qualcomm MEMS Technologies, Inc.

### Nondestructive Testing and *In Situ* Monitoring and Control
**Mark Goorsky** University of California, Los Angeles
**Kurt Eyink** Air Force Research Laboratory

### Contacts to Semiconductor Epilayers, Nanowires, Nanotubes and Organic Films
**Suzanne Mohney** The Pennsylvania State University
**Lisa Porter** Carnegie Mellon University
**Jerry Woodall** University of California, Davis
**Martin Allen** University of Canterbury
**Tae-Yeon Seong** Korea University

### Semiconductor Processing—Oxidation, Passivation and Etching
**Doug Hall** University of Notre Dame
**Suzanne Mohney** The Pennsylvania State University
**Mark Wistey** University of Notre Dame

### Materials Integration—Wafer Bonding and Engineered Substrates
**Mark Goorsky** University of California, Los Angeles
**Pete Moran** Michigan Technological University
**Eugene Fitzgerald** Massachusetts Institute of Technology
**Karl Hobart** U.S. Naval Research Laboratory

### Nanomagnetic, Magnetic Memory and Spintronic Materials
**Michael Flatté** The University of Iowa
**Xinyu Liu** University of Notre Dame
**Nitin Samarth** The Pennsylvania State University
**Masaaki Tanaka** The University of Tokyo

## Nanoscale Science and Technology In Materials

### Graphene, BN, $MoS_2$ and Other 2D Materials and Devices
**Randall Feenstra** Carnegie Mellon University
**Mike Spencer** Cornell University
**Huili (Grace) Xing** University of Notre Dame
**Avik Ghosh** University of Virginia
**Suneel Kodambaka** University of California, Los Angeles

### Carbon Nanotubes—Growth, Processing, Characterization and Devices
**Randall Feenstra** Carnegie Mellon University
**Mike Spencer** Cornell University
**Huili (Grace) Xing** University of Notre Dame
**Avik Ghosh** University of Virginia
**Suneel Kodambaka** University of California, Los Angeles

### Nanowires—Growth, Processing, Characterization and Devices
**Kris Bertness** National Institute of Standards and Technology
**Suzanne Mohney** The Pennsylvania State University
**Joan Redwing** The Pennsylvania State University
**Xiuling Li** University of Illinois
**Raymond Tsui** Raydis LLC
**William Wong** University of Waterloo
**Chen Yang** Purdue University

### Low-Dimensional Structures—Quantum Dots, Wires and Wells
**Jamie Phillips** University of Michigan
**Akio Sasaki** Kyoto University of Japan
**Diana Huffaker** University of California, Los Angeles
**Minjoo Larry Lee** Yale University
**Qiming Li** Sandia National Laboratories

### Nanoscale Characterization—Scanning Probes, Electron Microscopy and Other Techniques
**Ed Yu** The University of Texas at Austin
**Suneel Kodambaka** University of California, Los Angeles
**Lincoln Lauhon** Northwestern University
**Sarah Olsen** Newcastle University

## Organic Materials and Thin-Film Technology

### Biomaterials and Interfaces
**Tom Jackson** The Pennsylvania State University
**David Janes** Purdue University
**Bruce Gluckman** The Pennsylvania State University
**Greg Timp** University of Notre Dame
**Dave Martin** University of Delaware

### Molecular Electronics and OLEDs—Devices, Materials and Sensors
**David Janes** Purdue University
**Alec Talin** Sandia National Laboratories
**Theresa Mayer** The Pennsylvania State University

### Organic Thin-Film and Crystalline Transistors—Devices, Materials and Processing
**Alberto Salleo** Stanford University
**Michael Chabinyc** University of California, Santa Barbara
**David Gundlach** National Institute of Standards and Technology
**Tom Jackson** The Pennsylvania State University
**Oana Jurchescu** Wake Forest University

### Flexible and Printed Thin-Film Electronics
**Tom Jackson** The Pennsylvania State University
**William Wong** University of Waterloo
**Oana Jurchescu** Wake Forest University
**Thomas Kuech** University of Wisconsin
**Patrick Shea** Northrop Grumman Corporation

# EMC AWARDS CEREMONY AND PLENARY SESSION

Mendoza College of Business, Jordan Auditorium
Wednesday | 8:20 am – 9:20 am

## PLENARY SPEAKER

**R. Stanley Williams** Hewlett-Packard Laboratories
*Mott Memristors, Spiking Neuristors and Electronic Action Potentials*

**R. Stanley Williams** is an HP Senior Fellow and Vice President at Hewlett-Packard Laboratories (HP Labs). He received a BA degree in Chemical Physics from Rice University and his PhD degree in Physical Chemistry from the University of California, Berkeley. He was a member of technical staff at AT&T Bell Labs and a faculty member (Assistant, Associate and Full Professor) of the Chemistry Department at the University of California, Los Angeles. In 1995, Williams joined HP Labs to found the Quantum Science Research Group, which originally focused on fundamental research at the nanometer scale. His primary scientific research during the past 30 years has been in the areas of solid-state chemistry and physics, and their applications to technology. In 2008, a team of researchers Williams led announced they had built and demonstrated the first intentional memristor, the fourth fundamental electronic circuit element predicted by Leon Chua in 1971, complementing the capacitor, resistor and inductor. Williams has received recognition for business, scientific and academic achievement, including being named one of the top 10 visionaries in the field of electronics in 2012 by *EETimes,* 2009 *EETimes* Innovator of the Year ACE Award, the 2007 Glenn T. Seaborg Medal for contributions to Chemistry, the 2004 Herman Bloch Medal for Industrial Research, and the 2000 Julius Springer Award for Applied Physics. He has over 150 US patents with ~100 pending and over 400 papers published in reviewed scientific journals.

## 2012 BEST STUDENT PRESENTATION AWARDS

**Santino Carnevale** The Ohio State University
Advisor—Roberto Myers

*Polarization-Induced pn-Diodes in Wide Band Gap Nanowires with Ultraviolet Electroluminescence*

**Hari Nair** The University of Texas at Austin
Advisor—Seth Bank

*Thermal Annealing Induced Optical Quality Enhancement in GaSb-Based Dilute-Nitrides*

**Christopher Yerino** Yale University
Advisor—Minjoo Larry Lee

*Tensile Strained III-V Quantum Dots on a (110) Surface: Morphology and Optical Properties*

Student participation in this Conference is partially supported by a grant from the TMS Foundation.

# SPECIAL THANKS!

This Conference has been funded, in part, by the generous contributions from the following organizations.

Sandia National Laboratories
www.sandia.gov

UMC
UNITED MINERAL & CHEMICAL CORP.
www.umccorp.com

# TRAVEL RESOURCES

*The Conference does not endorse or sponsor any of the listings below. Information is provided as a courtesy to attendees.*

## INTERNET ACCESS

Wireless access will be **available to all attendees** throughout the university.

## DINING

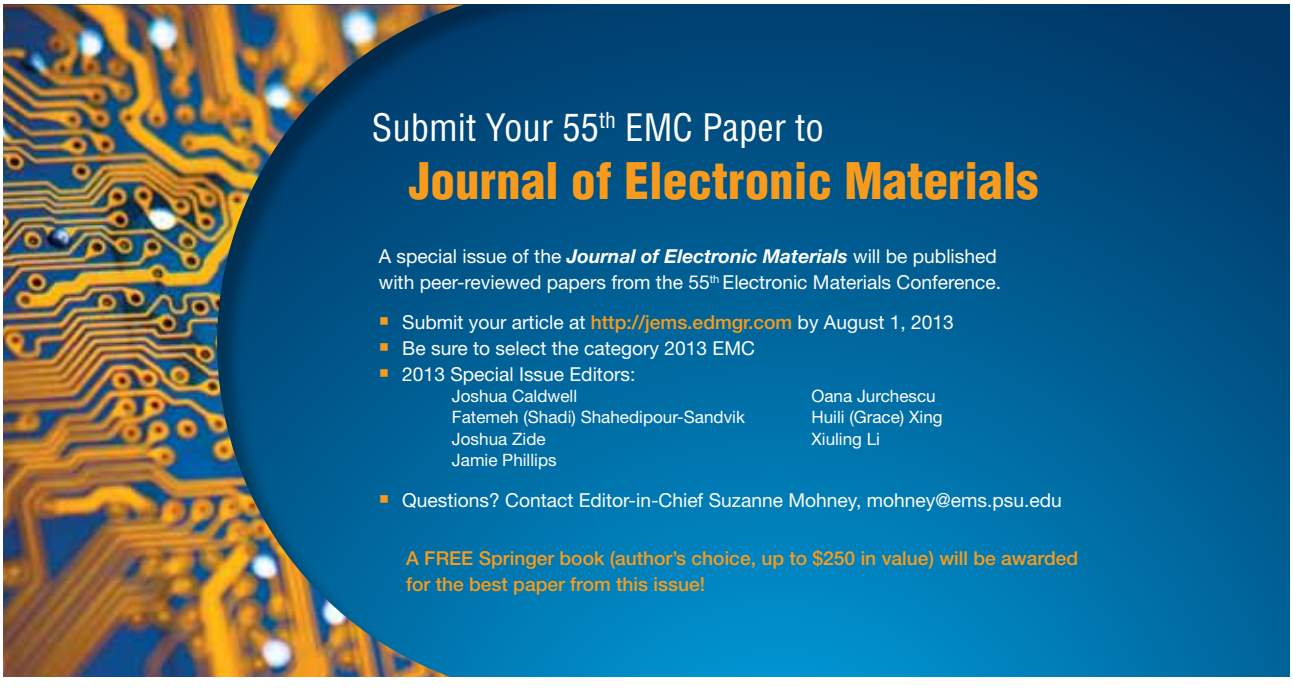
Attendees staying on campus can enjoy **many local dining options:** the North and South Dining Hall, Reckers, the popular Legends, the Huddle Food Court, or one of the many Express Units located throughout campus. The Fairfield Inn is located near **Eddy Street Commons,** an easy place to stop to enjoy a burger at Five Guys Burgers & Fries or experience the true flavor of Ireland at O'Rourke's Public House. There are also many **dining options off campus,** including Hanayori of Japan, Sunny Italy Café, or Elia's Mediterranean. Stop by the Registration Desk in McKenna Hall for a complete list of dining options and their locations. See the Schedule of Events on page 6 for Registration Desk hours.

## PARKING

A validated parking ticket is required to park in the Visitors Lot, South. Attendees can **pick up a complimentary validated ticket at the Registration Desk** located in McKenna Hall. See the Schedule of Events for Registration Desk hours.

## TRANSPORTATION

Complimentary shuttle service is available at the Inn at Saint Mary's. **Advanced scheduling is suggested.** Contact the Hotel front desk at 574-232-4000 for details.



# FLOOR PLANS | University of Notre Dame


**1. McKenna Hall** Level One

| | |
|---|---|
| Registration | Lobby |
| Welcome Reception | Atrium |
| Exhibit | Atrium |
| Posters | 100-104 |
| Refreshment Breaks | Atrium |
| Technical Sessions | Auditorium |

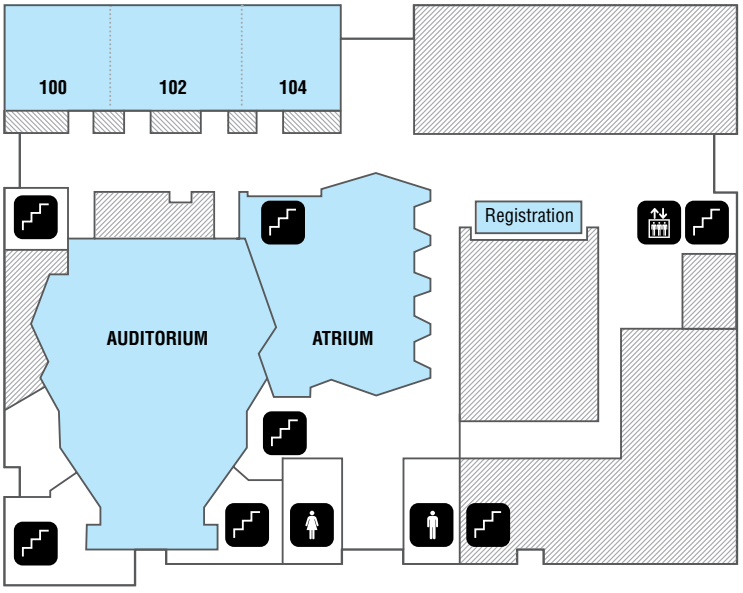
**2. DeBartolo Hall** Level One

| | |
|---|---|
| Technical Sessions | 102, 136, 138,140,141,155 |
| Speaker Ready Rooms | 108,113 |

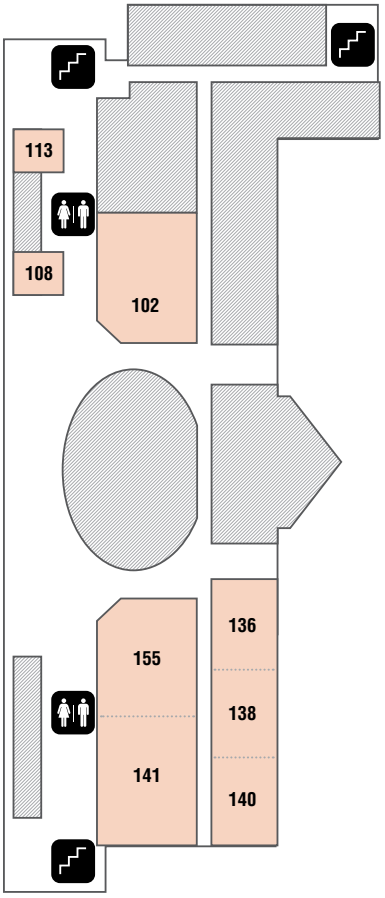
**3. Mendoza College of Business** Level One

| | |
|---|---|
| EMC Awards Ceremony and Plenary Session | Jordan Auditorium |

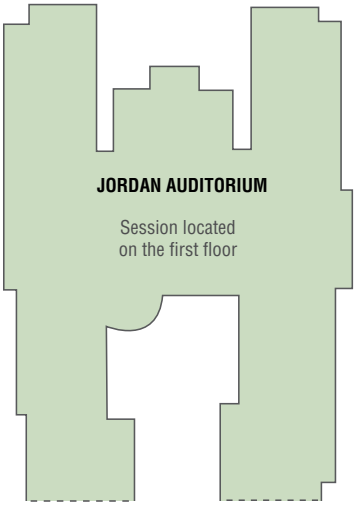
## 1. McKenna Hall




## 2. DeBartolo Hall




## 3. Mendoza College of Business



# SCHEDULE OF EVENTS

## Registration
McKenna Hall, Lobby

Wednesday
7:00 am – 8:00 pm

Thursday
7:30 am – 5:00 pm

Friday
7:30 am – 12:00 pm

## EMC Awards Ceremony and Plenary Session
Mendoza College of Business, Jordan Auditorium

Wednesday
8:20 am – 9:20 am

## Poster Set-up
McKenna Hall, Rooms 100-104

Wednesday
9:30 am – 1:30 pm

## Posters
McKenna Hall, Rooms 100-104

Wednesday
6:00 pm – 8:00 pm
*Posters will also be available for viewing Thursday and Friday*

## Exhibit
McKenna Hall, Atrium

Wednesday
10:00 am – 10:30 am
3:00 pm – 3:30 pm
6:00 pm – 8:00 pm

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

Friday
10:00 am – 10:30 am

## Welcome Reception
McKenna Hall, Atrium

Wednesday
6:00 pm – 8:00 pm

## Conference Banquet
Center for History and Studebaker National Museum

Thursday
6:30 pm – 8:30 pm
*Transportation will be provided to and from the Conference Banquet; meet in McKenna hall at 6:00 pm.*

## Speaker Ready Rooms
DeBartolo Hall, Rooms 108 & 113

Wednesday
7:30 am – 5:00 pm

Thursday
7:30 am – 5:00 pm

Friday
7:30 am – 12:00 pm

# PROGRAM AT-A-GLANCE

## WEDNESDAY AM

| EMC Awards Ceremony and Plenary Session | | | Jordan Auditorium, Mendoza College of Business |
|---|---|---|---|
| 8:20 am | | | Student Awards and EMC Recognition |
| 8:30 am | R. Stanley Williams | | **Plenary** Mott Memristors, Spiking Neuristors and Electronic Action Potentials |
| 9:20 am | Break | | |
| **A: Materials for Energy Applications** | | | **Room 155, DeBartolo Hall** |
| 10:00 am | Susan K. Fullerton Shirey | A1 | Aligning High-Aspect-Ratio Nanofillers to Improve Conductivity in Solid Polymer Electrolytes for Li-Ion Batteries |
| 10:20 am | Maarten Mees | A2 | Material Modeling of Solid-State Electrolytes with the Spinel Structure |
| 10:40 am | Corey Shemelya | A3 | (Student) Metallic Photonic Crystals for TPV Energy Generation Applications |
| 11:00 am | Matthew Doty | A4 | New Nanostructured Materials for Efficient Photon Upconversion |
| 11:20 am | Susan K. Fullerton Shirey | A5 | (Student) Influence of Nanofiller Shape and Aspect Ratio on the Ionic Conductivity and Thermal Properties of Solid Polymer Electrolytes for Rechargeable Li-Ion Batteries |
| 11:40 am | Matthew Shea | A6 | >1.0% Efficient Solar Cells Derived from Highly Enriched Single-Chirality Carbon Nanotubes |
| **B: Group III-Nitrides—UV AlGaN Growth and Lasers** | | | **Room 141, DeBartolo Hall** |
| 10:00 am | Yuh-Shian Liu | B1 | (Student) Stimulated Emission at 243.5 nm from Optically Pumped Quantum-Well Heterostructures Grown by MOCVD on AlN Substrates |
| 10:20 am | Zachary Bryan | B2 | (Student) A Study on Photo-Pumped UV-C Laser Structures Grown on AlN Substrates |
| 10:40 am | Jinqiao Xie | B3 | Stimulated Emission and Optical Gain in Bulk AlGaN Grown on AlN Substrates |
| 11:00 am | Xiaohang Li | B4 | (Student) Growth of High Al-Content AlGaN on AlN/ Sapphire Templates by High-Temperature Metalorganic-Chemical-Vapor Deposition |
| 11:20 am | Milena Bobea | B5 | (Student) X-Ray Characterization of Strain and Composition of Al-Rich AlGaN Films Grown on AlN Single Crystalline Substrates |
| 11:40 am | Isaac Bryan | B6 | (Student) Compensation in Si-Doped Al-Rich AlGaN Thin Films Deposited by MOCVD on c-AlN Substrates |
| **C: Graphene Devices and Fabrication** | | | **Room 102, DeBartolo Hall** |
| 10:00 am | Stephen Howell | C1 | Development of Dual-Gated Bilayer Graphene Device Structures |
| 10:20 am | Hongming Lv | C2 | (Student) High Carrier Mobility in Channel Suspended Graphene Field Effect Transistors |
| 10:40 am | Mona Ebrish | C3 | (Student) Understanding the Effect of Glucose Oxidase Surface Functionalization on the Material and Electronic Properties of Graphene |
| 11:00 am | Vinod Sangwan | C4 | Hybrid Nanodielectrics for Carbon-Based Electronics |
| 11:20 am | Shu He | C5 | (Student) Locally Altering the Electronic Properties of Graphene by Nanoscopically Doping It with Rhodamine 6G |
| 11:40 am | Amol Singh | C6 | (Student) Controlling Donor and Acceptor Type Molecular Doping of CVD Graphene |
| **D: SiC—Device Performance and Processing** | | | **Room 140, DeBartolo Hall** |
| 10:00 am | Edward Van Brunt | D1 | A Comparison of the Microwave Photoconductivity Decay and Open-Circuit Voltage Decay Lifetime Measurement Techniques for Lifetime-Enhanced 4H-SiC Epilayers |
| 10:20 am | Joshua Taillon | D2 | Student) Characterization of the Oxide-Semiconductor Transition Layer in NO, P, and N-Plasma Passivated 4H-SiC/$SiO_2$ Structures Using Transmission Electron Microscopy |
| 10:40 am | Aaron Modic | D3 | (Student) Nitrogen Plasma Processing of $SiO_2$/4H-SiC Interfaces |
| 11:00 am | Sabih Omar | D4 | (Student) Effect of Structural Defects on the Reverse I-V Characteristics of Ni/4H-SiC Schottky Diodes: Establishment of Defect-Dependent Performance Metrics |
| 11:20 am | Voshadhi Amarasinghe | D5 | (Student) Exfoliation and Transfer of SiC Layers for Analog Device Applications |
| 11:40 am | Anindya Nath | D6 | (Student, Late News) Microwave Annealing of High Dose $Al^+$ Implanted 4H-SiC: Towards Device Fabrication |
| **E: Oxide Semiconductors—Growth and Processing** | | | **Auditorium, McKenna Hall** |
| 10:00 am | Shizuo Fujita | E1 | Band Gap Engineering and Function Engineering with Corundum-Structured Gallium Oxide-Based Compounds and Alloys |
| 10:20 am | Stefan Mueller | E2 | (Student) Structural and Electrical Properties of Si-Doped $\beta$-$Ga_2O_3$ Thin Films and Schottky Contacts Thereon |
| 10:40 am | Zbigniew Galazka | E3 | Growth, Characterization and Properties of Bulk Single Crystals of Transparent Semiconducting Oxides: β-$Ga_2O_3$, $In_2O_3$ and $SnO_2$ |
| 11:00 am | Louis Piper | E4 | The Origin of the Bipolar Doping Behavior of SnO from X-Ray Spectroscopy and Density Functional Theory |
| 11:20 am | Changqiong Zhu | E5 | (Student) Solution Speciation Effects on the Morphology and Photoconductivity of the Electrodeposited Cuprous Oxide Films |
| **F: Embedded Metal Structures in III-V Semiconductors** | | | **Room 138, DeBartolo Hall** |
| 10:00 am | Zihao Yang | F1 | (Student) Ferromagnetism and Magneto-Transport in Gd-Doped AlN-GaN Two-Dimensional Electron Gases |
| 10:20 am | Sriram Krishnamoorthy | F2 | (Student) Efficient Hole Injection in GdN/GaN Heterojunction |
| 10:40 am | Thomas Kent | F3 | (Student) $Gd_xAl_{1-x}N$ Nanowire Electroluminescent Devices with Atomically Sharp 318nm Ultraviolet Emission and Ultralow Operating Voltage |
| 11:00 am | Rodolfo Salas | F4 | (Student) Carrier Dynamics and Electrical Properties of LuAs:InGaAs Superlattices |
| 11:20 am | Jongho Lee | F5 | (Student) Temperature and Thickness Dependence of Electrical Resistivity of $La_xLu_{1-x}As$ |
| 11:40 am | Sunyeol Jeon | F6 | (Student) Photoluminescence Enhancement of Embedded Ga:GaAs Nanocomposites |

# PROGRAM AT-A-GLANCE

## WEDNESDAY PM

| G: Next Generation Solar Cell Materials and Devices | | | Room 155, DeBartolo Hall |
|---|---|---|---|
| 1:30 pm | Yanjin Kuang | G1 | (Student) GaNAsP: An Intermediate Band Semiconductor Grown by Gas-Source Molecular Beam Epitaxy |
| 1:50 pm | Alexander Luce | G2 | (Student) Optical Properties of Highly Mismatched GaNAsP Alloys for Intermediate Band Solar Cells |
| 2:10 pm | Sarah Howell | G3 | (Student) Spatial Mapping of Efficiency of GaN/InGaN Nanowire Array Solar Cells by Using Scanning Photocurrent Microscopy |
| 2:30 pm | TaeWan Kim | G4 | (Student) Impact of Thermal Annealing on Bulk InGaAsSbN Materials Grown by Metalorganic Vapor Phase Epitaxy |
| 2:50 pm | Yoshitaka Okada | G5 | Operation Characteristics of Quantum Dot Intermediate-Band Solar Cells under Sunlight Concentration |
| 3:10 pm | Break | | |
| 3:30 pm | Chengyang Jiang | G6 | (Student) Comparative Study on the Formation of $Cu_2ZnSnS_4$ Thin Films from Various Liquid-Phase Precursors |
| 3:50 pm | Matthew Beres | G7 | (Student) A Comparison of $Cu_2ZnSnS_4$ Thin Films Fabricated by Single-Step Electrodeposition and Pulsed Laser Deposition |
| 4:10 pm | N. Feldberg | G8 | (Student) $ZnSnN_2$: Growth and Tuning through Cation Disorder |
| 4:30 pm | Chong Tong | G9 | (Student) Enhanced Semiconductor Optical Absorption via Periodic Silver Nanostructures for Al Doped ZnO/Si Thin Film Photovoltaic Applications |
| **H: Group III-Nitrides—LEDs and Novel Optical Structures** | | | **Room 141, DeBartolo Hall** |
| 1:30 pm | Andrew Armstrong | H1 | Quantum Well Deep Level Defects in InGaN/GaN Light Emitting Diodes and Implications for Wavelength Droop |
| 1:50 pm | Sriram Krishnamoorthy | H2 | Incorporation of GaN/InGaN and GdN/GaN Tunnel Junctions in Commercial III-Nitride LEDs |
| 2:10 pm | Jai Verma | H3 | Deep-UV 235-270 nm Emission from GaN/AlN Heterostructures Grown by Plasma-MBE on AlN Substrates |
| 2:30 pm | Hieu Nguyen | H4 | Phosphor-Free InGaN/GaN Dot-in-a-Wire White Light Emitting Diodes on Cu Substrates |
| 2:50 pm | Mi-Hee Ji | H5 | (Student) Laser Patterning for Light Extraction Efficiency Enhancement of III-Nitride-Based Light-Emitting Diodes |
| 3:10 pm | Break | | |
| 3:30 pm | Moritz Brendel | H6 | (Student) Solar-Blind AlGaN MSM Photodetectors on Planar and ELO AlN/Sapphire Templates |
| 3:50 pm | Colin Edmunds | H7 | (Student) Comparative Study of Near-Infrared Intersubband Absorption in AlGaN/GaN and AlInN/GaN Superlattices |
| 4:10 pm | Jonathan Marini | H8 | (Student) Permanent NEA in Cs-Free AlGaN/GaN Photocathodes |
| 4:30 pm | Chu-Hsiang Teng | H9 | (Student) Effects of Strain Relaxation on Luminescent Properties of InGaN/GaN Nanorods from 2D to 0D Transition |
| 4:50 pm | Brandon Demory | H10 | (Student) Enhancement of Spontaneous Emission Rate in an InGaN Quantum Dot Coupled to a Plasmonic Cavity |
| **I: HEMTS—Growth, Processing and Transport** | | | **Room 140, DeBartolo Hall** |
| 1:30 pm | Randy Tompkins | I1 | HVPE GaN for High Power Electronic Devices |
| 1:50 pm | Pil Sung Park | I2 | (Student) Graphene-Based Ohmic Contacts to AlGaN/GaN Heterostructures |
| 2:10 pm | Puneet Suvarna | I3 | (Student) Improved Epitaxial Material Quality of AlGaN Films for High Electron Mobility Transistors on Si Using Pulsed MOCVD |
| 2:30 pm | A. Sarwar | I4 | (Late News) Self-Assembled Hexagonal InN Micro-Mushrooms on Si by Plasma Assisted Molecular Beam Epitaxy |
| 2:50 pm | Marko Tadjer | I5 | Sacrificial Gate Process for Improved Diamond-Capped GaN HEMT Devices |
| 3:10 pm | Break | | |
| 3:30 pm | Ting-Hsiang Hung | I6 | (Student) Interface Charge Effects on Electron Transport in $Al_2O_3$/AlGaN/GaN |
| 3:50 pm | Digbijoy Nath | I7 | (Student) Percolation-Based Vertical Transport in Unipolar III-Nitride Heterostructures |
| 4:10 pm | Zongyang Hu | I8 | (Late News) Plasma Effects in Threshold Voltage Control of Enhancement Mode InAlN/GaN HEMTs: The Impact of Recess Etching and F Doping |
| 4:30 pm | Jun Suda | I9 | Extraction of Current-Voltage Characteristics of m-Plane p-Type GaN Contacts by Using Transmission Line Method Patterns |
| **J: Metamaterials, Graphene, Plasmonics and Long Wavelength Materials and Devices** | | | **Room 102, DeBartolo Hall** |
| 1:30 pm | Corey Shemelya | J1 | (Student) Moving towards the Dynamic Selective Polarizer: A Duel Metamaterial Polarization Grid |
| 1:50 pm | Alexander Sinitskii | J2 | Large-Scale Solution Synthesis of Narrow Graphene Nanoribbons with a Large Electronic Bandgap |
| 2:10 pm | Xiaozhu Zhou | J3 | OWL-Based Nanomasks for Preparing Graphene Ribbons with Sub-10 nm Gaps |
| 2:30 pm | Mark Roberts | J4 | High Energy-Density Electrochemical Capacitors with Polymer-Modified Carbon Nanomaterial Electrodes |
| 2:50 pm | David Roberts | J5 | Plastic Reorganization of Fixed Carbon Nanotube Film Surfaces-Global Alignment of Un-Oriented Nonwoven Fabric |
| 3:10 pm | Break | | |
| 3:30 pm | Bivas Saha | J6 | (Student) TiN/(Al,Sc)N Metal/Dielectric Superlattices for Metamaterial Applications in the Visible Range |
| 3:50 pm | William Streyer | J7 | (Student) Engineered Metals for Mid-IR Perfect Absorption |
| 4:10 pm | Justin Foley | J8 | (Student) Long-Wavelength Infrared Filters Based on Suspended-Silicon High-Index-Contrast Gratings |
| 4:30 pm | Rusen Yan | J9 | (Student) Tunable Electro-Absorption Metamaterial-Based Graphene Terahertz Modulators |
| 4:50 pm | Shamaita Shetu | J10 | (Student) Surface Plasmon Group Velocity of c/60 Using Graphene/SiC Ribbon Gratings: Shrinking Optical Components to Electronic Dimensions |

## WEDNESDAY PM (continued)

| K: Growth and Characterization | | | Room 136, DeBartolo Hall |
|---|---|---|---|
| 1:30 pm | Haizheng Song | K1 | Epitaxial Growth of 4H-SiC Using Tetrafluorosilane Precursor and Study of Defect Evolution |
| 1:50 pm | Meralys Reyes-Natal | K2 | Development of a Low-Cost 3C-SiC Growth Process on 4-Inch Silicon Wafers |
| 2:10 pm | M. Abadier | K3 | (Student) Nucleation of In-Grown Stacking Faults and Dislocation Half Loops in 4H-SiC Epilayers Deposited at High Growth Rate |
| 2:30 pm | Marko Tadjer | K4 | Removal of Basal Plane Dislocations in 4H-SiC Epitaxy by High Temperature Ultra-Fast Microwave Annealing |
| 2:50 pm | F. Wu | K5 | (Student, Late News) Prismatic Glide of Threading Edge Dislocations and Pyramidal Glide of Threading c+a Dislocations in PVT-Grown 4H-SiC |
| 3:10 pm | Break | | |
| **L: Contacts to Semiconductors, Epilayers and Nanowires** | | | **Room 136, DeBartolo Hall** |
| 3:30 pm | Sudarshan Narayanan | L6 | (Student) Electrical and Optical Characterization of Metal Nanowire Networked Composites for Transparent Contacts |
| 3:50 pm | Suzanne Mohney | L7 | The Effect of Sulfur Passivation on Ohmic Contacts to n-Type InGaAs Formed by *in situ* Solid Phase Regrowth |
| 4:10 pm | KunHo Yoon | L8 | (Student) Barrier Height Measurement of Metal Contacts to Silicon Nanowires Using Spectrally-Resolved Scanning Photocurrent Microscopy |
| 4:30 pm | Tae-Yeon Seong | L9 | Effects of Inserted Metal Layers on the Thermal Stability of Ag Reflector for Vertical GaN-Based Light-Emitting Diodes |
| **M: Oxide Semiconductors—Devices** | | | **Auditorium, McKenna Hall** |
| 1:30 pm | Wenbing Hu | M1 | (Student) Molybdenum as a Contact Material for Solution-Processed Zinc Tin Oxide Thin Film Transistors |
| 1:50 pm | Simon Bubel | M2 | Defects, Doping and the Amorphous Oxide Thin Film Transistor Characteristic |
| 2:10 pm | Yi-Chun Liu | M3 | Contact Barriers and Traps in PEALD ZnO TFTs |
| 2:30 pm | Fabian Kluepfel | M4 | Comparison of ZnO-Based JFET, MESFET and MISFET |
| 2:50 pm | Friedrich Schein | M5 | (Student) Transparent *p*-CuI/*n*-ZnO Heterojunction Diodes |
| 3:10 pm | Break | | |
| 3:30 pm | Chong Tong | M6 | (Student) Demonstration of ZnO Double Junction Diodes for Optoelectronic Applications |
| 3:50 pm | Friedrich Schein | M7 | (Student) Highly Rectifying pn-Diodes Based on Amorphous $ZnCo_2O_4$ and ZnSnO |
| 4:10 pm | Louis Piper | M8 | (Late News) La-doped $BaSnO_3$: An Earth Abundant Degenerate Cubic Perovskite Transparent Conducting Oxide Alternative to Sn-Doped $In_2O_3$ for Oxide-Electronics |
| 4:30 pm | Yogesh Sharma | M9 | (Late News) Improved 4H-SiC/$SiO_2$ Interface Using Thin PSG Process |
| 4:50 pm | Huanhuan Wang | M10 | (Student, Late News) Measurement of Critical Thickness for the Formation of Misfit Dislocation in 4H-SiC Epilayer via X-Ray Topography |
| **N: Low-Dimensional Structures—Quantum Dots, Wires and Wells** | | | **Room 138, DeBartolo Hall** |
| 1:30 pm | Christopher Yerino | N1 | (Student) Tensile Self-Assembly on a (111) III-V Surface: From Quantum Wires to Quantum Dots |
| 1:50 pm | Sergei Rouvimov | N2 | Onset of 3D Islands in Subcritical Deposition in Stranski–Krastanow Growth |
| 2:10 pm | Yuncheng Song | N3 | (Student) InGaAs/GaP Self-Assembled Quantum Dot LEDs on Si |
| 2:30 pm | Brian McGuigan | N4 | (Student) The Role of Strain and Defects on Band Alignment in Nanostructured GaSb/GaAs Systems |
| 2:50 pm | Christopher Prohl | N5 | (Student) Atomic Structure of $In_{0.25}Ga_{0.75}As$/GaAs Quantum Dots in a GaP(001) Matrix |
| 3:10 pm | Break | | |
| 3:30 pm | Jing Yang | N6 | (Student) Optical and Structural Properties of InN/AlN Multiple Quantum Wells |
| 3:50 pm | Simon Huang | N7 | (Student) Droplet Epitaxy of InAs/GaAs Quantum Dots: Formation and Coarsening |
| 4:10 pm | Adam Podell | N8 | (Student) Effect of Varying Growth Parameters on Indium Arsenide Quantum Dot Formation and Solar Cell Performance |
| 4:30 pm | Gaute Otnes | N9 | (Student) *In-Situ* Optical Measurements of the Effect of Wet-Chemical Etching on Silicon Quantum Dots |

### Upcoming Meetings of Interest to the EMC Community

ICNS-10

10th International Conference on Nitride Semiconductors

Gaylord National Hotel and Convention Center
Washington, DC | August 25 – 30, 2013

ISGN5 Atlanta 2014

5th International Symposium on Growth of III-Nitrides

Westin Peachtree
Atlanta, GA | May 18 - 22, 2014

8th IWZnO

International Workshop on Zinc Oxide and Related Materials

Sheraton on the Falls Hotel
Niagara Falls, Ontario, Canada | September 7 – 10, 2014

# POSTER SESSION
## WEDNESDAY PM

| Paper # | Presenter | Title — McKenna Hall, Rooms 100-104 |
|---|---|---|
| PS1 | Haizheng Song | Enhancement of Basal Plane Dislocation Conversion in SiC Epitaxial Growth by Mild Substrate Etching |
| PS2 | Gabriel Brown | (Student) Multi-Channel Spectroscopy of 4H-SiC PIN Diodes for Selective Electromagnetic and Ionizing Radiation Detection: Towards Neutrons |
| PS3 | Xueqiang Zhang | (Student) Silicon Surface Treatment by Atmospheric Pressure Plasma Jet |
| PS4 | YuJeong Jo | (Student) Surface Modification of Self-Consolidated Microporous Ti Implant Compacts Fabricated by Electro-Discharge-Sintering in Air |
| PS5 | Sundar Narayanan | Pattering Memory Devices with Ag as Part of the Memory Stack for Volume Manufacturing |
| PS6 | Nader Shehata | Annealing Impact on Optical Conversions in Ceria-Doped-Erbium Nanoparticles |
| PS7 | Pramod Kumar | Magnetoresistance in the Topological Insulator $Bi_2Te_3$ |
| PS8 | Alan Teran | (Student) Heterojunction n-ZnSe/p-ZnTe Solar Cells |
| PS9 | Dong-Ho Kim | (Abstract Withdrawn) Moderately Reduced Graphene Oxide as a Hole Transport Layer for High Efficiency Organic Solar Cells |
| PS10 | Changhe Guo | Conjugated Block Copolymer Photovoltaics with near 3% Efficiency |
| PS11 | Takafumi Yao | Thermal Stress Analysis of GaN Films Grown on Sapphire Substrates |
| PS12 | Gary Mount | Depth Profiling of Organic Semiconductors Using SIMS |
| PS13 | Albina Nikolaeva | Thermoelectric Properties Bismuth-Antimony Nanowires under the Influence Size Quantization, Strain, and Magnetic Field |
| PS14 | Albina Nikolaeva | Effect of Negative Magnetoresistance in Transverse Magnetic Field in Quantum Bi and Semimetal $Bi_{1-x}Sb_x$ Wires |
| PS15 | Jingzhou Wang | (Student) Temperature Dependent Luminescence of Yb-doped High In-Content InGaN Epilayers |
| PS16 | Wei Guo | (Student) Surface Patterning of GaN Using Natural Lithography |
| PS17 | Dylan Bayerl | (Student) Electronic Structure and Optical Properties of InN Nanowires from First Principles |
| PS18 | Yuyin Xi | (Student) Response Time Study of Hydrogen Detection with Pt-Gated AlGaN/GaN Based Diodes |
| PS19 | Stefan Mueller | (Student) Structural and Optical Properties of Si-Doped $(Ga,In)_2O_3$ PLD Thin Films |
| PS20 | Gary Farlow | Tracking Luminescence of ZnO during Electron Beam Irradiation |
| PS21 | Guangsha Shi | (Student) Electronic and Optical Properties of Nanoporous Silicon from First Principles |
| PS22 | Rebeca Castanedo-Perez | Au/$Cu_2$ Te/CdTe/CdS/TCO/Glass Solar Cells with $CdIn_2O_4$ Obtained by Sol Gel as TCO |
| PS23 | Danilo Barrionuevo Diestra | Tunnel Electroresistance Effect in Ferroelectric Tunnel Junction in Structures with Ultrathin Ferroelectric $PbZr_{0.52}Ti_{0.48}O_3$ (PZT) Barrier |
| PS24 | Benjamin Gaddy | (Student) Surfactant-Enabled Growth of Polar Oxide-Nitride Interfaces, Using DFT to Explore the Early Stages of Epitaxial Growth |
| PS25 | Xuanxiong Zhang | The Investigation on the Germanium-On-Insulator (GeOI) Manufactured by a Low Temperature Smart-Cut Process |
| PS26 | Ming-Show Wong | Nanostructure-Induced Room-Temperature Ferromagnetism in Titania-Based Thin Films |
| PS27 | Leonid Konopko | Magnetoresistance Oscillations in $Bi_2Te_3$ Microwires Contacting with Superconducting InGa |
| PS28 | Edward Lamere | (Student) Size-Dependent Effects on the Electronic Properties of GaAs |
| PS29 | Seonghoon Lee | R/G/B/Natural White Light Thin Flexible Colloidal Quantum Dots Light-Emitting Devices |
| PS30 | Rajendra Panmand | (Student) Magneto-Optical Performance of $Bi_2Te_3$ Quantum Dots in Glass Matrix |
| PS31 | Ryan Dwyer | (Student) Local Mobility Measurements in Organic Films Using Split-Gate Transistors and Time-Resolved Electric Force Microscopy |
| PS32 | Kanuo Chen | The Transistor-Injected Quantum Cascade Laser: A Novel Mid-IR Emitter |
| PS33 | Kevin Schulte | (Student) Characterization of Thick $In_xGa_{1-x}$ As Metamorphic Buffer Layers Grown by HVPE |

### General Viewing

**Wednesday Break ..... 3:10 pm – 3:30 pm**

**Poster Session ..... 6:00 pm – 8:00 pm**
*Authors should be standing with their poster.*

**Thursday Breaks ..... 10:00 am – 10:20 am**
**3:10 pm – 3:30 pm**

**Friday Break ..... 10:00 am – 10:20 am**

### Poster Authors Set-up
Wednesday, 9:30 am - 1:30 pm

### Tear Down
Friday, before 12:00 pm
Remaining posters will be discarded.

# PROGRAM AT-A-GLANCE

## THURSDAY AM

| O: MOS, MIM and DRAM Materials Physics | | | Room 155, DeBartolo Hall |
|---|---|---|---|
| 8:20 am | Yuanzheng Yue | O1 | Remote Plasma and Thermal Atomic Layer Deposition of Conformal Pt Films |
| 8:40 am | Mark Anders | O2 | (Student) Electrically Detected Magnetic Resonance Study Comparing 4H SiC n- and p- MOSFETs |
| 9:00 am | Thomas Pomorski | O3 | (Student) ESR and SDT Studies of BEOL (Low-K) Dielectrics and Etch Stop Layers |
| 9:20 am | Patrick Lenahan | O4 | Zero Field and Low Field Spin Dependent Transport in MOS Devices: A New Tool for the Study of Dielectric/Semiconductor Interface and Dielectric Defects |
| 9:40 am | Zeng Zhang | O5 | (Student) Band Alignment of Atomic-Layer-Deposited $Al_2O_3$ on n-Type GaN |
| 10:00 am | Break | | |
| 10:20 am | Dmitri Strukov | O6 | The Effect of Ion Implantation on the Resistive Switching in Pt/$TiO_{2-x}$/Pt Devices |
| 10:40 am | Andrew Lohn | O7 | Deposition Control and Depth Profiling in TaOx Memristors |
| 11:00 am | John Conley, Jr. | O8 | Step Tunneling Enhanced Asymmetry in Metal-Insulator-Insulator-Metal (MIIM) Diodes |
| 11:20 am | Linzi Dodd | O9 | (Student) Failure Mechanisms in Metal-Oxide-Metal (MOM) Diodes |
| 11:40 am | Linzi Dodd | O10 | (Student) Production of Metal-Oxide-Metal (MOM) Diodes Using Phase Shift Lithography |
| **P: InN, InGaN and Nanowires** | | | **Room 141, DeBartolo Hall** |
| 8:20 am | Yuhuai Liu | P1 | Pressurized Reactor Metal Organic Vapor Phase Epitaxy of InGaN/InN Structure with High InN Molar Fraction |
| 8:40 am | Yohjiro Kawai | P2 | Realization of Superior Crystalline Quality of Thick $In_{0.1}Ga_{0.9}N$ Epilayer Grown by Plasma-Assisted Molecular Beam Epitaxy Using High-Density Radical Source |
| 9:00 am | Hiroshi Fujioka | P3 | Characteristics of Ultrathin InN Grown on YSZ |
| 9:20 am | Tsutomu Araki | P4 | Impact of Plasma Power on the Electrical Properties of InN Thin Films Grown by RF-MBE |
| 9:40 am | Lei Zhang | P5 | Statistical Analysis of Site-Controlled InGaN Quantum Dots |
| 10:00 am | Break | | |
| 10:20 am | Songrui Zhao | P6 | (Student) Probing the Electrical Transport Properties of Intrinsic InN Nanowires |
| 10:40 am | Hsun-Chih Kuo | P7 | (Student) Vertically Aligned Single Phase InGaN Nanowires Grown by MOCVD |
| 11:00 am | Santino Carnevale | P8 | (Student) Mixed Polarity in Polarization-Induced Nanowire Light Emitting Diodes |
| 11:20 am | Tae Su Oh | P9 | Microstructural Properties of Nanowire-Suspended Non-Polar GaN Film |
| 11:40 am | Yuyin Xi | P10 | (Student) Effect of Temperature on CO Detection Sensitivity in Air Ambient by Using ZnO Nanorod-Gated AlGaN/GaN High Electron Mobility Transistors |
| **Q: HEMTS—Defects and Reliability** | | | **Room 140, DeBartolo Hall** |
| 8:20 am | Lu Liu | Q1 | (Student) The Effects of Proton Irradiation on the Reliability of InAlN/GaN High Electron Mobility Transistors |
| 8:40 am | D. Cardwell | Q2 | (Student) Spatially-Resolved Spectroscopic Measurements of $E_c$ – 0.57 eV Buffer Traps in AlGaN/GaN High Electron Mobility Transistors |
| 9:00 am | Ya-Hsi Hwang | Q3 | (Student) Influence of Electron Irradiation on AlGaN/GaN and InAlN/GaN Heterojunctions |
| 9:20 am | Marko Tadjer | Q4 | Improved Passivation and Off-State Leakage of AlGaN/GaN HEMTs by AlN Thin Films Grown by Atomic Layer Epitaxy |
| 9:40 am | Lu Liu | Q5 | (Student) The Improvement of the Reliability of AlGaN/GaN High Electron Mobility Transistors by Employing Different Buffer Structures |
| 10:00 am | Break | | |
| **R: Group III-Nitrides—Growth and Characterization I** | | | **Room 140, DeBartolo Hall** |
| 10:20 am | Jiayi Shao | R1 | Growth and Structure Characterization of AlGaN/GaN Superlattice on m-Plane (1-100) GaN with Various Miscut Direction |
| 10:40 am | Eberhard Richter | R2 | Growth of C-Plane Oriented $Al_xGa_{1-x}N$ Layers on Sapphire by Hydride Vapor-Phase Epitaxy |
| 11:00 am | Mark Durniak | R3 | (Student) Cubic GaN Templates for LED Applications |
| 11:20 am | Lindsay Hussey | R4 | (Student) Transmission Electron Microscopy Investigation of Inversion Domains in Aluminum Nitride Lateral Polarity Structures |
| 11:40 am | Tianyi Zhou | R5 | (Student) Characterization of Threading Dislocations in AlN Substrates via X-Ray Topography and Ray-Tracing Simulation |

# PROGRAM AT-A-GLANCE

## THURSDAY AM (continued)

| S: Graphene Growth, Characterization and Processing | | | Room 102, DeBartolo Hall |
|---|---|---|---|
| 8:20 am | Robert Jacobberger | S1 | (Student) Morphological Evolution of Graphene Crystals on Epitaxial Copper Thin Films |
| 8:40 am | Alpha N'Diaye | S2 | Graphene on a Ferromagnet: Epitaxial Growth and Spin Reflectivity of Monolayer Graphene on Cobalt on W (110) |
| 9:00 am | Hongming Lv | S3 | A Three-Reaction Step Cooling Mechanism in Graphene APCVD Growth on Platinum |
| 9:20 am | Susmit Singha Roy | S4 | (Student) Temporal and Spatial Mapping of the Oxidation of Copper Passivated by Graphene Diffusion Barriers |
| 9:40 am | Khachatur Manukyan | S5 | Combustion Synthesis of Graphene |
| 10:00 am | Break | | |
| 10:20 am | Randall Feenstra | S6 | Low-Energy Electron Reflectivity of Graphene on Various Substrates |
| 10:40 am | Anindya Nath | S7 | (Student) Effect of the SiC Substrate on Ability to Tailor Epitaxial Graphene Properties |
| 11:00 am | Anindya Nath | S8 | (Student) Getting It Clean: Optimized Processing and Cleaning Techniques for High Quality Wafer-Scale Epitaxial Graphene |
| 11:20 am | Kevin Daniels | S9 | (Student) History Dependence of Reversible Electrochemical Hydrogenation of Epitaxial Graphene/SiC |
| 11:40 am | Jeonghyun Hwang | S10 | (Late News) Direct CVD Growth of Graphene on h-BN |
| **T: Organic Interfaces and Charge Transfer** | | | **Room 136, DeBartolo Hall** |
| 8:20 am | Alec Talin | T1 | Electronic Transport in the $Cu_3(BTC)_2$ Metal Organic Framework with TCNQ Guest Adsorbates |
| 8:40 am | Katelyn Goetzl | T2 | (Student) Temperature Dependent Electrical Properties of DBTTF-TCNQ Charge Transfer Crystals |
| 9:00 am | Sujitra Pookpanratana | T3 | Attachment of Conjugated Diruthenium Alkynyl Compounds by Click Chemistry |
| 9:20 am | Shelby Nelson | T4 | (Late News) Printing Thin Film Circuits Using Selective Area Deposition |
| 9:40 am | Break | | |
| **U: Organic Optoelectronics** | | | **Room 136, DeBartolo Hall** |
| 10:20 am | Eliot Gomez | U1 | (Student) Highly Efficient Phosphorescent Organic Light Emitting Diodes by Using Natural DNA |
| 10:40 am | Chenyu Zheng | U2 | (Student) Self-Assembling Squaraine Aggregates' Impact on Photovoltaic Performance |
| 11:00 am | Lindsay Elliott | U3 | Transport and Recombination in Organic Photovoltaics Examined by Charge Extraction, Transient Photovoltage and Photocurrent Techniques |
| 11:20 am | Ryan McCormick | U4 | (Student) Enhancement of Vertical Charge Transport in Organic Photovoltaic Devices Deposited by Resonant Infrared Matrix-Assisted Pulsed Laser Evaporation (RIR-MAPLE) |
| 11:40 am | Taehwan Kim | U5 | (Student) Exploring Theoretical Predictions of the Organic Solar Cell Ideal Diode Equation |
| **V: ZnO Growth and Properties** | | | **Auditorium, McKenna Hall** |
| 8:20 am | Douglas Detert | V1 | (Student) Crystal Structure and Properties of $Cd_xZn_{1-x}O$ Alloys across the Full Composition Range |
| 8:40 am | Yuanyuan Li | V2 | (Student) Al Doped ZnO by Atomic Layer Deposition with Plasma Etch Back |
| 9:00 am | Myung-Yoon Lee | V3 | (Student) Spin Spray ZnO Thin Films |
| 9:20 am | Sanjeev Gautam | V4 | X-Ray Absorption Spectroscopic Study of 120 MeV $Ag^{9+}$ Ion Irradiated p-Type N-Doped ZnO Thin Films |
| 9:40 am | L. Brillson | V5 | (Late News) Impact of Mechanical Polishing and HF Etching on ZnO Native Point Defects |
| 10:00 am | Break | | |
| **W: Point Defects, Doping and Extended Defects** | | | **Auditorium, McKenna Hall** |
| 10:20 am | Adam Khan | W1 | Characterization of Co-Doped N-Type Nanocrystalline Diamond Thin Films and Related Materials |
| 10:40 am | Juan Beltran-Huarac | W2 | (Student) Luminescent, Magnetic and Magneto-Luminescent Properties and Relaxation Dynamics of ZnS:0.05Mn Nanoparticles |
| 11:00 am | Kevin Nay Yaung | W3 | (Student) Threading Dislocation Density Characterization in Metamorphic $GaAs_{1-X}P_x$ Solar Cells |
| 11:20 am | Akira Uedono | W4 | Vacancy-Type Defects in InGaN Grown by Metal Organic Chemical Vapor Deposition Probed Using a Monoenergetic Positron Beam |
| 11:40 am | Benjamin Gaddy | W5 | (Student) Vacancy Compensation in N-Type AlN Bulk Crystals Using a DFT-Based Self-Consistent Mass-Balance Approach and Photoluminescence (PL) Spectroscopy |
| **X: Epitaxial Materials and Devices** | | | **Room 138, DeBartolo Hall** |
| 8:20 am | Ryan Iutzi | X1 | (Student) MOCVD Growth and Tunnelling Characteristics of InAs/GaSb-Based Heterostructures |
| 8:40 am | Nupur Bhargava | X2 | (Student) The Structural Properties of GeSn Alloys Grown by Molecular Beam Epitaxy |
| 9:00 am | Holger Eisele | X3 | Mass Transfers during Growth and Capping of In(Ga)As/GaAs Quantum Dots |
| 9:20 am | Shujiang Yang | X4 | Kinetic Monte Carlo Simulation of Epitaxial Growth of III-V Semiconductor Thin Films |
| 9:40 am | Taizo Nakasu | X5 | (Student) (211) Oriented Domain Formation during the Growth of ZnTe on m-Plane Sapphire by MBE |
| 10:00 am | Break | | |
| 10:20 am | Lan Yu | X6 | (Student) Electroluminescence from InAs Quantum Wells Grown on Metamorphic Buffer Layers |
| 10:40 am | Taizoh Sadoh | X7 | High-Quality Ge-Networks on Insulator by Liquid-Phase Lateral-Epitaxy |
| 11:00 am | Xin Zhao | X8 | (Student) Layered Growth of Lattice-Mismatched $Ga_xIn_{1-x}P$ on GaP Substrates by Liquid Phase Epitaxy |
| 11:20 am | Guo-Dong Hao | X9 | Enhanced Light Extraction in AlGaInP Light-Emitting Diodes by Evanescent Wave Coupling Effect in Fine Ridge Structures |
| 11:40 am | Jerry Woodall | X10 | (Late News) Revisiting ZnO/InP Heterojunction Solar Cells |

## THURSDAY PM

| Y: Batteries and PEC Cells | | | Room 155, DeBartolo Hall |
|---|---|---|---|
| 1:30 pm | Erica Chen | Y1 | Electrochemical Properties of $CuQ_2$ (Q = S, Se) Formed by Mechanical Alloying |
| 1:50 pm | T. C. Mike Chung | Y2 | New Energy Storage Technology: Functional Polypropylene Thin Film Capacitors |
| 2:10 pm | Hao Yang | Y3 | (Student) Supercapacitors with Reduced Graphene Oxide Electrodes for Energy Storage Applications |
| 2:30 pm | Alec Talin | Y4 | (Late News) Hydrogen Evolution at Si-based Metal-Insulator-Semiconductor Photoelectrodes Enhanced by Inversion Channel Charge Collection and Hydrogen Spillover |
| 2:50 pm | Break | | |
| **Z: Nanowire Growth and Characterization** | | | **Room 141, DeBartolo Hall** |
| 1:30 pm | Sarah Eichfeld | Z1 | Vapor-Liquid-Solid Growth of <110> Silicon Nanowire Arrays |
| 1:50 pm | Naoya Morioka | Z2 | (Student) Surface Smoothing Process of Si Nanowires with Various Orientations by Hydrogen Anneal under Different Pressures |
| 2:10 pm | Curt Richter | Z3 | Multi-Bit Non-Volatile Si Nanowire Devices Based on Innovative Charge-Trapping Materials |
| 2:30 pm | Minoli Pathirane | Z4 | (Student) Fabrication and Optical Simulation of Hybrid Thin-Film a-Si:H Shell with ZnO Nanowire Core Structures |
| 2:50 pm | Seongmin Kim | Z5 | (Student) Interface Studies of Nitrogen Plasma Treated Zinc Tin Oxide Nanowire Transistors |
| 3:10 pm | Break | | |
| 3:30 pm | Yinggang Huang | Z6 | (Student) InAs Nanowires Grown by Metal Organic Vapor Phase Epitaxy (MOVPE) Employing PS/PMMA Diblock Copolymer Nanopatterning |
| 3:50 pm | Seongmin Kim | Z7 | (Student) Interface Studies of Indium Arsenide Nanowire Transistors Using Low-Frequency Noise |
| 4:10 pm | Parsian Katal Mohseni | Z8 | When van der Waals Epitaxy Meets a Commensurate Interface: Self-Segregation of InGaAs Nanowires on Graphene |
| 4:30 pm | Kun Li | Z9 | (Student) Single Crystalline InP Nanopillar Grown on Silicon with Very Low Surface Recombination Velocity |
| **AA: Group III-Nitrides—Growth and Characterization II** | | | **Room 140, DeBartolo Hall** |
| 1:30 pm | Mingyu Zhong | AA1 | (Student) Growth of Mg-Doped p-Type GaN by Phase Shift Epitaxy |
| 1:50 pm | Joseph Rajan | AA2 | (Student) Controlled Growth of GaN Lateral Polarity Structures |
| 2:10 pm | Benjamin Leung | AA3 | (Student) Single Crystal GaN Growth on $SiO_2$ by Evolutionary Selection |
| 2:30 pm | Jie Song | AA4 | Confined Lateral Growth of GaN Tiles on Si (111) |
| 2:50 pm | Jeff Leathersich | AA5 | (Student) Rare Earth Oxides Buffer Layers for Epitaxy of GaN Films on Si (111) Substrates |
| 3:10 pm | Break | | |
| 3:30 pm | James Riley | AA6 | (Student) Atom Probe Tomography of Polar, Nonpolar, and Semipolar InGaN Quantum Wells |
| 3:50 pm | Fatih Akyol | AA7 | (Student) Investigation of N-Polar InGaN Growth under N-Rich Conditions |
| 4:10 pm | Yuji Zhao | AA8 | Growth and Characterization of Semipolar (20-2-1) Green InGaN Light-Emitting Diodes |
| 4:30 pm | Adam Bross | AA9 | (Student) Structural Analysis of Nanopatterned a-Plane GaN on r-Plane Sapphire |
| 4:50 pm | Jeff Leathersich | AA10 | (Student) Homoepitaxial Growth of Non-Polar AlN Crystals Using Molecular Dynamics Simulations |
| **BB: BN, $MoS_2$ and Other 2D Materials** | | | **Room 102, DeBartolo Hall** |
| 1:30 pm | Gong Gu | BB1 | Shapes and Crystallography of Hexagonal Boron Nitride Domains Formed by Ambient Pressure Chemical Vapor Deposition |
| 1:50 pm | Zhiyi Chen | BB2 | (Student) Molecular Beam Epitaxial Growth and Properties of $Bi_2Se_3$ Topological Insulator Layers on GaAs(111)B and on InP(001) Using Various Substrate Surface Preparations |
| 2:10 pm | Masihhur Laskar | BB3 | Single Crystal (0001) Orientated $MoS_2$ by CVD |
| 2:30 pm | Woan-seo Park | BB4 | (Student) Passivation Effect on Molybdenum Disulfide Field Effect Transistors under Oxygen, Nitrogen and Vacuum Environments |
| 2:50 pm | Matin Amani | BB5 | Temperature Dependent Electronic Properties of CVD $MoS_2$ |
| 3:10 pm | Break | | |
| 3:30 pm | Matin Amani | BB6 | (Student) Transport Phenomena along Grain Boundaries in CVD $MoS_2$ |
| 3:50 pm | Chung-Chiang Wu | BB7 | Elucidating the Intrinsic Photoresponse of Ultrathin $MoS_2$ Field-Effect Transistors by Scanning Photocurrent Microscopy |
| 4:10 pm | Libai Huang | BB8 | Exciton Dynamics in Suspended Monolayer and Few-Layer $MoS_2$ 2D Crystals |
| 4:30 pm | Sarah Eichfeld | BB9 | (Late News) Synthesis and Properties of Atomic-Layered Tungsten Diselenide ($WSe_2$) |
| 4:50 pm | Edwin Lee | BB10 | (Student, Late News) Growth and Electrical Characterization of $MoS_2$/GaN Heterojunctions |

# PROGRAM AT-A-GLANCE

**THURSDAY PM** (continued)

| CC: Organic Thin-Film and Crystalline Transistors | | | Room 136, DeBartolo Hall |
|---|---|---|---|
| 1:30 pm | Duc Duong | CC1 | (Student) The Chemical and Structural Origin of Efficient p-Type Doping in Semiconducting Polymers |
| 1:50 pm | D. Taylor | CC2 | Photon-Assisted Capacitance-Voltage Study of Organic MIS Capacitors |
| 2:10 pm | Peter Diemer | CC3 | Significant Reduction of the Interface Trap Densities in Organic Field-Effect Transistors by Vibration-Assisted Crystallization and Its Effect on Charge Transport |
| 2:30 pm | Scott Himmelberger | CC4 | (Student) Precise Thin Film Structure of Poly(3-hexylthiophene) Oligomer from Grazing Incidence X-Ray Diffraction |
| 2:50 pm | Kiarash Vakhshouri | CC5 | (Student) Rapid Crystallization Kinetics Can Enhance Charge Mobilities of Polythiophenes |
| 3:10 pm | Break | | |
| **DD: Flexible and Printed Thin-Film Electronics** | | | **Room 136, DeBartolo Hall** |
| 3:30 pm | Sanjiv Sambandan | DD1 | Self Healing of Open Interconnects for Large Area Flexible Electronics Using Field Based Aggregation of Carbon Nanotubes |
| 3:50 pm | Andrew Steckl | DD2 | Organic Electronic and Optoelectronic Devices on Transparent and Opaque Paper Substrates |
| 4:10 pm | D. Taylor | DD3 | A Vacuum Approach to Roll-to-Roll Production of Organic Electronics |
| 4:30 pm | Dong-Ku Kim | DD4 | (Student) Electrical Characterization of Rectifying Molecular Electronic Devices on Flexible Substrates |
| 4:50 pm | Matthew Panzer | DD5 | Development of Soft Ionogel Electrolytes for Flexible Charge Storage Applications |
| **EE: Mixed Metal Oxides** | | | **Auditorium, McKenna Hall** |
| 1:30 pm | June Hyuk Lee | EE1 | *In Situ* Synchrotron X-Ray Study of $Sr_{n+1}Ti_nO_{3n+1}$ Ruddlesden-Popper Thin Film Growth |
| 1:50 pm | J. Israel Ramirez | EE2 | (Student) Integration of ZnO Thin Film Transistors with PZT Capacitors |
| 2:10 pm | Anil Mane | EE3 | Tunable Resistivity Nanocomposite Thin Films by Atomic Layer Deposition for MEMS Applications |
| 2:30 pm | Nick Sbrockey | EE4 | MOCVD of Compositionally Graded BST Films with Highly Temperature Stable Dielectric Properties |
| 2:50 pm | Hitesh Basantani | EE5 | (Student) Vertically Integrated High Resistivity, High TCR A:Ge:H and $VO_x$ Thin-Films for Uncooled IR Microbolometers |
| 3:10 pm | Break | | |
| 3:30 pm | Sahar Keshavarz | EE6 | Flicker Noise Behavior across Metal-Insulator Transition in $VO_2$ Thin Films |
| 3:50 pm | Craig Eaton | EE7 | Tuning the Electronic Properties of $SrVO_3$ with Epitaxial Strain |
| **FF: Semiconductor Processing and Fabrication** | | | **Room 138, DeBartolo Hall** |
| 1:30 pm | Marko Tadjer | FF1 | Growth of Nanocrystalline Diamond in High Aspect Ratio through-Silicon Vias |
| 1:50 pm | Kaige Sun | FF2 | (Student) pH-Based Selective Etching of $Al_2O_3$ over ZnO |
| 2:10 pm | Ho Him Fok | FF3 | (Student) Self-Aligned Patterning of SU-8 by a Non-Etch-Based Process |
| 2:30 pm | Haoyu Li | FF4 | (Student) Substrate Surface Energy Dependence of Parylene Chemical Vapor Deposition |
| 2:50 pm | Chun-Chieh Chang | FF5 | (Student) Fabrication of Large-Area, High-Density Ni Nanopillar Arrays on GaAs Substrates Using Diblock Copolymer Lithography and Electrodeposition |
| 3:10 pm | Break | | |
| **GG: Highly Mismatched Dilute Alloys** | | | **Room 138, DeBartolo Hall** |
| 3:30 pm | Scott Maddox | GG1 | (Student) Optical and Structural Characterization of InAsBi and InGaAsBi Grown by Molecular Beam Epitax |
| 3:50 pm | Kamran Forghani | GG2 | Low Temperature Metal Organic Vapor Phase Epitaxy Growth of $GaAs_{(1-y)}Bi_y$ Films |
| 4:10 pm | Yujun Zhong | GG3 | (Student) Near-Infrared to Mid-Infrared Transparent Degenerately Doped InGaBiAs:Si Thin Films as New Contact Materials |
| 4:30 pm | Chihyu Chen | GG4 | (Student) ZnTeO Epitaxial Layers on GaSb with Outstanding Structural Properties |
| 4:50 pm | Li Zhou | GG5 | Towards the Understanding of Oxygen Placement in ZnTe:O Alloys |

| HH: Group III-Nitride—Nanowires | | | Room 141, DeBartolo Hall |
|---|---|---|---|
| 8:20 am | Jeremy Wright | HH1 | (Student) Monolithic III-Nitride Multi-Color Laser Arrays |
| 8:40 am | Huiwen Xu | HH2 | (Student) Mode Control in Gallium Nitride Nanowire Lasers |
| 9:00 am | David Diercks | HH3 | On the Field Evaporation Behavior of c-Axis GaN Nanowires in Laser-Pulsed Atom Probe Tomography |
| 9:20 am | James Riley | HH4 | (Student) 3D GaN/InGaN Core/Shell Nanowire Heterostructures Analyzed via Correlated Cathodoluminescence Spectroscopy and Atom Probe Tomography |
| 9:40 am | Huiwen Xu | HH5 | (Student) Manipulation of Lasing Polarization in GaN Nanowires |
| 10:00 am | Break | | |
| 10:20 am | Saniya Deshpande | HH6 | (Student) Electrically Injected Polarized Single Photon Emission from a Single InGaN Dot in GaN Nanowire |
| 10:40 am | Park Hyunik | HH7 | (Student) Uniform Nano-LEDs with InGaN/GaN Multi-Quantum-Wells |
| 11:00 am | Sharif Sadaf | HH8 | (Student) Polarization Doped Core-Shell InGaN-GaN Dot-in-a Wire White Light Emitting Diodes |
| 11:20 am | Alina Wilson | HH9 | (Student) High Quality InN Nanowires for Multi-Modal Sensing |
| **II: Materials Integration and Wafer Bonding** | | | **Room 140, DeBartolo Hall** |
| 8:20 am | Jong-Hyeok Park | II1 | (Student) Ultra-Low-Temperature Formation of (100)- or (111)-Oriented Ge on Insulator for Flexible Electronics |
| 8:40 am | Xiaolu Kou | II2 | (Student) Morphological Evolution of Porous InP during Annealing and Epitaxial Growth for Layer Transfer |
| 9:00 am | Danti Chen | II3 | (Student) A Slice-Print-Growth Process for 'Transplant Epitaxy' of GaN on Versatile Substrates |
| 9:20 am | Ryo Matsumura | II4 | (Student) Laterally Graded SiGe-Profiles on Insulator by Segregation-Controlled Rapid-Melting Technique |
| 9:40 am | Brian Zutter | II5 | (Student) Planarization and Processing of $In_xGa_{1-x}As$ Metamorphic Buffer Layers Grown by HVPE |
| 10:00 am | Break | | |

# PROGRAM AT-A-GLANCE

**FRIDAY AM** (continued)

| JJ: Nanomagnetic Materials and Nanoscale Characterization | | | Room 136, DeBartolo Hall |
|---|---|---|---|
| 8:20 am | Peng Li | JJ1 | (Student) Pseudo-Spin-Valve Giant Magnetoresistance Structures for Electronic Readout in Nanomagnet Logic |
| 8:40 am | Faisal Shah | JJ2 | (Student) Sub-10-nm Inter-Magnet Spacing for Improved Defect Tolerance in NML |
| 9:00 am | Peng Li | JJ3 | (Student) Magnetic Properties and Thermal Stability of Nanomagnets/High-Permeability Dielectrics System |
| 9:20 am | Yong Chen | JJ4 | Topological Insulators: Spin Transport and Interplay with Magnetism |
| 9:40 am | Hussein Abu Jeib | JJ5 | (Student) Andreev Reflection Studies in GaMnAs/Nb Micro-Structures |
| 10:00 am | Break | | |
| 10:20 am | Xiaowei Wu | JJ6 | (Student) A Novel Nano-Scale Non-Contact Temperature Measurement Technique Based on Scanning Electron Microscopy |
| 10:40 am | Keun Woo Park | JJ7 | (Student) Thermal Characterization of Rare Earth/III-V Superlattice and Nanocomposite Structures Using Scanned Probe Microscopy |
| 11:00 am | Muriel Veron | JJ8 | TEM Automated Orientation and Phase Mapping of Nanomaterials |
| 11:20 am | Sergei Rouvimov | JJ9 | Transmission Electron Microscopy of Nano-Structures |
| 11:40 am | Subhasis Ghosh | JJ10 | (Late News) 20,000 $cm^2$/Vsec Carrier Mobility in Graphene Exfoliated from Solid Carbon in Aqueous Medium |

| KK: Thermoelectrics | | | Auditorium, McKenna Hall |
|---|---|---|---|
| 8:20 am | Matthew Lewis | KK1 | (Student) Thermoelectric Power Generation in a Dynamic Temperature Environment |
| 8:40 am | Pankaj Jha | KK2 | (Student) Giant Cross-Plane Seebeck Effect in Oxide Metal Semiconductor Superlattices for Spin-Magnetic Thermoelectric Devices |
| 9:00 am | Brandon Giles | KK3 | (Student) Opto-Thermal Measurements of Spin Seebeck Effect in Yttrium Iron Garnet |
| 9:20 am | Anne Glaudell | KK4 | (Student) Thermopower and Conductivity in Charge-Transfer Doped Semiconducting Polymers |
| 9:40 am | Pierre Poudeu | KK5 | Electronic and Phonon Transports in Bulk Quantum Dots Engineered Half-Heusler Nanocomposites |
| 10:00 am | Break | | |
| 10:40 am | James LeBeau | KK6 | Atomic Scale Structure and Chemistry of $Bi_2Te_3$/GaAs Thermoelectric Interfaces Grown by Metallorganic van der Waals Epitaxy |
| 11:00 am | Jay Maddux | KK7 | Temperature Dependence of the Properties of Thermoelectric Materials under Steady-State Isothermal Conditions |
| 11:20 am | Patrick Garrity | KK8 | Development of Thermoelectric Metamaterials with Enhanced Figure of Merit |

| LL: Narrow-Bandgap Materials and Devices | | | Room 138, DeBartolo Hall |
|---|---|---|---|
| 8:20 am | Dante DeMeo | LL1 | (Student) Strained Layer Superlattice Unipolar Barrier Diode Thermophotovoltaic Cells |
| 8:40 am | Kurt Eyink | LL2 | Evaluation of Thickness and Strain of Thin Planar Layers of InAs on GaAs(001) Using Spectroscopic Ellipsometry and TEM |
| 9:00 am | Orlando Romero | LL3 | (Student) Characterization of Surface Defects in III-Sb Epitaxy on GaSb Substrates |
| 9:20 am | Kristen Collar | LL4 | (Student) Characterization of Band Bending and the Surface Composition of InAs Native Oxide Layers Created with Molecular Beam Epitaxy Termination Layers of In and As |
| 9:40 am | Wenyong Liu | LL5 | Preparation of All Inorganic III-V (InP, InAs and InSb) Quantum Dots Inks for Solution-Processed Electronic and Optoelectronic Devices |
| 10:00 am | Break | | |
| 10:20 am | Meng Qi | LL6 | (Student) Strain Limitation Study of Tensile Strained Ge for Optical Device Applications |
| 10:40 am | Seyed Amir Ghetmiri | LL7 | (Student) Strain Engineering of High Quality CVD Grown GeSn Films for Optoelectronic Devices |
| 11:00 am | William O'Brien | LL8 | (Student) Freestanding Ge Membranes Hydrostatically Strained by Compressive $SiN_x$ Films toward a Direct Bandgap |
| 11:20 am | Dmitry Khokhlov | LL9 | Local Electron States Linked to the Quasi-Fermi Level in $Pb_{1-x}Sn_xTe$(In) Narrow-Gap Semiconductors |
| 11:40 am | B. Keen | LL10 | (Student, Late News) Molecular Beam Epitaxy of III-Bismides |

# EXHIBITOR PROFILES

## Exhibit Hours

**Wednesday**
10:00 am – 10:30 am
3:00 pm – 3:30 pm
6:00 pm – 8:00 pm

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

**Friday**
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Literature will also be available from AIP Publishing, Proton OnSite and SPI Supplies.