

**ELECTRONIC
MATERIALS
CONFERENCE**

and EXHIBITION

June 23-25, 2010

University of Notre Dame

Notre Dame, Indiana

***52nd Annual Forum on Preparation and
Characterization of Electronic Materials***

Featuring an Exhibition and Networking Events

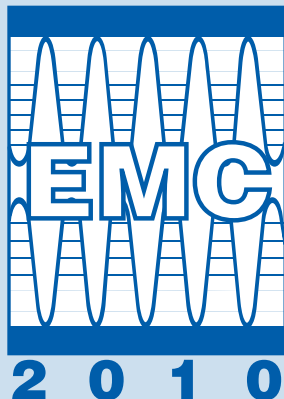
Register by June 4 and save \$100

Sponsored by

TMS

Electronic, Magnetic & Photonic Materials Division

www.tms.org/EMC.html



The Premier 52nd Annual Forum Electronic Materials Conference June 23-25, 2010 • University of Notre Dame Notre Dame, Indiana

It's time to get electrified! This is your opportunity to join your colleagues in a premier forum and advance your work in the electronic materials field.

Expect to network with hundreds of professionals and students from around the world hailing from all areas of electronic materials research and development. From scientists, engineers, researchers and professors to technicians, R&D managers and product managers, the wealth of knowledge will be immeasurable.

EMC 2010 will present both invited and contributed oral presentations on more than 30 diverse topics. This conference is coordinated with the Device Research Conference (DRC) and was developed with respect to the strong interaction between electronic materials and device research. This coordination provides for maximum exchange of information between attendees of both conferences.

Register online at www.tms.org/emc.html through June 4 and save \$100 off the full on-site registration fee.

Table of Contents

	Page
Networking and Social Events.....	3
Programming.....	3
Awards.....	3
Especially for Students.....	4
Proceedings & Publications.....	4
Accommodations.....	5
Transportation.....	5
Business Opportunities/Exhibition/Sponsorship.....	6
Registration (online only).....	7
General Information.....	7
Program At-A-Glance.....	8
Session Listing.....	9
Technical Program.....	10
Contact Information.....	Inside Back Cover

Networking and Social Events

Welcoming Reception

Wednesday, June 23, 6 to 8 p.m.

McKenna Hall, University of Notre Dame

Take advantage of this casual gathering to network with familiar colleagues or to meet new industry professionals! This is also a chance to interact with exhibitors in a casual setting to learn firsthand about their cutting edge products and services.

Banquet

Thursday, June 24, 6:30 to 9 p.m. • Northern Indiana Center for History and the Studebaker Museum

Dine in this magnificent historic site showcasing an elegant, 38-room Victorian mansion, a charming circa 1930's cottage, a gallery chronicling local history, a collage of Notre Dame history, a children's museum, and compelling displays. In addition, the Studebaker Museum will lead visitors through a century of automotive development.

Tickets include dinner, entrance to the museums, and round trip bus transportation to the University of Notre Dame. This event is free to both full conference and student registrants.

Guests and one-day registrants tickets are \$65 each and \$30 for children 12 and under.

Reserve tickets online at www.tms.org/emc.html or purchase them on-site at the EMC registration desk on Wednesday, June 23 until 5 p.m.

Break Refreshments

Coffee, tea and soft drinks will be offered in the exhibition and break areas during morning and afternoon session intermissions.

Programming Notes

Technical Sessions

The technical program commences with the plenary session on Wednesday, June 23 at 8:30 a.m. All sessions are held in DeBartolo Hall on the campus of University of Notre Dame. Session and paper titles are included in this brochure.

See page 9 for session and paper titles.

Program

Registrants will receive a complete program with abstracts of papers to be presented at the meeting at the on-site registration desk.

Late News Papers

Late News Papers will be considered through June 4, 2010 and must be submitted by accessing ProgramMaster at <http://ProgramMaster.org/EMC2010> and then selecting "Late News."

Audio/Video Recording Policy

TMS reserves the right to all audio and video reproductions of presentations at TMS sponsored meetings. Recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of TMS and the individual authors is strictly prohibited. Contact **TMS Technical Programming** at (724) 776-9000, ext. 212 to obtain a copy of the waiver release form.

Awards

John Bardeen Award

Established in 1994, this award recognizes an individual who has made outstanding contributions, and is a leader in the electronic materials field.



2010 Recipient: Eugene Haller
University of California – Berkeley;
Lawrence Berkeley National Laboratory

Citation: For seminal contributions to the materials science and technology of isotopically engineered semiconductors.

"Winning the 2010 John Bardeen Award of TMS is a great honor and a much appreciated recognition of the research contributions that my collaborators, students, postdocs and I have made. The award carries the name of one of my greatest heroes in the sciences, John Bardeen. I had the fortune to speak with John Bardeen on a few occasions. I was always impressed by his friendly and low-key style of discussing science. As a young postdoctoral fellow at the Rad Lab in Berkeley (now the Lawrence Berkeley National Laboratory), I discussed our ultra-pure Germanium research and development with John Bardeen who at the time was reviewing our work for the Atomic Energy Commission (now the Department of Energy). He listened carefully with an approving smile!"

About John Bardeen

John Bardeen's career of theoretical and experimental research set the foundation for the current state of understanding of electronic materials. Two areas in which Bardeen had great impact were the invention and development of the solid-state transistor and the theory that developed greater understanding of superconductivity.

How to Nominate a Colleague and for Additional Information

Pick up a nomination form at the EMC registration desk, or visit the TMS Web site at www.tms.org/Society/honors.html.

Especially for Students

Student Paper Awards

Awards of \$500 each are given to the authors of the top five percent of the student papers presented at EMC. Student papers are judged on both scientific content and oral presentation. Awards are funded by the Electronic Materials Committee and presented during the plenary session on **Wednesday, June 23**.

Student Travel Awards

Student authors who are presenting papers may be eligible for travel assistance. To apply, submit a letter no later than June 5, 2010 to **Mark Goorsky**, EMC General Chair at: goorsky@seas.ucla.edu

Student travel assistance is made possible through generous donations from the TMS Electronic, Magnetic, & Photonic Materials Division and the EMC Foundation.

ATTENTION STUDENTS!

Become a member of the Material Advantage student program for only \$25 and reap the benefits of affiliations with four varied materials organizations!

ACerS

The American Ceramic Society

AIST

Association for Iron & Steel Technology

ASM

ASM International

TMS

The Minerals, Metals & Materials Society

For full details on benefits, including scholarships and awards totaling more than \$600,000, visit www.materialadvantage.org.

MATERIALTM ADVANTAGE

The Student Program for Materials Science and Engineering

Everything Else Is Immaterial

Proceedings/Publication

The EMC does not publish formal conference proceedings; however, the *Journal of Electronic Materials* (*JEM*) encourages both presenters and attendees to submit manuscripts of their work at any time.

JEM and the EMC are seeking submissions for an upcoming special issue of the *Journal of Electronic Materials*



Group III Nitrides, SiC and ZnO

Guest editors: Grace Xing, Jamie Phillips, Joshua Caldwell, and Siddarth Rajan

Deadline: August 1, 2010

Journal site (with link to manuscript preparation instructions): www.springer.com/11664

Submission site: jems.edmgr.com

About JEM

JEM is a monthly archival technical journal of TMS and the Institute of Electrical and Electronics Engineers (IEEE). Articles are reviewed, selected and edited by peers who serve as voluntary members of the editorial board, associate editors, and guest editors.

JEM's Content

JEM is a forum for the rapid circulation of original research. It contains technical papers detailing critical new developments in the electronic materials field, as well as invited and contributed review articles on topics of current interest. The journal focuses on semiconductors for transistors, detectors, emitters, photovoltaics, and thermoelectrics. It also addresses dielectrics and contact metals, as well as materials for electronic packaging. Additionally, the journal publishes articles on nanofabrication, materials synthesis, crystal growth, electronic properties, optical properties, and reliability.

JEM Subscription

2010 and 2011 *JEM* issues will include manuscripts of papers presented at the 2010 Electronic Materials Conference. Individuals may subscribe to *JEM* by contacting Springer, the journal's publisher, at:

In North America

Telephone (800) 777-4643

E-mail journals-ny@springer.com

Outside North America

Telephone (212) 460-1500 or +49 (0) 6221-345-4303

E-mail subscriptions@springer.com

TMS and IEEE members receive a discount!

Accommodations

Residence Halls

On-campus residence hall lodging is available on a first-come, first-served basis, so early registrations and reservations are encouraged. On-campus room reservations **MUST** be made by **Thursday, May 20, 2010**. For accommodations details, visit:

<http://www.tms.org/Meetings/specialty/EMC10/housing.aspx>.

Single Occupancy \$48

Double Occupancy \$35 per person (maximum 2 per room)

The Residence Hall room reservations will only be accepted on-line at the following website: <http://cce.nd.edu/>

To pay by other means, please follow on-line instructions or contact the Notre Dame Conference Center at (574) 631-6691.

Hotels

- Blocks of rooms have been reserved at special conference rates at the hotels listed but will be released May 21. Thereafter, reservations can be obtained only as space is available.
- Make your reservations directly with the hotel as soon as possible and identify yourself as an EMC attendee.

The Morris Inn

Location: Notre Dame Avenue

(on campus directly across the street from the conference center)

Rate: \$132 single / \$152 double per night, plus 13% tax

(includes full, hot breakfast in Sorin's Dining Room)

Web: www.themorrisinn.com

Telephone: (574) 631-2000

The Inn at Saint Mary's

Location: South Bend

(on Saint Mary's College campus adjacent to the University of Notre Dame)

Rate: \$117 per night (king or 2 double beds) plus 13% tax (includes full, hot breakfast)

Web: www.innatsaintmarys.com

Telephone: (574) 232-4000 or 1-800-947-8627

For a list of alternative lodging options, please refer to the conference center website: <http://cce.nd.edu/hotels.shtml>

Transportation

By Air: The University of Notre Dame is a 15-minute drive from South Bend Regional Airport and a two-hour drive from Chicago's O'Hare Airport.

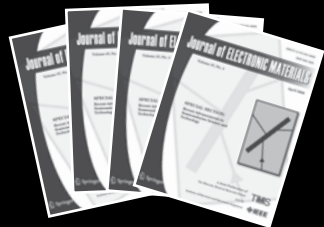
By Car: For driving directions, please visit:

<http://www.tms.org/Meetings/specialty/EMC10/housing.aspx>

THINGS TO DO AT NOTRE DAME

Whether you like the performing or visual arts, sports, music, or outdoor activities, South Bend has something for everyone. Located within driving distance from three major metropolitan areas—Chicago, Indianapolis, and Detroit—South Bend offers many of the same amenities of those larger cities within a more affordable environment.

Its small town reputation belies the many social and cultural activities that area residents enjoy: Broadway plays and first-rate musical and performance artists at the Morris Performing Arts Center; outdoor music and arts festivals at St. Patrick's County Park; kayaking on and picnicking near the East Race Waterway, and watching the South Bend Silver Hawks, a single-A baseball team for the Arizona Diamondbacks, at Covleski Stadium. All of these activities and more are available to visitors at far more reasonable prices than you would find in a larger city.



Journal of Electronic Materials Manuscript Submission

JEM employs an online manuscript submission and review system. To be considered for publication, authors must submit manuscripts electronically. Detailed submission guidelines are available from the publisher's Web site at <http://www.springer.com/11664>.

Find electronic materials related publications in the TMS Knowledge Resource Center!

3 ways to order:

Online <http://knowledge.tms.org> • E-mail publications@tms.org • Telephone (724) 776-9000, ext. 251, or (800) 759-4TMS

Business Opportunities

EMC Exhibition

Wanted: Suppliers of Electronic Materials Technology

Connect with 500 professionals from industry, government laboratories and academia searching for equipment, instrumentation, software, publications and services in electronic materials:

- Advanced thin-film characterization
- Chemical Vapor Deposition (CVD)
- Compound semiconductor materials
- Failure analysis
- GaAs and InP-based epitaxial wafers, substrates
- High performance purification
- High purity metalorganics
- III-V materials
- Materials characterization
- MOCVD
- Optoelectronics
- Sapphire substrates
- Scanning probe and electron microscopes
- Silicon heterostructures
- Ultra High Purity (UHP) metals, gas and chemical
- Wafer processing equipment
- Wide bandgap semiconductors

Exhibit Dates and Hours

Wednesday, June 23 • 9:30 a.m. - 1:30 p.m.; 3 - 4 p.m. and 6 - 8 p.m. • Thursday, June 24 • 10 a.m. to 1:30 p.m. and 3 - 4 p.m.

What You Receive as an Exhibitor:

- One full conference registration
- Company listing and hypertext link on Web site
- Company listing and description in the exhibition directory distributed on-site to all meeting attendees
- Guaranteed traffic with attendee events in exhibit area, including welcoming reception and coffee breaks
- Post-show report of meeting participants
- 8'x10' space (includes six-foot draped table; two chairs; wastebasket; standard electricity)
- Exhibition management services

Your cost: \$1,350 per 8' x 10' space.

Space reservations are accepted on a first-come, first-served basis. **Book your space now** - online at www.tms.org/EMC.html. Deadline is June 1.

Spotlight Your Company as a Corporate Sponsor!

As the exclusive sponsor of an activity at EMC, your company's name and logo take center stage before an audience of hundreds of professionals through:

Exclusive Visibility

- Signage
- EMC Web Site
- Conference Promotional Materials
- Conference Program

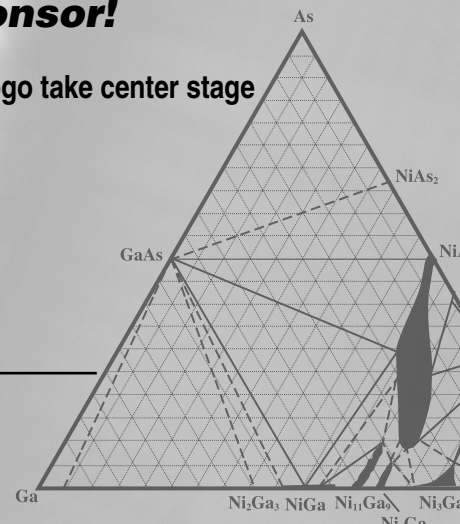
Exclusive Sponsorship Activities

- Welcoming Reception
- Coffee Breaks
- Continental Breakfast
- Thursday Night Banquet

For more information on sponsorship or the exhibition, contact TMS Partner Relations at:

Telephone (800) 759-4TMS / (724) 776-9000, ext. 257

E-mail exhibits@tms.org



General Information

Computer/Network Facilities

Free wireless Internet access is available for personal computers through ResNet, the University of Notre Dame's high-speed network wiring in all residence halls and public areas on campus. Guest ID's will be issued during registration.

Messages

Telephones and a message board will be located near the EMC registration desk on the first level of McKenna Hall. Messages will be posted on the board throughout the conference.


Dress

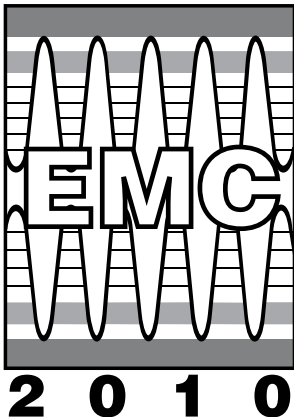
Casual clothing is in order with a sweater or light jacket occasionally needed for the evenings. Layered clothing is recommended for cooler days or in air-conditioned buildings. Comfortable walking shoes, a light raincoat and an umbrella are also recommended, as the university is essentially a walking campus.

Campus Smoking Policy

In accordance with St. Joseph County Ordinance #04-06 and LEED certification requirements, the University of Notre Dame prohibits smoking within 25 feet of all buildings and stadiums, as well as in all vehicles owned, leased or operated by the University.

Americans With Disabilities Act

 TMS strongly supports the federal Americans with Disabilities Act (ADA) which prohibits discrimination against, and promotes public accessibility for, those with disabilities. In support of, and in compliance with, ADA, we ask those requiring specific equipment or services to indicate their needs on the enclosed housing form or contact TMS Meeting Services in advance.



Registration

**Register before June 4
to save time and
\$100 off the on-site fee!**

Visit www.tms.org/EMC.html for secure online registration or to complete mail-in form.

Advance Registration Fees

Full Conference	\$455
One Day	\$405
Student	\$225

** Please note that registration fees increase by \$100 after the June 4 advance registration deadline.*

Your registration fee includes:

- Admission to All Technical Sessions
- Access to the Exhibition
- Wednesday Night Welcoming Reception
- Coffee Breaks
- Thursday Night Banquet*

**One-day registration does not include banquet dinner.*

Value for Your Cost

EMC is being coordinated with the Device Research Conference, also held at the University of Notre Dame, June 21 - 23.

Badges will be accepted for admittance to both conferences on Wednesday, June 23.

On-Site Registration* / Advance Registrant and Exhibitor Badge Pick-Up

McKenna Hall, First Level

Tuesday, June 22	3 to 5 p.m.
Wednesday, June 23.....	7:30 a.m. to 5 p.m.
Thursday, June 24	7:30 a.m. to 4 p.m.
Friday, June 25.....	7:30 to 10 a.m.

**On-site registration fees are higher than advance registration fees.*

Refund Policy

A request for a refund due to a cancellation must be made in writing and postmarked no later than June 4, 2010. Mail to: TMS, 184 Thorn Hill Road, Warrendale, PA 15086-7514 USA. A \$75 processing fee is charged for all cancellations. No refunds are issued after the deadline.

Room	Wednesday		Thursday		Friday	
	AM	PM	AM	PM	AM	
McKenna Hall		REGISTRATION on First Level: Tuesday: 3:00-5:00 PM Wednesday: 7:30 AM-5:00 PM Thursday: 7:30 AM-4:00 PM Friday: 7:30-10:00 AM		EXHIBITION: Wednesday: 9:30 AM-1:30 PM; 3:00-4:00 PM; 6:00-8:00 PM Thursday: 10:00 AM-1:30 PM; 3:00-4:00 PM		
	101	EMC Plenary Lecture / Student Awards				
	102	Session A: High-K Gate Dielectrics	Session G: Oxide Semiconductor Thin Film Transistors	Session M: Graphene - Materials and Characterization	Session U: Graphene and Nanotubes - Devices	Session DD: Oxide Semiconductor Heterojunction Diodes
	126	Session B: Non-Destructive Characterization	Session H: Materials and Devices for Flexible Electronics	Session N: Molecular Electronics and Chem / Bio Sensors	Session V: Quantum Dots, Boxes, and Wires	Session EE: Epitaxy Materials and Devices
	129	Session C: Nanoscale Characterization	Session I: Nanomagnetic and Spintronic Materials	Session O: SiC: Characterization and Growth	Session W: Semiconducting and Metallic Nanowires	Session FF: Si and Ge Nanowires
	131	Session D: Narrow Bandgap Semiconductor Bulk Materials and Devices	Session J: Thin Film Photovoltaics	Session P: One-Dimensional Photovoltaics	Session X: Narrow Bandgap Semiconductors: Infrared Detectors and Lasers	Session GG: Thermoelectrics and Thermionics
	138	Session E: Materials Integration: Wafer Bonding	Session K: III-Nitride Nanowires	Session Q: Oxide Thin Films	Session Y: III-N Nanostructures Session Z: Point and Extended Defects and Doping in Wide Bandgap Materials	Session HH: Semiconductor Processing, Surfaces and Contacts
	141			Session R: ZnO Growth and Doping	Session AA: Oxide Defects, Localized States, and Nanostructures	Session II: Heteroepitaxy on Silicon
	155	Session F: Silicon Carbide Devices	Session L: III-N HEMTs I	Session S: Light Emitting Diodes and Laser Diodes Session T: AlGaIn Growth and Devices	Session BB: III-V Novel Electronic Devices Session CC: III-N HEMTs II	Session JJ: Nonpolar-Semipolar III-Ns Session KK: Indium Nitride

Tuesday, June 22, 2010

Registration 3:00-5:00 PM McKenna Hall, First Level

Wednesday, June 23, 2010

Registration 7:30 AM-5:00 PM McKenna Hall, First Level
 Exhibits 9:30 AM-1:30 PM; 3:00-4:00 PM; & 6:00-8:00 PM McKenna Hall
 Welcoming Reception 6:00-8:00 PM McKenna Hall

EMC Plenary Session / Student Awards	8:20 AM	101	10
Session A: High-K Gate Dielectrics	10:00 AM	102	10
Session B: Non-Destructive Characterization	10:00 AM	126	10
Session C: Nanoscale Characterization	10:00 AM	129	10
Session D: Narrow Bandgap Semiconductor Bulk Materials and Devices	10:00 AM	131	11
Session E: Materials Integration: Wafer Bonding.....	10:00 AM	138	11
Session F: Silicon Carbide Devices	10:00 AM	155	11
Session G: Oxide Semiconductor Thin Film Transistors.....	1:30 PM.....	102	12
Session H: Materials and Devices for Flexible Electronics.....	1:30 PM.....	126	12
Session I: Nanomagnetic and Spintronic Materials	1:30 PM.....	129	13
Session J: Thin Film Photovoltaics.....	1:30 PM.....	131	13
Session K: III-Nitride Nanowires	1:30 PM.....	138	14
Session L: III-N HEMTs I.....	1:30 PM.....	155	14

Thursday, June 24, 2010

Registration 7:30 AM-4:00 PM McKenna Hall, First Level
 Exhibits 10:00 AM-1:30 PM; & 3:00-4:00 PM McKenna Hall
 Banquet 7:00-9:00 PM..... Northern Indiana Center for History and the Studebaker Museum

Session M: Graphene - Materials and Characterization	8:20 AM	102	15
Session N: Molecular Electronics and Chem / Bio Sensors	8:20 AM	126	15
Session O: SiC: Characterization and Growth.....	8:20 AM	129	16
Session P: One-Dimensional Photovoltaics.....	8:20 AM	131	16
Session Q: Oxide Thin Films.....	8:20 AM	138	17
Session R: ZnO Growth and Doping	8:20 AM	141	17
Session S: Light Emitting Diodes and Laser Diodes.....	8:20 AM	155	18
Session T: AlGaIn Growth and Devices.....	10:20 AM	155	18
Session U: Graphene and Nanotubes - Devices.....	1:30 PM.....	102	18
Session V: Quantum Dots, Boxes, and Wires	1:30 PM.....	126	19
Session W: Semiconducting and Metallic Nanowires	1:30 PM.....	129	19
Session X: Narrow Bandgap Semiconductors: Infrared Detectors and Lasers	1:30 PM.....	131	20
Session Y: III-N Nanostructures	1:30 PM.....	138	20
Session Z: Point and Extended Defects and Doping in Wide Bandgap Materials.....	3:30 PM.....	138	21
Session AA: Oxide Defects, Localized States, and Nanostructures	1:30 PM.....	141	21
Session BB: III-V Novel Electronic Devices.....	1:30 PM.....	155	21
Session CC: III-N HEMTS II	3:30 PM.....	155	22

Friday, June 25, 2010

Registration 7:30-10:00 AM McKenna Hall, First Level

Session DD: Oxide Semiconductor Heterojunction Diodes	8:20 AM	102	23
Session EE: Epitaxy Materials and Devices	8:20 AM	126	23
Session FF: Si and Ge Nanowires.....	8:20 AM	129	23
Session GG: Thermoelectrics and Thermionics.....	8:20 AM	131	24
Session HH: Semiconductor Processing, Surfaces and Contacts	8:20 AM	138	24
Session II: Heteroepitaxy on Silicon.....	8:20 AM	141	25
Session JJ: Nonpolar-Semipolar III-Ns.....	8:20 AM	155	25
Session KK: Indium Nitride.....	10:20 AM	155	26

EMC Plenary Session / Student Awards

Wednesday AM
June 23, 2010
Room: 101
Location: University of Notre Dame

8:20 AM Awards Ceremony

8:30 AM Plenary

Epitaxial Graphene: Designing a New Electronic Material: *Walter A. de Heer*¹; ¹Georgia Institute of Technology

9:20 AM Break

Session A: High-K Gate Dielectrics

Wednesday AM
June 23, 2010
Room: 102
Location: University of Notre Dame

Session Chairs: John Conley, Oregon State University; Peter Moran, Michigan Technological University

10:00 AM Invited

A1, The Electrical Properties of Metal/Gd₂O₃/Si Gate Stacks and Their Dependence on the Structure of the Oxide Layer: *Moshe Eizenberg*¹; Eran Lipp¹; ¹Technion-Israel Institute of Technology

10:40 AM Student

A2, Spin Dependent Trap Assisted Tunneling in Gd₂O₃ Dielectrics: *Brad Bittel*¹; P.M. Lenahan¹; E. Lipp²; M. Eizenberg²; ¹Pennsylvania State University; ²Technion-Israel Institute of Technology

11:00 AM

A3, Crystalline Lattice-Matched Ba_{0.7}Sr_{0.3}O on Si(001) as Gate Dielectric: *Herbert Pfnür*¹; Dirk Müller-Sajak¹; Alexander Cosceev¹; Karl Hofmann¹; ¹Leibniz Universität Hannover

11:20 AM

A4, Rare-Earth Scandates/Tin Gate Stack on High Mobility Strained SOI for Fully Depleted (FD) Mosfets: *Eylem Durgun Özben*¹; J. M. J. Lopes¹; A. Nichau¹; R. Luptak¹; Roeckerath¹; S. Lenk¹; A. Besmehn¹; B. Ghyselen¹; Q.-T. Zhao¹; J. Schubert¹; S. Mantl¹; ¹Jülich Research Center

11:40 AM

A5, Late News

Session B: Non-Destructive Characterization

Wednesday AM
June 23, 2010
Room: 126
Location: University of Notre Dame

Session Chairs: Kurt Eyink, Wright-Patterson AFB; Leonard Brillson, Ohio State University

10:00 AM

B1, Innovative Time-Resolved Optical Characterization Techniques for Monitoring of Carrier Dynamics in Wide Band Gap Semiconductors: *Kestutis Jarasiunas*¹; Tadas Malinauskas¹; Ramunas Aleksiejunas¹; Arunas Kadys¹; Saulius Nargelas¹; Vytautas Gudelis¹; ¹Vilnius University

10:20 AM

B2, Raman Characterization Methodologies Suitable for Determining Graphene Thickness and Uniformity: *David Tomich*¹; John Hoelscher¹; Jeongho Park¹; Bruce Claffin¹; Kurt Eyink¹; William Mitchel¹; ¹USAF/AFRL

10:40 AM Student

B3, Characterizing the RF Properties of Semiconductors under Optical Illumination: *Youssef Tawk*¹; Alex Albrecht²; Sameer Hemmady¹; Ganesh Balakrishnan²; Christos Christodoulou¹; ¹University of New Mexico; ²Center for High Technology Materials

11:00 AM Student

B4, Admittance Spectroscopy of GaSb(100) and ALD / PEALD Al₂O₃ Dielectric Interface with Various Surface Treatments: *Ashkar Ali*¹; Himanshu Madan¹; Mantu Hudait¹; Dalong Zhao¹; Devon Mourey¹; Thomas Jackson¹; Suman Datta¹; ¹The Pennsylvania State University

11:20 AM Student

B5, High Temperature Coefficient of Resistance Sputtered a-Ge for Uncooled Microbolometer Applications: *Hang-Beum Shin*¹; Myung-Yoon Lee¹; David John¹; Nikolas Podraza¹; Thomas Jackson¹; ¹The Pennsylvania State University

11:40 AM Student

B6, Temperature Dependence of the Lattice Constant of Popular III-Sb Binary and Quarternary Alloys: *Magnus Breivik*¹; Tron Arne Nilsen¹; Saroj Kumar Patra¹; Geir Myrvågnes¹; Espen Selvig²; Bjørn-Ove Fimland¹; ¹Norwegian University of Science and Technology (NTNU); ²Norwegian Defence Research Establishment (FFI)

Session C: Nanoscale Characterization

Wednesday AM
June 23, 2010
Room: 129
Location: University of Notre Dame

Session Chairs: John Schlager, NIST; Lincoln Lauhon, Northwestern

10:00 AM Student

C1, Pulsed-Laser Atom Probe Tomographic Analysis of Ge-Ge/Co/Mn Thin-Film Superlattices: *James Riley*¹; Daniel Perea²; Lincoln Lauhon¹; Frank Tsui³; ¹Northwestern University; ²Los Alamos National Laboratory; ³University of North Carolina

10:20 AM Student

C2, Atomic Scale Gate Electrode Formed by a Charged Defect on GaAs(110): *Donghun Lee*¹; Jay Gupta¹; ¹Ohio State University

10:40 AM

C3, Ordered Assemblies of Bimetallic Nanostructure Arrays Utilizing a Self-Assembled Disilicide Nanowire Template: *Talin Ayyazian*¹; Aniketa Shinde¹; Regina Ragan¹; ¹University of California-Irvine

11:00 AM Student

C4, Scanned Probe Characterization of Self-Assembled ErAs/GaAs Semimetal/Semiconductor Nanostructures Grown by Molecular-Beam Epitaxy: *Keun Woo Park*¹; Adam Crook¹; Hari Nair¹; Seth Bank¹; Edward Yu¹; ¹University of Texas at Austin

11:20 AM

C5, Carbon Nanotube Fibrils as Nanoneedles in Novel Scanning Probe Applications: *Haoyan Wei*¹; Minhua Zhao²; Bryan Huey³; Fotios Papadimitrakopoulos⁴; Harris Marcus³; ¹Washington State University; ²National Research Council Postdoc Fellow; ³Materials Science and Engineering Program, Department of Chemical, Materials and Biomolecular Engineering, Institute of Materials Science, University of Connecticut; ⁴Nanomaterials Optoelectronics

Laboratory, Polymer Program, Institute of Materials Science, Department of Chemistry, University of Connecticut

11:40 AM
C6, Late News

Session D: Narrow Bandgap Semiconductor Bulk Materials and Devices

Wednesday AM Room: 131
June 23, 2010 Location: University of Notre Dame

Session Chairs: Partha Dutta, Rensselaer Polytechnic Institute; Shekhar Guha, Wright Patterson Air Force Base

10:00 AM
D1, Review of Narrow Bandgap Semiconductor Based THz-Emitters: *Ingrid Wilke*¹; Suranjana Sengupta¹; Partha Dutta¹; ¹Rensselaer Polytechnic Institute

10:20 AM Student
D2, Electrical and Optical Studies of Melt Grown Optical Grade In_xGa_{1-x}P_y: *Jean Wei*¹; Yung Kee Yeo²; Jacob Barnes¹; Leo Gonzalez³; Shekhar Guha³; Robert Hengehold²; Geeta Rajagopalan⁴; ¹General Dynamics IT; ²Air Force Institute of Technology; ³Air Force Research Laboratory; ⁴United Semiconductors LLC

10:40 AM Student
D3, Electrical and Optical Properties of Bulk Ternary In_xGa_{1-x}As: *Jean Wei*¹; *Austin Berstrom*²; Yung Kee Yeo²; Shekhar Guha³; Leo Gonzalez²; Robert Hengehold²; Geeta Rajagopalan⁴; ¹General Dynamics IT; ²Air Force Institute of Technology; ³Air Force Research Laboratory; ⁴United Semiconductors LLC

11:00 AM Student
D4, Optical and Thermal Properties of III-V Bulk Ternary In_xGa_{1-x}Sb and In_xGa_{1-x}As Crystals: *Jean Wei*¹; *Shekhar Guha*²; Leo Gonzalez²; Jacob Barnes¹; Yung Kee Yeo³; Geeta Rajagopalan⁴; ¹General Dynamics IT; ²Air Force Research Laboratory; ³Air Force Institute of Technology; ⁴United Semiconductors LLC

11:20 AM
D5, Late News

11:40 AM
D6, Late News

Session E: Materials Integration: Wafer Bonding

Wednesday AM Room: 138
June 23, 2010 Location: University of Notre Dame

Session Chairs: Cindy Colinge, Tyndall National Institute; Mark Goorsky, University of California, Los Angeles

10:00 AM Student
E1, Investigation of Physisorbed and Chemisorbed Sulfur Species for GaAs Wafer Bonding: *Michael Jackson*¹; Mark Goorsky¹; ¹UCLA Materials Science & Engineering

10:20 AM Student
E2, AlGaAs/GaAs/GaN Wafer Fused HBTs with Ar Implanted Extrinsic Collectors: *Zongyang Hu*¹; Chuanxin Lian¹; Zhen Chen²; Yu-Chia Chang²; Huili(Grace) Xing¹; ¹University of Notre Dame; ²University of California, Santa Barbara

10:40 AM Student
E3, Effect of Surface Activation for Ge-Si Integration Using Wafer Bonding: *Ki Yeol Byun*¹; Isabelle Ferain¹; Ran Yu¹; Cindy Colinge¹; ¹Tyndall National Institute

11:00 AM Student
E4, Strain, Annealing, and Exfoliation in Hydrogen Implanted GaN for Layer Transfer Applications: *Eric Padilla*¹; Anthony Pangan¹; Michael Jackson¹; Mark Goorsky¹; ¹University of California, Los Angeles

11:20 AM
E5, Optimization of Adhesive Wafer Bonding for Silicon: *Sue Holl*¹; Srinivasulu Korrapati¹; Cindy Colinge²; ¹CSUS; ²Tyndall National Institute

11:40 AM
E6, Development of Surface Activation Based Nano-Bonding and Interconnect System: *Matiar Howlader*¹; Tadatomo Suga²; Akira Yamauchi³; ¹McMaster University; ²The University of Tokyo; ³Bondtech Co. Ltd.

Session F: Silicon Carbide Devices

Wednesday AM Room: 155
June 23, 2010 Location: University of Notre Dame

Session Chairs: Joshua Caldwell, Naval Research Laboratory; Michael Dudley, Suny-Stony Brook University

10:00 AM Invited
F1, Applications of SiC Power Devices – A Materials and Device Perspective: *Anant Agarwal*¹; ¹Cree, Inc

10:40 AM
F2, Review of the Dominant Scattering Mechanisms in SiC MOS Devices: *Jody Fronheiser*¹; Vinayak Tilak¹; Kevin Matocha¹; Greg Dunne¹; ¹GE Global Research

11:00 AM Student
F3, A Comparative Study of Thermal and Deposited Gate Oxides on 4H SiC: *Sarah Haney*¹; Veena Misra¹; Mark Johnson¹; Juan-Carlos Idrobo²; Anant Agarwal³; ¹NCSU; ²Oak Ridge National Laboratories; ³Cree

11:20 AM Student
F4, Magnetic Resonance Studies of 4H SiC MOS Structures: *Brad Bittel*¹; P.M. Lenahan¹; J. Fronheiser²; A. Lelis³; ¹Pennsylvania State University; ²GE Global Research; ³US Army Research Laboratory

11:40 AM
F5, Influence of Geometry on Silicon Carbide JBS Diodes Conduction: *Maxime Berthou*¹; ¹CNM

Session G:

Oxide Semiconductor Thin Film Transistors

Wednesday PM
June 23, 2010
Room: 102
Location: University of Notre Dame

Session Chairs: John Conley, Oregon State University; Tom Jackson, Pennsylvania State University

1:30 PM Student

G1, Temperature Dependent Measurements of ZnO TFTs: *Devin Mourey*¹; Dalong Zhao¹; Thomas Jackson¹; ¹Pennsylvania State University

1:50 PM Student

G2, Flexible ZnO Temperature Sensors on Plastic Substrate: *Dalong Zhao*¹; Devin Mourey¹; Thomas Jackson¹; ¹Pennsylvania State University

2:10 PM Student

G3, Improvement of InGaZnO₄ TFT Device Performance on Glass and Paper Substrates: *Erica Douglas*¹; Wantae Lim¹; Youngwoo Heo²; David Norton¹; Fan Ren¹; Stephen Pearton¹; ¹University of Florida; ²Kyungpook National University

2:30 PM

G4, Sputtering of ZnO Thin Films for TFT on Polyimide Substrates: Xiaotian Yang¹; Chieh-Jen Ku¹; *Faraz Khan*¹; Pavel Reyes¹; Chung Kuo¹; Yicheng Lu¹; ¹Rutgers University

2:50 PM Student

G5, Zinc-Tin-Oxide Thin-Film Transistors with Al₂O₃ and ZrO₂ Gate Dielectrics: *Josh Triska*¹; John Conley¹; Rick Presley¹; John Wager¹; ¹Oregon State University

3:10 PM Break

3:30 PM Student

G6, Study of CV and Admittance Characteristics of ALD High-K Dielectric ZnO Capacitors: *Jeffrey Siddiqui*¹; Du Nguyen²; Jamie Phillips¹; Kevin Leedy³; Burhan Bayraktaroglu³; ¹University of Michigan; ²Michigan State University; ³Air Force Research Laboratory

3:50 PM Student

G7, Transparent Rectifying Contacts - A New Concept for Transparent Electronics: *Alexander Lajn*¹; Heiko Frenzel¹; Holger von Wenckstern¹; Marius Grundmann¹; ¹Universität Leipzig

4:10 PM

G8, Transition from Hopping to Band-like Transport in Solution-Processed Amorphous Zinc Tin Oxide Thin-Film Transistors: *Chen-Guan Lee*¹; Brian Cobb¹; Ananth Dodabalapur¹; ¹University of Texas at Austin

4:30 PM Student

G9, A Comparative Study of the Effect of Heat Treatment on the Microstructure and Properties of Colloidal ITO Films and Cold-Sputtered ITO Films: *Salil Joshi*¹; Gregory Book¹; Rosario Gerhardt¹; ¹Georgia Institute of Technology

4:50 PM

G10, Optimization of Dielectric Passivation of ZnO-Based Schottky Diodes: *Holger von Wenckstern*¹; Stefan Müller¹; Matthias Schmidt¹; Florian Schmidt¹; Marius Grundmann¹; ¹Universität Leipzig

Session H:

Materials and Devices for Flexible Electronics

Wednesday PM
June 23, 2010
Room: 126
Location: University of Notre Dame

Session Chairs: Oana Jurchescu, Wake Forest University; Alberto Salleo, Stanford University

1:30 PM Student

H1, Molecular Contact Doping in Organic Thin-Film Transistors: *Frederik Ante*¹; Tobias Canzler²; Ansgar Werner²; Ute Zschieschang¹; Klaus Kern³; Hagen Klauk¹; ¹Max Planck Institute for Solid State Research, Stuttgart, Germany; ²Novald AG, Dresden, Germany; ³Ecole Polytechnique Fédérale de Lausanne, Switzerland

1:50 PM Student

H2, Gate Dielectric Thickness Dependence of OTFT Performance: *Yuanyuan Li*¹; Devin Mourey¹; Dalong Zhao¹; Haoyu Li¹; Marsha Loth²; John Anthony²; Thomas Jackson¹; ¹Pennsylvania State University; ²University of Kentucky

2:10 PM Student

H3, Arylene Diimide-Thiophene Semiconductors for n-Channel Field-Effect Transistors: *Rocio Ponce Ortiz*¹; Hui Huang¹; Antonio Facchetti¹; Tobin Marks¹; Yan Zheng²; Raul Blanco³; Helena Herrera³; Jose Segura³; ¹Northwestern University; ²Polyera Corporation; ³Complutense University of Madrid

2:30 PM Student

H4, Advanced X-Ray Peak Shape Analysis of Organic Semiconductors: Insights into Crystalline Size, Strain, Intragrain Disorder and Implications for Charge Transport: *Jonathan Rivnay*¹; Michael Toney²; Alberto Salleo¹; ¹Stanford University; ²Stanford Synchrotron Radiation Lightsource

2:50 PM

H5, Probing Stress Effects in Single Crystal Organic Transistors by Scanning Kelvin Probe Microscopy: *Lucile Teague*¹; Oana Jurchescu²; Curt Richter³; Sankar Subramanian⁴; John Anthony⁴; Thomas Jackson⁵; David Gundlach³; James Kushmerick³; ¹Savannah River National Laboratory; ²Wake Forest University; ³National Institute of Standards and Technology; ⁴University of Kentucky; ⁵The Pennsylvania State University

3:10 PM Break

3:30 PM Student

H6, Study on the Resistance of Stretchable Electrodes from Surface Morphology Aided by Computer Modeling: *Wenzhe Cao*¹; Patrick Goernl¹; Oliver Graudejus²; Joyelle Jones¹; Sigurd Wagner¹; ¹Princeton University; ²Arizona State University

3:50 PM Student

H7, Reverse Offset Roll Printing Using High Resolution Flat Printing Plate for Electronic Application: *Nackbong Choi*¹; Miltiadis Hatalis¹; Shahrukh A Khan¹; ¹Lehigh University

4:10 PM Student

H8, A Novel Hybrid Electrical and Chemical Barrier Material for Flexible Electronics: *Lin Han*¹; Katherine Song¹; Sigurd Wagner¹; Prashant Mandlik²; ¹Princeton University; ²Universal Display Corporation

4:30 PM Student

H9, Heavily Doped ZnO Thin Films for Hybrid Inorganic Organic Devices: Budhi Singh¹; *Zaheer Khan*¹; Subhasis Ghosh¹; ¹School of Physical Sciences

4:50 PM

H10, Late News

Session I: Nanomagnetic and Spintronic Materials

Wednesday PM
June 23, 2010

Room: 129
Location: University of Notre Dame

Session Chairs: Xinyu Liu, University of Notre Dame; Roberto Myers, Ohio State University

1:30 PM

I1, An Organic-Based Magnetic/Nonmagnetic Semiconductor as a Spin Polarized Carrier Source/Channel: Moving toward Organic Spintronics: *Jung-Woo Yoo*¹; V. N. Prigodin¹; Chia-Yi Chen¹; H. W. Jang²; C. W. Bark²; C. B. Eom²; A. J. Epstein¹; ¹The Ohio State University; ²University of Wisconsin

1:50 PM Student

I2, Effect of Perpendicular Magnetic Anisotropy on Emerging Magnetic Logic Devices: *Larkhoon Leem*¹; James Harris¹; ¹Stanford University

2:10 PM Student

I3, Observation of Antiferromagnetic Interlayer Exchange Coupling in a GaMnAs/GaAs:Be/GaMnAs Tri-Layer: *Jonathan Leiner*¹; Hakjooon Lee²; Taehee Yoo²; Sanghoon Lee²; Brian Kirby³; Xinyu Liu³; Jacek Furdyna⁴; Margaret Dobrowolska¹; ¹University of Notre Dame; ²Korea University; ³National Institute of Standards and Technology

2:30 PM

I4, Electrical Spin Injection in a Hybrid Organic/Inorganic Spin-Polarized Light Emitting Diode (Spin-LED): L. Fang¹; D. Duman¹; C.-Y. Chen¹; P. Truitt¹; A. Epstein¹; *Ezekiel Johnston-Halperin*¹; ¹Department of Physics, The Ohio State University

2:50 PM

I5, Properties of MnAs/GaMnAs/MnAs Magnetic Multilayers and Their Application to High Temperature Vertical Spin Valves: *Debashish Basu*¹; Hyun Kum¹; Wei Guo¹; Pallab Bhattacharya¹; ¹University of Michigan

3:10 PM Break

3:30 PM Student

I6, The Magneto-Optic Kerr Effect (MOKE) as a Measure of Strain-Induced Ferromagnetism in EuTiO₃ Grown by Molecular-Beam Epitaxy: *Lei Fang*¹; JuneHyuk Lee²; E. Vlahos³; X. Ke³; Y. W. Jung¹; L. Fitting Kourkoutis²; P. Ryan⁴; J. W. Freeland⁵; T. Heeg⁶; M. Roeckerath⁶; V. Goian⁷; M. Bernhagen⁸; R. Uecker⁸; C. Hammel¹; K. M. Rabe⁹; S. Kamba⁷; J. Schubert⁶; D. A. Muller²; C. J. Fennie²; V. Gopalan³; P. Schiffer³; D. Schlom²; *Ezekiel Johnston-Halperin*¹; ¹The Ohio State University; ²Cornell University; ³Pennsylvania State University; ⁴Ames Laboratory; ⁵Argonne National Laboratory; ⁶JARA-Fundamentals of Future Information Technologies, Research Centre; ⁷Na Slovance 2; ⁸Max-Born-Straße 2; ⁹Rutgers University

3:50 PM Student

I7, Magnetic Circular Dichroism (MCD) Studies on GaMnAs: *Kritsanu Tivakornsasithorn*¹; Xinyu Liu¹; M. Berciu²; J. Furdyna¹; M. Dobrowolska¹; ¹University of Notre Dame; ²University of British Columbia

4:10 PM Student

I8, Magneto-Optical Spectroscopy of MOVPE Grown Ferromagnetic Semiconductors: Giti Khodaparast¹; *Mithun M. Bhowmick*¹; Matthew Frazier¹; Bruce Wessels²; Yasuhiro Matsuda³; ¹Virginia Tech; ²Northwestern University; ³University of Tokyo

4:30 PM

I9, Micromagnetic Simulation of Focused Ion Beam Patterned Cobalt-Platinum Multilayers: Xueming Ju¹; Stephanie Wartenburg¹; Markus Becherer¹; Doris Schmitt-Landsiedel¹; Paolo Lugli¹; Wolfgang Porod¹; *Gyorgy Csaba*²; ¹Technical University of Munich; ²University of Notre Dame

4:50 PM Student

I10, Growth and Characterization of In_{1-x}Mn_xSb Ferromagnetic Semiconductor Alloys Using Metal Organic Vapor Phase Epitaxy (MOVPE): *Caitlin Feeser*¹; John Peters¹; Nidhi Parashar¹; Bruce Wessels¹; ¹Northwestern University

Session J: Thin Film Photovoltaics

Wednesday PM
June 23, 2010

Room: 131
Location: University of Notre Dame

Session Chairs: Steven Ringel, Ohio State University; Christian Wetzel, Rensselaer Polytechnic Institute

1:30 PM

J1, MBE Growth of Metamorphic InGaP on GaAs and GaP for Wide-Bandgap Photovoltaic Junctions: *John Simon*¹; Stephanie Tomasulo¹; Paul Simmonds¹; Minjoo Lee¹; ¹Yale University

1:50 PM Student

J2, In_xGa_{1-x}As Metamorphic Buffer Layers for Lattice Mismatched Multi-Junction Solar Cells: *Peter Dudley*¹; Jeremy Kirch¹; Toby Garrod¹; Sangho Kim¹; Luke Mawst¹; Katie Radavich¹; Steven Ruder¹; Thomas Kuech¹; Sabarni Palit²; Nam Jokerst²; ¹University of Wisconsin; ²Duke University

2:10 PM Student

J3, Quantum Dot n-i-p-i Photovoltaic Devices: *Michael Slocum*¹; Steven Polly¹; Chelsea Plourde¹; Christopher Bailey¹; Jeremiah McNatt²; Sheila Bailey²; Cory Cress³; David Forbes¹; Seth Hubbard¹; ¹Rochester Institute of Technology; ²NASA-Glenn Research Center; ³Naval Research Laboratory, Solid State Devices Branch

2:30 PM

J4, Characterization of a p-i-n Photovoltaic Cell Containing InAs/GaAs Quantum Dots: *Andrey Semichaevsky*¹; Harley Johnson¹; Simon Huang²; Rachel Goldman²; ¹UIUC; ²University of Michigan

2:50 PM

J5, MBE Growth of Lattice-Matched 6.1Å II-VI on GaSb Substrates: *Xinyu Liu*¹; D. Ding²; S. Wang²; S.-N. Wu²; X. Zhang²; J. Fan²; J.-J. Liu²; X. Lu²; S. Johnson²; D. Smith²; J. Furdyna¹; Y.-H. Zhang²; ¹University of Notre Dame; ²Arizona State University

3:10 PM Break

3:30 PM

J6, ZnO/ZnTeO/ZnTe Heterojunctions for Intermediate State Solar Cells: *Weiming Wang*¹; Jamie Phillips¹; ¹The University of Michigan

3:50 PM Student

J7, Copper Zinc Tin Sulfide Solar Cell Development by RF Sputtering from Binary Targets: *Jeffrey Johnson*¹; Ashish Bhatia¹; Haritha Nukala¹; Win Maw Hlaing Oo¹; Liz Lund¹; Mike Scarpulla¹; Loren Reith¹; ¹University of Utah

4:10 PM Student

J8, Chemical Vapor Deposition of CsSnI₃ Thin Films for Photovoltaic Applications: *Nicholas LiCausi*¹; Sunil Rao¹; Ishwara Bhat¹; Jim Wang²; Nemanja Vockic²; Matt Pfenninger²; John Kenney²; Zhuo Chen³; Kai Shum³; ¹Rensselaer Polytechnic Institute; ²OmniPV Inc.; ³The City University of New York

4:30 PM Student

J9, Exploring More Effective Catalysts for Metal-Induced Growth of Thin Film Si: *Peter Mersich*¹; Wayne Anderson¹; ¹University at Buffalo

W
E
D
N
E
S
D
A
Y

P
M

4:50 PM Student

J10, Enhanced Light Absorption in Thin-Film Silicon Solar Cells by Scattering from Sub-Surface Dielectric Nanoparticles: *James Nagel*¹; Michael Scarpulla¹; ¹University of Utah

Session K:

III-Nitride Nanowires

Wednesday PM
June 23, 2010

Room: 138
Location: University of Notre Dame

Session Chairs: Aric Sanders, NIST; Debdeep Jena, University of Notre Dame

1:30 PM Student

K1, Molecular Beam Epitaxy of Catalyst-Free InGaN/GaN Nanowires on (001) Silicon and Nanowire Light Emitting Diodes: *Wei Guo*¹; Meng Zhang¹; Pallab Bhattacharya¹; ¹University of Michigan

1:50 PM

K2, Photoluminescence of Bandgap-Graded InGaN Wires Grown by Molecular Beam Epitaxy: *Vladimir Protasenko*¹; Kevin Goodman¹; Thomas Kosel¹; Huili Grace¹; Debdeep Jena¹; ¹University of Notre Dame

2:10 PM

K3, Growth of Dislocation-Free and High-Indium-Content InGaN/GaN Coaxial Nanowires: *Qiming Li*¹; George Wang¹; ¹Sandia National Laboratories

2:30 PM

K4, Threshold Studies of Optically Pumped GaN Nanowire Lasers: *John Schlager*¹; Alexana Roshko¹; Aric Sanders¹; Kris Bertness¹; Norman Sanford¹; ¹NIST

2:50 PM

K5, GaN Nanowire MOSFETs with Fully Conformal Cylindrical Gates: *Paul Blanchard*¹; Kris Bertness¹; Todd Harvey¹; Aric Sanders¹; Norman Sanford¹; Steven George²; Dragos Seghete²; ¹National Institute of Standards and Technology (NIST); ²University of Colorado

3:10 PM Break

3:30 PM

K6, Formation Mechanisms and Kinetics of Negative Nanowires in GaN and ZnO Using In-Situ Transmission Electron Microscopes: *Bong-Joong Kim*¹; Eric Stach¹; ¹Purdue University

3:50 PM Student

K7, Self-Assembled GaN/AlN Nanowire Superlattices on Si toward Non-Polar Intersubband Photonics: *Santino Carnevale*¹; J. Yang¹; P. Phillips¹; M. Mills¹; R. Myers¹; ¹Ohio State University

4:10 PM

K8, HVPE Homoepitaxy of p-Type GaN on n-Type Catalyst Free GaN Nanowires: *Aric Sanders*¹; Norman Sanford¹; Paul Blanchard¹; Kris Bertness¹; John Schlager¹; Andrew Herrero¹; Christopher Dodson¹; Albert Davydov¹; Denis Tsvetkov¹; Abhishek Motayed¹; ¹National Institute of Standards and Technology (NIST)

4:30 PM

K9, Homoepitaxial Nucleation of GaN Nanowires in Grooves: *Alexana Roshko*¹; Kris Bertness¹; Todd Harvey¹; Aric Sanders¹; Matthew Brubaker¹; Devin Rourke¹; ¹NIST

4:50 PM

K10, Growth and Lift-off of High-Quality GaN Thin Films Using Self-Assembled Silica Microsphere Monolayers: *Qiming Li*¹; George Wang¹; ¹Sandia National Laboratories

Session L: III-N HEMTs I

Wednesday PM
June 23, 2010

Room: 155
Location: University of Notre Dame

Session Chairs: Huili Grace Xing, University of Notre Dame; Debdeep Jena, University of Notre Dame

1:30 PM

L1, Formation of Structural Defects in AlGaIn/GaN High Electron Mobility Transistors under Electrical Stress: *Prashanth Makaram*¹; Jungwoo Joh¹; Carl Thompson¹; Jesus Del Alamo¹; Tomas Palacios¹; ¹Massachusetts Institute of Technology

1:50 PM Student

L2, Electrical Properties of GaN/AlN/GaN Heterostructures: Presence of 2DHG: *Satyaki Ganguly*¹; Debdeep Jena¹; ¹University of Notre Dame

2:10 PM Student

L3, Study of Cause of G_m -Collapse for Higher Gate Voltages in N-Polar GaN HEMTs with Scaled GaN Channels: *Nidhi Nidhi*¹; Oliver Bierwagen¹; Sansaptak Dasgupta¹; David Brown¹; Stacia Keller¹; James Speck¹; Umesh Mishra¹; ¹University of California Santa Barbara

2:30 PM Student

L4, Polarization-Engineered Low-Leakage Buffers for Nitride HEMTs Grown by MBE: *Yu Cao*¹; Guowang Li¹; Ronghua Wang¹; Chuanxin Lian¹; Tom Zimmermann¹; Grace Xing¹; Debdeep Jena¹; ¹University of Notre Dame

2:50 PM Student

L5, The Influence of High-k Gate Dielectrics on Deep Traps in AlGaIn/GaN High Electron Mobility Transistors Measured by Deep Level Spectroscopy Methods: *Qilin Gu*¹; Aaron Arehart¹; Andrew Malonis¹; Omair Saadat²; Tomas Palacios²; Steven Ringel¹; ¹The Ohio State University; ²Massachusetts Institute of Technology

3:10 PM Break

3:30 PM

L6, PECVD-SiN, Si or Si/Al₂O₃-Capped ED-Mode AlN/GaN Inverters: *Tom Zimmermann*¹; Yu Cao¹; Guowang Li¹; Ronghua Wang¹; Patrick Fay¹; Greg Snider¹; Debdeep Jena¹; Huili Xing¹; ¹University of Notre Dame

3:50 PM Student

L7, Reduced Self-Heating in AlGaIn/GaN HEMTs Using Nanocrystalline Diamond Heat Spreading Films: *Marko Tadjer*¹; Travis Anderson²; Karl Hobart²; Tatyana Feygelson³; Joshua Caldwell²; Charles Eddy, Jr.²; Fritz Kub²; James Butler²; John Melngailis¹; ¹University of Maryland; ²Naval Research Laboratory; ³SAIC, Inc.

4:10 PM

L8, Demonstration of Enhancement Mode AlN/Ultrathin AlGaIn/GaN HEMTs Using Selective Wet Etching: *Travis Anderson*¹; Marko Tadjer²; Michael Mastro¹; Jennifer Hite¹; Karl Hobart¹; Charles Eddy¹; Fritz Kub¹; ¹Naval Research Laboratory; ²University of Maryland

4:30 PM Student

L9, Growth and Characterization of InGaIn Heterojunction Bipolar Transistors: *Zachary Lochner*¹; Hee Jin Kim¹; Suk Choi¹; Yi-Che Lee¹; Yun Zhang¹; Jae-Hyun Ryou¹; Shyh-Chiang Shen¹; Russell Dupuis¹; ¹Georgia Institute of Technology

4:50 PM Student

L10, High Temperature Transport Properties of GaN HEMTs with Various Heterostructure Designs: *Ronghua Wang*¹; Yu Cao¹; Guowang Li¹; Tom Zimmermann¹; Chuanxin Lian¹; Xiang Gao²; Shiping Guo²; Debdeep Jena¹; Huili Xing¹; ¹University of Notre Dame; ²IQE RF LLC

Session M:

Graphene - Materials and Characterization

Thursday AM
June 24, 2010

Room: 102
Location: University of Notre Dame

Session Chairs: Michael Spencer, Cornell University; Randall Feenstra, Carnegie Mellon University

8:20 AM Invited

M1, Material and Electronic Properties of CVD Graphene Grown on Ni and Cu then Transferred to Insulators: Helin Cao¹; Qingkai Yu²; Luis Jauregui¹; Deepak Pandey¹; Robert Colby¹; Jifa Tian¹; Nathan Guisinger³; Eric Stach¹; Steven Pei²; *Yong Chen*¹; ¹Purdue University; ²University of Houston; ³Argonne National Laboratory

9:00 AM

M2, Fabrication and Characterization of Graphene Materials Grown via CVD on Copper Based Substrates: *Michelle Kelly*¹; Kristof Tahy¹; M. Jane Fleming²; Barbara Raynal¹; Vladimir Protasenko¹; Huili Xing¹; Debdeep Jena¹; ¹University of Notre Dame; ²Saint Mary's College

9:20 AM Student

M3, Kinetic Limitations in the Formation of Graphene on the C-Face of SiC: *Luxmi Luxmi*¹; Nishtha Srivastava¹; Patrick Fisher¹; Randall Feenstra¹; ¹Carnegie Mellon University

9:40 AM Student

M4, Graphene to Graphane: Novel Electrochemical Conversion and Possible Applications: *Kevin Daniels*¹; Biplob Daas¹; Rui Zhang¹; John Weidner¹; Christopher Williams¹; Tangali Sudarshan¹; MVS Chandrashekar¹; ¹University of South Carolina

10:00 AM Break

10:20 AM

M5, Growth of Few Layer Graphene on C-Face SiC: *Virgil Shields*¹; MVS Chandrashekar¹; Shriram Shivaraman¹; Michael Spencer¹; Gary Tompa²; Nick Sbrockey²; ¹Cornell University; ²Structured Materials Industries, Inc.

10:40 AM

M6, Graphene Growth on SiC, SiO₂, and Sapphire with Carbon Addition: *Jeonghyun Hwang*¹; Virgil Shields¹; Chris Thomas¹; Shriram Shivaraman¹; Dong Hao¹; Moonkyung Kim¹; Michael Spencer¹; ¹Cornell University

11:00 AM

M7, Ultrafast Transient Absorption Microscopy Studies of Carrier Dynamics in Epitaxial Graphene: *Libai Huang*¹; Gregory Hartland¹; Li-Qiang Chu¹; L Luxmi²; Randall Feenstra²; Chuanxin Lian¹; Kristof Tahy¹; Huili Xing¹; ¹University of Notre Dame; ²Carnegie Mellon University

11:20 AM

M8, Comparison of Graphene Thickness Determination for MBE Grown Graphene on SiC Using Raman, XPS, and TEM: *David Tomich*¹; John Boeckl¹; Jeongho Park¹; John Hoelscher¹; Larry Grazulis¹; Kurt Eyink¹; Chip Clafin¹; William Mitchel¹; ¹Air Force Research Laboratory

11:40 AM

M9, Late News

Session N:

Molecular Electronics and Chem / Bio Sensors

Thursday AM
June 24, 2010

Room: 126
Location: University of Notre Dame

Session Chairs: Takhee Lee, GIST; Jay Gupta, Ohio State University

8:20 AM

N1, STM Studies of Hybrid Inorganic-Organic Molecular Magnets on an Ultrathin Insulating Film: *Taeyoung Choi*¹; Jay Gupta¹; ¹Ohio State University

8:40 AM Student

N2, Effect of Molecular Tilt Configuration and Interface Dipoles on Molecular Electronic Conduction: *Gunuk Wang*¹; Tae-Wook Kim¹; Jamin Ku¹; Seok-In Na¹; Gunho Jo¹; Yonghun Kim¹; Yun Hee Jang¹; Dong-Yu Kim¹; Takhee Lee¹; ¹GIST

9:00 AM Student

N3, Improvement of Transfer Characteristics in Carbon Nanotube Field-Effect Transistors with Au Nano Clusters: *Yasuki Yamamoto*¹; Yasuhide Ohno¹; Kenzo Maehashi¹; Kazuhiko Matsumoto¹; ¹Osaka University

9:20 AM

N4, Carbon Nanotube Field-Effect Transistor Biosensor with Schottky Barrier Control Gate Electrode: *Masuiro Abe*¹; Katsuyuki Murata²; Kazuhiko Matsumoto³; ¹National Institute of Advanced Industrial Science and Technology; ²Core Research for Evolutional Science and Technology, Japan Science and Technology Agency; ³The Institute of Scientific and Industrial Research, Osaka University

9:40 AM Student

N5, Breakdown Statistics and Nanowire Device Integration of Self-Assembled Nano Dielectrics: *Ruth Anne Schlitz*¹; KunHo Yoon¹; Sara Renfrew¹; Lisa Fredin¹; Young-Geun Ha¹; Tobin Marks¹; Lincoln Lauhon¹; ¹Northwestern University

10:00 AM Break

10:20 AM

N6, Functionalization Studies on GaN Nanowires: *Devin Rourke*¹; Christopher Dodson¹; Aric Sanders¹; Kristine Bertness¹; Norman Sanford¹; ¹NIST Boulder

10:40 AM Student

N7, Olefin Metathesis Reaction on GaN (0001) Surfaces: *Matthew Makowski*¹; Dmitry Zemlyanov²; Albena Ivanisevic¹; ¹Weldon School of Biomedical Engineering, Purdue University; ²Birck Nanotechnology Center, Purdue University

11:00 AM Student

N8, Protection of ZnO Nanowires for Liquid-Phase Sensing: *Ashley Mason*¹; Chien-Chih Huang¹; Saki Kondo¹; Myra Koesdjojo¹; Vincent Remcho¹; John Conley¹; ¹Oregon State University

11:20 AM Student

N9, Signal-to-Noise Ratio Improvement of Magnetoelectric Laminar Sensor by Multilayer Structure and Direct Integration with Advanced Microelectronics: *Zhao Fang*¹; Ninad Mokhariwale¹; Feng Li¹; Suman Datta¹; Qiming Zhang¹; ¹The Pennsylvania State University

11:40 AM

N10, Late News

Session O: SiC: Characterization and Growth

Thursday AM
June 24, 2010

Room: 129
Location: University of Notre Dame

Session Chairs: Robert Stahlbush, Naval Research Laboratory; Brett Hull, Cree, Inc.

8:20 AM

O1, Analysis of Dislocation Interactions in Low Dislocation Density, PVT-Grown, Four-Inch Silicon Carbide Single Crystals: *Michael Dudley*¹; Balaji Raghothamachari¹; Shayan Byrappa¹; Gloria Choi¹; ¹State University of New York at Stony Brook

8:40 AM

O2, Formation of a (5-1)-Bilayer-Height Complex Step-and-Terrace Structure on 4H-SiC (0001) by a Spiral Etching Process: *Jun Suda*¹; Tsunenobu Kimoto¹; ¹Kyoto University

9:00 AM

O3, Processes Controlling the Carrier Lifetime in n-4H-SiC Epilayers with Low $Z_{1/2}$ Concentrations: *Paul Klein*¹; Rachael Meyers-Ward¹; K.-K. Lew¹; Brenda VanMil¹; C.R. Eddy¹; D.K. Gaskill¹; A. Shrivastava²; T.S. Sudarshan²; ¹Naval Research Laboratory; ²University of South Carolina

9:20 AM

O4, Comparative Studies of Carrier Dynamics in 3C-SiC Layers Grown on Si and 4H-SiC Substrates: *Jawad ul Hassan*¹; Patrik Scajev¹; Kestutis Jarasiunas¹; Masashi Kato²; Anne Henry³; Peder Bergman³; ¹Vilnius University; ²Nagoya Institute of Technology; ³Linköping University

9:40 AM

O5, Expansion and Contraction of Stacking Faults in 4H-SiC: *Nadeemullah Mahadik*¹; Robert Stahlbush¹; Joshua Caldwell¹; Karl Hobart¹; ¹Naval Research Laboratory

10:00 AM Break

10:20 AM

O6, Influence of Stacking Fault Generation and Half Loop Array on Electrical Behavior of 4H-SiC 10 kV PiN Diodes: *Qingchun (Jon) Zhang*¹; Anant Agarwal¹; Robert Stahlbush²; Charles Scozzie³; Albert Burk¹; Michael OLoughlin¹; ¹CREE; ²Naval Research Laboratory; ³Army Research Laboratory

10:40 AM

O7, Reducing Basal Plane Dislocation Density in Nitrogen and Aluminum Doped 4H-SiC Epilayers: *Virginia Wheeler*¹; Brenda VanMil¹; Rachael Myers-Ward¹; Charles Eddy¹; Robert Stahlbush¹; Nadeemullah Mahadik¹; D. Kurt Gaskill¹; ¹Naval Research Laboratory

11:00 AM

O8, Improved Surface Morphology of 4H-SiC Homoepitaxial Layers Grown on Si-Face 4° off-Axis Substrates: *Swapna Sunkari*¹; Timothy Oldham¹; Janna Casady¹; Jeffrey Casady¹; ¹SemiSouth Laboratories, Inc.

11:20 AM Student

O9, High-Purity Semi-Insulating 4H-SiC Homoepitaxy at a High Growth Rate Using Dichlorosilane for High Power Devices: *Iftekhhar Chowdhury*¹; MVS Chandrashekar¹; Pawel Kaminski²; Roman Kozlowski²; Paul Klein³; Joshua Caldwell³; Kurt Gaskill³; Tangali Sudarshan¹; ¹University of South Carolina; ²Institute of Electronic Materials Technology; ³Naval Research Laboratory

11:40 AM

O10, Vanadium Doping Using VCl₄ Source during the Chloro-Carbon Epitaxial Growth of 4H-SiC: Bharat Krishnan¹; Siva Kotamraju¹; *Yaroslav Koshka*¹; ¹Mississippi State University

Session P: One-Dimensional Photovoltaics

Thursday AM
June 24, 2010

Room: 131
Location: University of Notre Dame

Session Chairs: Joan Redwing, Pennsylvania State University; Mike Scarpulla, University of Utah

8:20 AM

P1, Fabrication of Individual Silicon Nanowire Radial Junction Solar Cells: *Chito Kendrick*¹; S. Eichfeld¹; Y. Ke¹; X. Weng²; J. Redwing¹; X. Wang³; T. Mayer³; ¹Department of Materials Science and Engineering, Pennsylvania State University; ²Materials Research Institute, Pennsylvania State University; ³Department of Electrical Engineering, Pennsylvania State University

8:40 AM

P2, Wire Textured Multicrystalline Silicon Solar Cells: *Kejia Wang*¹; Oki Gunawan¹; Naim Moumen¹; George Tulevski¹; Hisham Mohamed²; Babak Fallah³; Emanuel Tutuc³; Supratik Guha¹; ¹IBM T.J. Watson Research Center; ²Egypt-IBM Nanotechnology Research Center Labs; ³University of Texas Austin

9:00 AM

P3, Efficiency Enhancements for Copper Contaminated Radial p-n Junctions over Planar p-n Junctions in Silicon: Akram Boukai¹; *Alec Talin*²; Gregg Gallatin²; Aaron Katzenmeyer³; Peidong Yang⁴; ¹University of Michigan; ²NIST; ³Sandia National Laboratories; ⁴UC Berkeley

9:20 AM Student

P4, Faceting and Disorder Effects in Nanowire Array Solar Cells: *Evan Pickett*¹; Erik Garnett¹; Yi Cui¹; James Harris¹; ¹Stanford University

9:40 AM Student

P5, Wafer Scale Si Nanowire Arrays for Photovoltaic Applications: *Yi Jing*¹; Ke Sun¹; Deli Wang¹; ¹University of California, San Diego

10:00 AM Break

10:20 AM Student

P6, Branched ZnO/Si Nanowire Heterostructure Based Photoelectrochemical Cell for Efficient Water Splitting: *Ke Sun*¹; Yi Jing¹; Banu Khaleida¹; Namsouk Park¹; Deli Wang¹; ¹University of California, San Diego

10:40 AM

P7, Solar Cells Based on ZnO/ZnS Core-Shell Nanowires Arrays: *Aurelien Du Pasquier*¹; Shamgzu Sun²; Elan Coleman²; Bruce Willner²; Gary Tompa²; ¹Rutgers State University; ²SMI, Inc.

11:00 AM Student

P8, Fabrication of Subwavelength Pillar Arrays on GaAs by Confined Self-Assembly Technique for Broadband Antireflection Coating: *Dae-Seon Kim*¹; Min-Su Park¹; Yon-Kil Jeong¹; Wu Lu¹; Jae-Hyung Jang¹; ¹Gwangju Institute of Science and Technology

11:20 AM Student

P9, Hybrid Solar Cell Based on Patterned Nanopillar/P3HT Heterojunction: *Giacomo Mariani*¹; ¹University of California, Los Angeles

11:40 AM

P10, Dissociation of Photo-Generated Excitons on Carbon Nanotubes at Type-II Heterojunctions: *Dominick Bindl*¹; Michael Arnold¹; ¹UW Madison

Session Q: Oxide Thin Films

Thursday AM
June 24, 2010

Room: 138
Location: University of Notre Dame

Session Chairs: Bruce Hinds, University of Kentucky; Pat Lenahan, Pennsylvania State University

8:20 AM

Q1, Pulsed-dc Reactive Sputtering Vanadium Oxide Thin Films for Microbolometers: *Bharadwaja Srowthi*¹; C. Venkatasubramanyam¹; N. Fieldhouse¹; B. Gauntt¹; O. Cabarcos¹; Myung Yoon Lee¹; S. Ashok¹; E. C. Dickey¹; T. N. Jackson¹; M. Horn¹; ¹Pennsylvania State University

8:40 AM Student

Q2, Defects in Low- κ Dielectrics and Etch Stop Layers for Use as Interlayer Dielectrics in ULSI: *Brad Bittel*¹; P.M. Lenahan¹; S. King²; ¹Pennsylvania State University; ²Intel Corp.

9:00 AM Student

Q3, Nanocluster and Nanocrystalline Si Trap Distributions within SiO₂/SiO₂/SiO₂ Field Oxides for Radiation-Tolerant Electronics: *Evan Katz*²; Zhichun Zhang¹; Hap Hughes²; Kwun-Bum Chung³; Gerry Lucovsky³; Leonard Brillson¹; ¹The Ohio State University; ²Naval Research Laboratory; ³North Carolina State University

9:20 AM Student

Q4, Nanoscale Depth-Resolved Electronic Properties of HfO₂/RPAN/Ge and HfSiON/RPAN/Ge Gate Dielectrics for Radiation-Tolerant Electronics: *Zhichun Zhang*¹; E. J. Katz¹; K.-B. Chung²; G. Lucovsky²; L. J. Brillson¹; ¹Ohio State University; ²North Carolina State University

9:40 AM Student

Q5, Nano-Gap Electrodes Formed at the Exposed Edge of Au/Al₂O₃/Au Tunnel Structures Grown by Atomic Layer Deposition: *Bing Hu*¹; Bruce J. Hinds¹; ¹University of Kentucky

10:00 AM Break

10:20 AM Student

Q6, Surface-Interface Conductivity in Thin Film Gd-Doped CeO₂: *Matthew Swanson*¹; Lakshmi Krishna¹; Natee Tangtrakarn¹; Madhana Sunder¹; P.D. Moran¹; ¹Michigan Technological University

10:40 AM

Q7, Growth of Heteroepitaxial SrRuO₃ Electrodes on CeO₂ Buffered R-Plane Al₂O₃ Substrates by RF Magnetron Sputtering: *Madhana Sunder*¹; Peter Moran²; ¹Bruker AXS; ²Michigan Technological University

11:00 AM Student

Q8, Evidence of Ferroelectricity Induced by Epitaxial Strain in Calcium Titanate Thin Films Grown by Molecular-Beam Epitaxy: *Charles Brooks*¹; Eftihia Vlahos¹; Michael Biegalski²; Carl-Johan Eklund³; Craig Fennie⁴; Karin Rabe³; Venkatraman Gopalan¹; Darrell Schlom⁴; ¹The Pennsylvania State University; ²Oak Ridge National Laboratory; ³Rutgers University; ⁴Cornell University

11:20 AM

Q9, Synchrotron Spectroscopy Detection of Spin-Polarized Bands and Hopping-Induced Mixed Valence for Ti and Sc in GdSc_{1-x}Ti_xO₃ for x = 0.18 and 0.25: *Gerald Lucovsky*¹; Leonardo Miotti¹; Karen Bastos¹; Carolina Amada²; Darrell Schlom³; ¹NC State University; ²Pennsylvania State University; ³Cornell University

11:40 AM

Q10, Application of Many Electron Charge Transfer Multiplet (CTM) Theory to Band Edge and Band Defect States in High-K Gate Dielectrics and Complex Functional Oxide Thin Films: *Gerald Lucovsky*¹; Leonardo Miotti¹; Chung Kwun-Bum¹; ¹NC State University

Session R: ZnO Growth and Doping

Thursday AM
June 24, 2010

Room: 141
Location: University of Notre Dame

Session Chairs: Yicheng Lu, Rutgers University; Takafumi Yao, Tohoku University

8:20 AM Student

R1, Nucleation Layer Based Optimization of MOCVD Grown ZnO by In Situ Laser Interferometry: *Jens-Peter Biethan*¹; Laurence Considine¹; Dimitris Pavlidis¹; ¹Technische Universität Darmstadt

8:40 AM Student

R2, Influence of Substrate Temperature and Post-Deposition Anneal on Material Properties of Ga-Doped ZnO Prepared by Pulsed Laser Deposition: *Robin Scott*¹; ¹Arizona State University

9:00 AM

R3, Epitaxial Electrochemical-Deposition of ZnO on Graphite and p-GaN Substrates: *Kazuyuki Uno*¹; Yoshinori Ishii¹; Ichiro Tanaka¹; ¹Wakayama University

9:20 AM Student

R4, Control of ZnO Epitaxial Growth via Focused Ion Beam Induced Damage in Lattice-Mismatched Substrates: *Blake Stevens*¹; Benjamin Myers²; Vinayak Dravid¹; Scott Barnett¹; ¹Department of Materials Science and Engineering, Northwestern University; ²NUANCE Center, Northwestern University

9:40 AM

R5, Properties of Nitrogen Molecules in ZnO: *Norbert Nickel*¹; Marc Gluba¹; ¹Helmholtz-Zentrum Berlin für Materialien und Energie

10:00 AM Break

10:20 AM

R6, High-Quality p-Type ZnO Layers Grown by Co-Doping of N and Te: Seunghwan Park¹; T. Minegishi¹; J.S. Park¹; I.H. Im¹; D.C. Oh²; T. Taishi¹; I. Yonenaga¹; M.N. Jung³; J.H. Chang³; *Takafumi Yao*¹; ¹Tohoku University; ²Hoseo University; ³Korea Maritime University

10:40 AM

R7, Magnetic Properties of Mn and N Doped ZnO: *Mathrubhutham Rajagopalan*¹; S. Ramasubramanian¹; J. Kumar¹; ¹Anna University

11:00 AM

R8, Effects of p-Type Doping on the ZnO Based Diluted Magnetic Semiconductor Thin Films: *Liping Zhu*¹; Xuetao Wang¹; Zhigao Ye¹; Zhizhen Ye¹; ¹Zhejiang University

11:20 AM Student

R9, Hydrothermal Synthesis of Wide Bandgap Be_xZn_{1-x}O Nanorods for Solar Blind Photodetection: *Ke Sun*¹; Shrey Prasad¹; Joe Lee²; Bob Olah³; Achyut Dutta³; Deli Wang¹; ¹University of California, San Diego; ²Tanner Research Inc; ³Banpil Photonic

11:40 AM Student

R10, Synthesis and Characterization of p-NiO/n-ZnO Heterojunction Diode by Spray Pyrolysis: *Namseok Park*¹; ¹UCSD

Session S: Light Emitting Diodes and Laser Diodes

Thursday AM Room: 155
June 24, 2010 Location: University of Notre Dame

Session Chairs: Russell Dupuis, Georgia Institute of Technology; Theeradetch Detchprohm, Rensselaer Polytechnic Institute

8:20 AM

S1, Effect of InAlN Electron Blocking Layer in Visible Light-Emitting Diodes on Quantum Efficiency Grown by Metalorganic Chemical Vapor Deposition: *Hee Jin Kim*¹; Suk Choi¹; Seong-Soo Kim¹; Jae-Hyun Ryou¹; P. Yoder¹; Russell Dupuis¹; Kwei Sun²; Alec Fischer²; Reid Juday²; Fernando Ponce²; ¹Georgia Institute of Technology; ²Arizona State University

8:40 AM Student

S2, Fabrication of GaN-Based Laser Diode and Laser Diode Facet Formation: *Wenting Hou*¹; Wei Zhao¹; Mingwei Zhu¹; Theeradetch Detchprohm¹; Christian Wetzel¹; ¹Rensselaer Polytechnic Institute

9:00 AM

S3, Performance Improvement of AlInGaN Visible Laser Diodes by Epitaxial Layer Design: *Jianping Liu*¹; Jeomoh Kim¹; Zachary Lochner¹; Seong-Soo Kim¹; Yun Zhang¹; Jae-Hyun Ryou¹; Shyh-Chiang Shen¹; P. Yoder¹; Russell Dupuis¹; Kwei Sun²; Alec Fischer²; Reid Juday²; Fernando Ponce²; ¹Georgia Institute of Technology; ²Arizona State University

9:20 AM

S4, Enhancement of the Light-Extraction Efficiency of GaN-Based Light-Emitting Diodes Using a Graded-Refractive-Index Layer: *Byung-Jae Kim*¹; Joona Bang¹; Sung Hyun Kim¹; Jihyun Kim¹; ¹Korea University

9:40 AM Student

S5, Nano-Fabrication of Green AlGaInN LEDs – Structural Wavelength Control and Enhanced Light Extraction: *Christoph Stark*¹; Theeradetch Detchprohm¹; Christian Wetzel¹; ¹Future Chips Constellation, and Department of Physics, Applied Physics, and Astronomy, Rensselaer Polytechnic Institute

10:00 AM Break

Session T: AlGaN Growth and Devices

Thursday AM Room: 155
June 24, 2010 Location: University of Notre Dame

Session Chairs: Theeradetch Detchprohm, Rensselaer Polytechnic Institute; Russell Dupuis, Georgia Institute of Technology

10:20 AM Student

T1, Polarization Induced p-Doped Nitride Quantum Well UV LEDs: *Jai Verma*¹; John Simon¹; Vladimir Protasenko¹; Debdeep Jena¹; ¹University of Notre Dame

10:40 AM

T2, Structural Characterization of Highly Conducting Al_xGa_{1-x}N (x > 50%) for Deep Ultraviolet Light Emitting Diode: *Joseph Dion*¹; Bin Zhang¹; Qhalid Fareed¹; Asif Khan¹; ¹Nitek, Inc.

11:00 AM

T3, Epitaxial Growth and Doping of AlGaIn Alloys on AlN Single Crystal Substrates: *Ramón Collazo*¹; Seiji Mita²; Jinqiao Xie²; Anthony Rice¹; James Tweedie¹; Rafael Dalmau²; Zlatko Sitar¹; ¹North Carolina State University; ²HexaTech, Inc.

11:20 AM Student

T4, Morphological Development of Homoepitaxial AlN Thin Films Grown by MOCVD: *Anthony Rice*¹; Ramon Collazo¹; Seiji Mita²; James Tweedie¹; Jinqiao Xie²; Rafael Dalmau²; Zlatko Sitar¹; ¹North Carolina State University; ²HexaTech, Inc.

11:40 AM Student

T5, Aluminum Gallium Nitride Alloys Grown via Metal Organic Vapor Phase Epitaxy Using Digital Alloy Growth Technique: *L. Rodak*¹; D. Korakakis¹; ¹West Virginia University

Session U: Graphene and Nanotubes - Devices

Thursday PM Room: 102
June 24, 2010 Location: University of Notre Dame

Session Chairs: Huili Grace Xing, University of Notre Dame; Debdeep Jena, University of Notre Dame

1:30 PM Student

U1, Sub-20 nm Patterning of Graphene Nanoconstrictions Using Nanosphere Lithography and Characterization of Its Electronic Properties: *Nathaniel Safran*¹; Michael Arnold¹; ¹University of Wisconsin-Madison

1:50 PM Student

U2, Carrier Transport in Graphene P-N Junctions: *Tian Fang*¹; Kristof Tahy¹; Aniruddha Konar¹; Huili Xing¹; Debdeep Jena¹; ¹University of Notre Dame

2:10 PM

U3, Epitaxial Graphene Materials Integration: Effects of Dielectric Overlayers on Structural and Electronic Properties: *Joshua Robinson*¹; Michael LaBella¹; Kathleen Trumbull¹; Xiaojun Weng¹; Randall Cavalero¹; Tad Daniels¹; Zachary Hughes¹; Matthew Hollander¹; Mark Fanton¹; David Snyder¹; ¹Pennsylvania State University EO Center

2:30 PM

U4, Comparison of Ballistic Performance of Graphene and Planar III-V MOSFETs for RF Low Voltage Applications: *Lingquan (Dennis) Wang*¹; Vincent Lee²; Francisco Lopez²; Yuan Taur²; Jeong Moon³; Peter Asbeck²; ¹University of California, San Diego/Global Foundries; ²University of California, San Diego; ³Hughes Research Laboratories

2:50 PM

U5, Graphene Fundamental Trade-offs and Asymmetric Bandgap Opening: *Frank Tseng*¹; Avik Ghosh¹; ¹University of Virginia

3:10 PM Break

3:30 PM

U6, Hall Effect Mobility of Epitaxial Graphene on Si-Face SiC: *Shin Mow*¹; John Boeckl¹; Jeongho Park¹; Kurt Eyink¹; David Tomich¹; John Hoelscher²; Lawrence Grazulis³; Steve Smith³; Weijie Lu⁴; William Mitchel¹; ¹Air Force Research Laboratory; ²Wright State University; ³University of Dayton Research Institute; ⁴Fisk University

3:50 PM Student

U7, Highly Efficient Photovoltaic Devices with Transparent Graphene Electrode and TiOX Layer: *Minhyeok Choe*¹; Byoung Hoon Lee¹; Gunho Jo¹; June Park²; Woojin Park¹; Sangchul Lee¹; Woong-Ki Hong¹; Maeng-Je Seong²; Yung Ho Kahng¹; Kwanghee Lee¹; Takhee Lee¹; ¹Gwangju Institute of Science and Technology; ²Chung-Ang University

4:10 PM Student

U8, Integrated Circuits Based on Carbon-Nanotube Transistors and Amorphous-Carbon Thin-Film Load Resistors: *Hyeyeon Ryu*¹; Daniel Kaelblein¹; Frederik Ante¹; Ute Zschieschang¹; Oliver Schmidt²; Hagen Klauk¹; ¹Max Planck Institute for Solid State Research; ²Chemnitz University of Technology

4:30 PM

U9, Late News

4:50 PM

U10, Late News

4:30 PM

V9, Enhancement of Luminescence Efficiency in InAs/GaAs Quantum Dots by Proton Irradiation: Subhananda Chakrabarti¹; Saumya Sengupta¹; *Subhananda Chakrabarti*¹; Shrikrishna Gupta²; ¹Indian Institute of Technology Bombay; ²Bhabha Atomic Research Centre

4:50 PM

V10, Late News

Session W:

Semiconducting and Metallic Nanowires

Thursday PM

June 24, 2010

Room: 129

Location: University of Notre Dame

Session Chairs: David Janes, Purdue University; Xiuling Li, University of Illinois

Session V:

Quantum Dots, Boxes, and Wires

Thursday PM

June 24, 2010

Room: 126

Location: University of Notre Dame

Session Chairs: James Merz, University of Notre Dame; Diana Huffaker, University of California, Los Angeles

1:30 PM

V1, Toward Conversion from Electron Pairs to Photon Pairs in Quantum Dots: *Ikuo Suemune*¹; Yasuhiro Idutsu¹; Makoto Takada¹; Hirotaka Sasakura¹; Hidekazu Kumano¹; ¹Hokkaido University

1:50 PM

V2, Tensile-Strained Self-Assembled III-V Nanostructures: *Paul Simmonds*¹; Minjoo Lee¹; ¹Yale University

2:10 PM Student

V3, Self-Assembled In_{0.5}Ga_{0.5}As Quantum Dots on GaP(001): *Yuncheng Song*¹; Paul Simmonds¹; Minjoo Lee¹; ¹Yale University

2:30 PM Student

V4, Time-Resolved Spectroscopy of Single Colloidal CdSe Nanowires with Picosecond Resolution: *Joseph Herzog*¹; Alexander Mintairov¹; James Merz²; ¹University of Notre Dame

2:50 PM

V5, Late News

3:10 PM Break

3:30 PM

V6, Resonant Periodic Gain InAs Quantum Dot VECSEL: *Alexander Albrecht*¹; Christopher Hains¹; Thomas Rotter¹; Andreas Stintz¹; Kevin Malloy¹; Ganesh Balakrishnan¹; ¹University of New Mexico

3:50 PM

V7, Quantum Dot Light Emitting Devices and Exciton Recombination Zone: *Seonghoon Lee*¹; ¹Seoul National University

4:10 PM Student

V8, Thermal Stability in Emission Peak in Multilayer InAs/GaAs Quantum Dot Heterostructure in Laser Application: Nilanjan Halder¹; Sourav Adhikary¹; *Subhananda Chakrabarti*²; ¹IIT Bombay

1:30 PM Student

W1, Single Crystalline Wurtzite GaAs Nanoneedles Epitaxially Grown on Highly Lattice-Mismatched Sapphire with Bright Luminescence: *Wai Son Ko*¹; Linus Chuang¹; Michael Moewe¹; Kar Wei Ng¹; Shanna Crankshaw¹; Thai-Truong Tran¹; Roger Chen¹; Connie Chang-Hasnain¹; ¹University of California, Berkeley

1:50 PM

W2, Twinning Superlattice in VLS Grown <110> Planar GaAs Nanowires Induced by Impurity Doping: *Xiuling Li*¹; Ryan Dowdy¹; Seth Fortuna¹; Donald Walko¹; Jian-Guo Wen¹; ¹University of Illinois

2:10 PM Student

W3, Photoluminescence of InGaAs Nano-Pillar Arrays on GaAs Substrate: *Joshua Shapiro*¹; Adam Scofield¹; Clayton Tu¹; Diana Huffaker¹; ¹UCLA

2:30 PM Student

W4, Synthesis and Characterization of GaAs/MnAs Core/Shell Nanowires: *Nicholas Dellas*¹; Jing Liang¹; B.J. Cooley¹; Dave Rench¹; Jeremy Cardellino¹; Nitin Samarth¹; Suzanne Mohnney¹; ¹Pennsylvania State University

2:50 PM Student

W5, Contact Laser Annealing Effects on Indium Oxide Nanowire Transistors: *Seongmin Kim*¹; Sunkook Kim¹; Chunghun Lee¹; Pornsak Srisungthitsunti¹; Pochiang Chen²; Chongwu Zhou²; Xianfan Xu¹; Minghao Qi¹; Saeed Mohammadi¹; Sanghyun Ju³; David Janes¹; ¹Purdue University; ²University of Southern California; ³Kyonggi University

3:10 PM Break

3:30 PM Student

W6, Vertical InSb Nanowire Arrays Electrodeposited into Porous Anodic Alumina Templates on Silicon Substrates: *Suprem Das*¹; Asaduzzaman Mohammad¹; Yong Chen¹; Timothy Sands¹; David Janes¹; ¹Purdue University

3:50 PM Student

W7, High Growth Rate and Control of Stacking Faults on InP Semiconductor: *Thalita Chiamonte*¹; Luiz Tizei¹; Daniel Ugarte¹; Mônica Cotta¹; ¹UNICAMP

4:10 PM

W8, Formation of Periodic Nanostructures through Kirkendall Constitutional Interdiffusion in Epitaxial Heterostructures: *Patrick Taylor*¹; Wendy Sarney¹; Venkataraman Swaminathan²; ¹US Army Research Laboratory; ²US Army ARDEC

4:30 PM Student

W9, Thermal Conductivity of Aluminum Nanowires near Room Temperature: Direct Measurements and Theory: *Nenad Stojanovic*¹; Sanjeeva Maithripala¹; Jordan Berg¹; Mark Holtz¹; ¹Texas Tech University

4:50 PM

W10, Simulation of the Influence of Grain Boundaries on Resistivity via the Wigner-Fokker-Planck Equation: *Richard Sharp*¹; Katayun Barmak¹; ¹Carnegie Mellon University

Session X:

Narrow Bandgap Semiconductors: Infrared Detectors and Lasers

Thursday PM
June 24, 2010

Room: 131
Location: University of Notre Dame

Session Chairs: L. Ralph Dawson, University of New Mexico; Mark Wistey, University of Notre Dame

1:30 PM

X1, Minority Carrier Lifetime in LWIR Type II Superlattice Detector Structures Using Time-Resolved Photoluminescence: *Blair Connelly*¹; Grace Metcalfe¹; Paul Shen¹; Kevin Clark²; Paul Pinsukanjana²; Michael Wraback¹; ¹U.S. Army Research Laboratory; ²Intelligent Epitaxy Technology, Inc.

1:50 PM Student

X2, MOCVD Growth of InAs/GaSb Type-II Superlattice Structures and Photodiodes for Mid-Infrared Detection: *Yong Huang*¹; Jae-Hyun Ryou¹; Russell Dupuis¹; Adam Petschke²; Martin Mandl²; Shun-Lien Chuang²; ¹Georgia Institute of Technology; ²University of Illinois at Urbana-Champaign

2:10 PM Student

X3, Investigation of Passivation Techniques on InAs/GaSb Strained Layer Superlattice Long Wave Infrared Detectors: *Maya Narayanan Kutty*¹; Elena Plis¹; Stephen Myers¹; Ha Sul Kim¹; Nutan Gautam¹; Ralph Dawson¹; Sanjay Krishna¹; ¹University of New Mexico

2:30 PM

X4, Structural Analysis of Type-II Superlattice Based Infrared Detectors Using XSTM and Dynamical XRD Simulation: *Changhyun Yi*¹; Michael Yakes¹; Edward Aifer¹; ¹Naval Research Laboratory

2:50 PM Student

X5, Investigation of Antimonide Infrared Detectors Based on the nBn Design: *Stephen Myers*¹; Arezou Khoshakhlagh¹; Elena Plis¹; Maya Kutty¹; Ha Sul Kim¹; Nutan Gautam¹; Brianna Klein¹; Ralph Dawson¹; Sanjay Krishna¹; ¹University of New Mexico

3:10 PM Break

3:30 PM Student

X6, Quaternary GaInAsSbP on GaAs Substrates Grown by Metal Organic Vapor Phase Epitaxy (MOVPE): *Toby Garrod*¹; Peter Dudley¹; Jeremy Kirch¹; Sangho Kim¹; Luke Mawst¹; Thomas Kuech¹; ¹University of Wisconsin-Madison

3:50 PM Student

X7, Growth of GaAs_{1-x}Bi_y/Al_{1-y}Ga_{1-y}As Multi-Quantum Well Structures on GaAs: *Takuma Fuyuki*¹; Yoriko Tominaga¹; Kazuya Yamada¹; Kunishige Oe¹; Masahiro Yoshimoto¹; ¹Kyoto Institute of Technology

4:10 PM Student

X8, Perforated (In)GaSb Quantum Wells on GaSb Substrates through the Use of As₂ Based In-Situ Etches: *P. Ahirwar*¹; T. J. Rotter¹; S Clark¹; C. P. Hains¹; A. R. Albrecht¹; L.R. Dawson¹; G. Balakrishnan¹; ¹Center for High Technology Materials, University of New Mexico

4:30 PM Student

X9, Antimonide VECSELs on AlGaAs DBRs: *P. Ahirwar*¹; *T. J. Rotter*¹; A. R. Albrecht¹; S. Clark¹; C.P. Hains¹; L. R. Dawson¹; G. Balakrishnan¹; J. V. Moloney²; ¹Center for High Technology Materials (CHTM), University of New Mexico; ²College of Optical Sciences, University of Arizona

4:50 PM Student

X10, Effect of Aluminum Composition on Current-Voltage Characteristics of AlGaSb/InAs Tunnel Junction: *Yeqing Lu*¹; Alan Seabaugh¹; Huili Xing¹; Tom Kosel¹; Siyuranga Koswatta²; Hanjun Zhu³; Kevin Clark³; Jenn-Ming Kuo³; Pinsukanjana Paul³; Patrick Fay¹; ¹University of Notre Dame; ²IBM T. J. Watson; ³IntelliEPI

Session Y:

III-N Nanostructures

Thursday PM
June 24, 2010

Room: 138
Location: University of Notre Dame

Session Chairs: Andrew Armstrong, Sandia National Laboratories; Alec Talin, NIST

1:30 PM Student

Y1, Dislocation Filtering in GaN Nanorods: *Robert Colby*¹; Zhiwen Liang¹; Isaac Wildeson²; Timothy Sands³; R. Garcia¹; Eric Stach¹; ¹Purdue University, School of Materials Engineering; ²Purdue University, School of Electrical and Computer Engineering; ³Birck Nanotechnology Center

1:50 PM Student

Y2, Threading Defect Elimination in GaN Nanostructures: *Ashwin Rishinaramangalam*¹; Stephen Hersee¹; Michael Fairchild¹; Lei Zhang²; Petros Varangis²; ¹The Center for High Technology Materials, The University of New Mexico; ²Nanocrystal Corporation

2:10 PM Student

Y3, Yellow-Orange Luminescence from III-Nitride Nanopyramid Heterostructures: *Isaac Wildeson*¹; David Ewoldt¹; Robert Colby¹; Zhiwen Liang¹; Dmitri Zakharov¹; R. Edwin Garcia¹; Eric Stach¹; Timothy Sands¹; ¹Purdue University

2:30 PM Student

Y4, Molecular Beam Epitaxial Growth and Characterization of InGaN/GaN Dot-in-a-Wire Nanoscale Heterostructures on Si: *Jiale Wang*¹; Yi-Lu Chang¹; Feng Li¹; Zetian Mi¹; ¹McGill University

2:50 PM Student

Y5, Electrochemical Etching of GaN and Its Applications: *Yu Zhang*¹; Qian Sun¹; Chris Yerino¹; Benjamin Leung¹; Qinghai Song¹; Coung Dang¹; Sangwan Ryu²; Hui Cao¹; Arto Nurmi³; Jung Han¹; ¹Yale University; ²Chonnam National University; ³Brown University

3:10 PM Break

Session Z:

Point and Extended Defects and Doping in Wide Bandgap Materials

Thursday PM
June 24, 2010

Room: 138
Location: University of Notre Dame

Session Chairs: Alec Talin, NIST; Andrew Armstrong, Sandia National Laboratories

3:30 PM

Z1, Luminescence Recombination Dynamics of Ytterbium Implanted GaN Epilayers: Wojciech Jadowski¹; *Jingzhou Wang*¹; Andre Anders²; ¹Ohio University; ²Lawrence Berkeley National Laboratory

3:50 PM

Z2, Energy Levels of Nd³⁺ Ions in In Situ Doped AlN: *Grace Metcalfe*¹; Eric Readinger¹; Ryan Enck¹; Paul Shen¹; Michael Wraback¹; ¹US Army Research Laboratory

4:10 PM

Z3, Correlation of InGaN Growth Parameters, Defects and MQW Radiative Efficiency for Blue to Green Emission: *Andrew Armstrong*¹; Mary Crawford¹; Daniel Koleske¹; Stephen Lee¹; ¹Sandia National Laboratories

4:30 PM Student

Z4, Proton-Irradiated AlGaIn/GaN HEMT at 5 MeV Protons: *Hong-Yeol Kim*¹; Jihyun Kim¹; Jaime Freitas, Jr.²; Michael Mastro²; ¹Korea University; ²US Naval Research Laboratory

4:50 PM

Z5, Effect of Traps Spatial Localization on GaN HEMT Static Characteristics: *Alessandro Chini*¹; Valerio Di Lecce¹; Michele Esposito¹; Gaudenzio Meneghesso²; Enrico Zanoni²; ¹Università di Modena e Reggio Emilia; ²Università di Padova

Session AA:

Oxide Defects, Localized States, and Nanostructures

Thursday PM
June 24, 2010

Room: 141
Location: University of Notre Dame

Session Chairs: Holger von Wenckstern, University Leipzig; Martin Allen, University of Canterbury

1:30 PM

AA1, Vacancy Defect and Defect Cluster Energetics in Ion-Implanted ZnO: *Leonard Brillson*¹; Yufeng Dong¹; Filip Tuomisto²; Andrej Kuznetsov³; Bengt Svensson³; ¹Ohio State University; ²Aalto University; ³University of Oslo

1:50 PM

AA2, O-H-Li-Complex in Hydrothermally Grown Single Crystalline ZnO: *Klaus Magnus Johansen*¹; Hallvard Haug¹; Pekka Tapio Neuvonen¹; Knut Erik Knutsen¹; Lasse Vines¹; Edouard V Monakhov¹; Andrej Yu. Kutnetsov¹; Bengt Gunnar Svensson¹; ¹University of Oslo

2:10 PM

AA3, Induced Gap States at Zinc Oxide Surfaces and Interfaces: M.W. Allen¹; J.G. Partridge¹; D.H.-S. Kim¹; *S.M. Durbin*¹; ¹University of Canterbury

2:30 PM

AA4, Optical Properties of Gd Implanted ZnO Single Crystals: *John Kennedy*¹; Peter Murmu¹; Andreas Markwitz¹; Ben Ruck²; Ruben Mendelsberg³; Roger Reeves⁴; P Malar⁵; Thomas Osipowicz⁵; ¹GNS Science; ²Victoria University of Wellington; ³The MacDiarmid Institute of Advanced Materials and Nanotechnology; ⁴University of Canterbury; ⁵National University of Singapore

2:50 PM

AA5, High-Resolution Laplace DLTS on Mg_xZn_{1-x}O PLD Thin Films: *Holger von Wenckstern*¹; Florian Schmidt¹; Kerstin Brachwitz¹; Matthias Schmidt¹; Christof Dietrich¹; Marius Grundmann¹; ¹Universität Leipzig

3:10 PM Break

3:30 PM Student

AA6, Observation of a Strong Polarization Induced Quantum-Confined Stark Effect in Mg_xZn_{1-x}O/ZnO Quantum Wells: *Matthias Brandt*¹; Holger von Wenckstern¹; Marko Stölzel¹; Alexander Müller¹; Gabriele Benndorf¹; Martin Lange¹; Jan Zippel¹; Jörg Lenzner¹; Christof Dietrich¹; Michael Lorenz¹; Marius Grundmann¹; ¹Universität Leipzig

3:50 PM

AA7, Low Temperature Electrochemical Growth of ZnO Nanobelts, Nanowalls, Nanospikes and Nanowires: Growth Mechanism and Field Emission Study: *Debabrata Pradhan*¹; Kam Leung¹; ¹University of Waterloo

4:10 PM Student

AA8, Synthesis and Field Emission Characterizations of Well-Aligned Single-Crystal Al-Doped ZnO Nanowires Grown at Low Temperature: *Po-Yu Yang*¹; Jyh-Liang Wang²; Wei-Chih Tsai³; Der-Ming Kuo³; Hau-Yuan Huang³; I-Che Lee¹; Chia-Tsung Chang¹; Sih-Yin Wang⁴; Shui-Jinn Wang³; Huang-Chung Cheng¹; ¹National Chiao Tung University; ²Ming Chi University of Technology; ³National Cheng Kung University; ⁴Chang Jung Christian University

4:30 PM Student

AA9, Correlation of ZnO Polar Surface Nanostructure with Native Point Defects: *Tyler Merz*¹; Daniel Doutt¹; Leonard Brillson¹; ¹The Ohio State University

4:50 PM Student

AA10, Evolution and Growth of Nanostructures on ZnO with Staged Annealing: *Daniel Doutt*¹; Tyler Merz¹; Leonard Brillson¹; ¹The Ohio State University

Session BB:

III-V Novel Electronic Devices

Thursday PM
June 24, 2010

Room: 155
Location: University of Notre Dame

Session Chairs: Andrew Allerman, Sandia National Laboratories; Michael Manfra, Purdue University

1:30 PM Student

BB1, Demonstration and Room Temperature Electrical Characteristics of a Nitride Hot Electron Transistor with GaN Base of 10 nm: *Sansaptak Dasgupta*¹; Nidhi Nidhi¹; A. Raman¹; J. S. Speck²; Umesh Mishra¹; ¹ECE Department UCSB; ²Materials Department, UCSB

1:50 PM Student

BB2, Novel Cs-Free GaN Photocathodes: Neeraj Tripathi¹; L. Bell²; Shouleh Nikzad²; Mihir Tungare¹; Puneet Suvarna¹; Ryan Vinson¹; *Fatemeh (Shadi) Shahedipour-Sandvik*¹; ¹University at Albany, State University of New York; ²Jet Propulsion Laboratory, California Institute of Technology

2:10 PM

BB3, Influence of MOVPE Growth Conditions on Intersubband Absorption in AlN-AlGa_xN Superlattices: *Andrew Allerman*¹; Jonathan Wierer¹; Qiming Li¹; Mary Crawford¹; Stephen Lee¹; ¹Sandia National Laboratories

2:30 PM Student

BB4, Engineering Ferromagnetism in Gd-Doped GaN Two-Dimensional Electron Gases: *Jing Yang*¹; D. Hoy¹; S. Carnevale¹; E. Uchaker¹; R. Myers¹; ¹Ohio State University

2:50 PM

BB5, Nearly Ideal Current-Voltage Characteristics of Schottky Barrier Diodes Directly Formed on GaN Free-Standing Substrates: *Jun Suda*¹; Kazuki Yamaji¹; Yuichirou Hayashi¹; Tsunenobu Kimoto¹; Kenji Shimoyama²; Hideo Namita³; Satoru Nagao³; ¹Kyoto University; ²Mitsubishi Chemical Corporation; ³Mitsubishi Chemical Group Science and Technology Research Center, Inc

3:10 PM Break

Session CC: III-N HEMTs II

Thursday PM
June 24, 2010

Room: 155
Location: University of Notre Dame

Session Chairs: Andrew Allerman, Sandia National Laboratories; Michael Manfra, Purdue University

3:30 PM Student

CC1, High Al Composition Al_{0.72}Ga_{0.28}N/AlN/GaN Heterostructures with High Mobility Two-Dimensional Electron Gases: *Guowang Li*¹; Yu Cao¹; Huili Xing¹; Debdeep Jena¹; ¹University of Notre Dame

3:50 PM Student

CC2, Two-Dimensional Electron Gas in In_xAl_{1-x}N/AlN/GaN Heterostructure Field-Effect Transistors Depending on Indium Composition: *Suk Choi*¹; Hee Jin Kim¹; Zachary Lochner¹; Bravishma Narayan¹; Yun Zhang¹; Shyh-Chiang Shen¹; Jae-Hyun Ryou¹; Russell Dupuis¹; ¹Georgia Institute of Technology

4:10 PM

CC3, Source-Drain Regrowth by MBE in Metal-Face AlN/GaN HEMTs: *Chuanxin Lian*¹; Yu Cao¹; Ronghua Wang¹; Guowang Li¹; Tom Zimmermann¹; Debdeep Jena¹; Huili Xing¹; ¹University of Notre Dame

4:30 PM Student

CC4, AlGa_xN/GaN High Electron Mobility Transistors for Large Current Operation Achieved by Selective-Area Growth Using Plasma-Assisted Molecular Beam Epitaxy: *Liang Pang*¹; Hui-Chan Seo¹; Patrick Chapman¹; Philip Krein¹; Jung-Hee Lee²; Kyekyoon Kim¹; ¹University of Illinois at Urbana-Champaign; ²Kyungpook National University

4:50 PM

CC5, Transport Studies of AlGa_xN/GaN Heterostructures with Variable SiN_x Passivant Stress: Tamara Fehlberg¹; Jason Milne¹; Gilberto Umana-Membreno¹; Stacia Keller²; Umesh Mishra²; Brett Nener¹; *Giacinta Parish*¹; ¹The University of Western Australia; ²University of California (Santa Barbara)

Session DD: Oxide Semiconductor Heterojunction Diodes

Friday AM
June 25, 2010

Room: 102
Location: University of Notre Dame

Session Chairs: Deli Wang, University of California, San Diego; Jamie Philips, University of Michigan

8:20 AM

DD1, Ultraviolet Photodetectors with Novel Oxide Thin Films: *Shizuo Fujita*¹; Takumi Ikenoue¹; Naoki Kameyama¹; Takayoshi Oshima¹; ¹Kyoto University

8:40 AM Student

DD2, Polarization-Sensitive Schottky Photodiodes Based on A-Plane ZnO/ZnMgO Multiple Quantum-Wells: *Gema Tabares*¹; Adrian Hierro¹; Christiane Deparis²; Christian Morhain²; Jean-Michel Chauveau²; ¹ISOM-Dept. Ingenieria Electrica, Universidad Politecnica de Madrid, Spain; ²CRHEA-CNRS

9:00 AM

DD3, A New Approach to Make ZnO-Cu₂O Heterojunctions for Solar Cells: *Aurelien Du Pasquier*¹; Ziqing Duan¹; Yicheng Lu¹; ¹Rutgers State University

9:20 AM Student

DD4, Double Heterojunction Metal-Semiconductor-Metal Photodetector Using ZnO/Si Structure: *Tingfang Yen*¹; Juhyung Yun¹; Sung Jin Kim¹; Alexander Cartwright¹; Wayne Anderson¹; ¹SUNY-Buffalo

9:40 AM Student

DD5, A Study of Indium Doped-ZnO/p-Si(111) Diode Characteristics with Various In Mole Fraction: *Jong Hoon Lee*¹; Hong Seung Kim¹; Bo Ra Jang¹; Ju Young Lee¹; Nak Won Jang¹; Bo Hyun Kong²; Hyung Koun Cho²; Won Jae Lee³; ¹Korea Maritime University; ²Sungkyunkwan University; ³Dong-eui University

10:00 AM Student

DD6, Effects of High - Energy Electron Irradiation on Pd/ZnO/Si MSM Photodetector: Conduction Mechanisms and Radiation Resistance: *Franklin Catalfamo*¹; Tingfang Yen¹; Juhyung Yun¹; Wayne Anderson¹; ¹University at Buffalo

Session EE: Epitaxy Materials and Devices

Friday AM
June 25, 2010

Room: 126
Location: University of Notre Dame

Session Chairs: Seth Bank, University of Texas, Austin; Archie Holmes, University of Virginia

8:20 AM Student

EE1, Overgrowth Investigation of Epitaxial Semimetallic Nanoparticles for Photonic Devices: *Adam Crook*¹; Hari Nair¹; Keun Park¹; Edward Yu¹; Seth Bank¹; ¹University of Texas at Austin

8:40 AM Student

EE2, Regrown InGaAs Tunnel Junctions for TFETs: *Guangle Zhou*¹; Haijun Zhu²; Paul Pinsukanjana²; Yung-Chung Kao²; Tom Kosel¹; Patrick Fay¹; Mark Wistey¹; Alan Seabaugh¹; Huili Xing¹; ¹University of Notre Dame; ²IntelliEPI

9:00 AM Student

EE3, Molecular Beam Epitaxy of Very Thin Fluoride Films on Ge(111) and Its Application to Resonant Tunneling Diodes: *Keita Takahashi*¹; Takao Oshita¹; Kazuo Tsutsui¹; ¹Tokyo Institute of Technology

9:20 AM Student

EE4, Hole Mobility Improvement in Strained InGaSb Quantum Well with Carbon Doping: *Chichih Liao*¹; K. Y. Cheng¹; ¹UIUC

9:40 AM Student

EE5, Growth and Thermal Conductivity of Polycrystalline GaAs Grown on CVD Diamond Using Molecular Beam Epitaxy: *Stephen Clark*¹; P. Ahirwar¹; F. Jaeckel¹; C. Hains¹; A. Albrecht¹; P. Schjetnan¹; T. Rotter¹; L. Dawson¹; G. Balakrishnan¹; P. Hopkins²; A. Phinney²; J. Hader²; J. Moloney³; ¹CHTM; ²Sandia National Laboratories; ³College of Optical Sciences UA

10:00 AM Break

10:20 AM

EE6, Thick HVPE Growth of Patterned Semiconductors for Nonlinear Optics: *Candace Lynch*¹; David Bliss¹; Vladimir Tassev¹; George Bryant¹; Cal Yapp²; ¹AFRL; ²Solid State Scientific Corp.

10:40 AM Student

EE7, Effects of Carrier Localization on Emission Spectra of Dilute GaAsN Materials Doped with Silicon: *Yan He*¹; A.M. Mintairov¹; J.L. Merz¹; Y. Jin²; R.S. Goldman²; I. Akimov³; T. Goedde³; D. Yakovlev³; ¹University of Notre Dame; ²University of Michigan; ³Technical University of Dortmund

11:00 AM Student

EE8, Fabrication and Characterization of Free-Standing InGaAs/GaAs Quantum Dot Microbelt-like Optical Resonators: *Feng Li*¹; Zetian Mi¹; ¹McGill University

11:20 AM

EE9, MBE Grown InGaAsSbN/GaSb Single Quantum Wells for Mid-Infrared Applications: *Sudhakar Bharatan*¹; Shanthi Iyer¹; Jia Li¹; Thomas Rawdanowicz²; ¹North Carolina A&T State University; ²North Carolina State University

11:40 AM

EE10, Late News

Session FF: Si and Ge Nanowires

Friday AM
June 25, 2010

Room: 129
Location: University of Notre Dame

Session Chairs: Diana Huffaker, University of California, Los Angeles; Chen Yang, Purdue University

8:20 AM Student

FF1, The Influence of the Catalyst on Dopant Incorporation during Si and Ge Nanowire Growth: *Justin Connell*¹; Eric Hemesath¹; Daniel Perea²; Zakaria Al Balushi³; Kwon Nam Sohn¹; Jiaying Huang¹; Lincoln Lauhon¹; ¹Northwestern University; ²Los Alamos National Laboratory; ³Pennsylvania State University

8:40 AM

FF2, Size Effects in Semiconductor Nanowire Synthesis at the Ultimate Limit: *Shadi Dayeh*¹; Eli Sutter²; Peter Sutter²; S. T. Picraux¹; ¹Los Alamos National Laboratory; ²Brookhaven National Laboratory

9:00 AM Student

FF3, Growth and Applications of Silicon/Germanium Axial Nanowire Heterostructures: *Cheng-Yen Wen*¹; Mark Reuter²; John Bruley²; Jerry Tersoff²; Suneel Kodambaka³; Eric Stach¹; Frances Ross²; ¹Purdue University; ²IBM; ³University of California, Los Angeles

9:20 AM Student

FF4, SiGe/Si Selective Etch Structures for Nanowire Release and Assembly: *Sharis Minassian*¹; Xiahua Zhong²; Xiaojun Weng³; Theresa Mayer²; Joan Redwing⁴; ¹Department of Chemical Engineering; ²Department of Electrical Engineering; ³Materials Research Institute; ⁴Department of Chemical Engineering, Department of Materials Science and Engineering, Materials Research Institute, The Pennsylvania State University

9:40 AM

FF5, Diffusion Formation of Nickel Silicides Contacts in Silicon Nanowires: Yuval Yaish¹; *Michael Beregovsky*¹; Alexander Katsman²; ¹Electrical Engineering, Technion; ²Materials Engineering, Technion

10:00 AM Break

10:20 AM Student

FF6, Comparative Study of Ni-Silicide and Germanide Formation in Contacts to Si and Ge Nanowires: *Nicholas Dellas*¹; Sharis Minassian¹; Joan Redwing¹; Suzanne Mohney¹; ¹Pennsylvania State University

10:40 AM Student

FF7, High Responsivity Vertical Si Nanowire Photodetector Arrays: *Yi Jing*¹; Cesare Soci¹; Ke Sun¹; Matt Chandransu¹; Atsushi Ohoka¹; Deli Wang¹; ¹University of California, San Diego

11:00 AM

FF8, Si Nanowire Mats for Large-Area Electronics: *William Wong*¹; Sourabh Raychaudhuri¹; Sanjiv Sambandan¹; Rene Lujan¹; Robert Street¹; ¹Palo Alto Research Center

11:20 AM

FF9, Jet-Printed and Dielectrophoretically Aligned Nanowires for Large Area Electronics: *Sourabh Raychaudhuri*¹; William Wong¹; Sanjiv Sambandan¹; Rene Lujan¹; Robert Street¹; ¹Palo Alto Research Center

11:40 AM

FF10, Late News

9:40 AM

GG5, Late News

10:00 AM Break

10:20 AM Student

GG6, Thermomagnetic Transport Properties of (Ag_xSbTe₂₋₁)₁₅(GeTe)₈₅ Thermoelectric Materials: *Yi Chen*¹; ¹Ohio State University

10:40 AM Student

GG7, Thermoelectric Properties of Sn-Rich Pb_{1-x}Sn_xTe Alloys Doped with Indium: *Yibin Gao*¹; Joseph Heremans¹; ¹The Ohio State University

11:00 AM Student

GG8, Incorporation of AgSbTe₂ to Pb_{1-x}Sn_xTe by Mechanical Alloying of End Compounds: *Aaron D. LaLonde*¹; Lakshmi Krishna¹; Eric D. Hintsala¹; P.D. Moran¹; ¹Michigan Technological University

11:20 AM Student

GG9, Electron Transport Properties of Mechanically Alloyed N-Type Pb_{1-x}Sn_xTe Thermoelectric Elements: *Lakshmi Krishna*¹; Aaron Lalonde¹; Eric Hintsala¹; Matthew Swanson¹; Peter Moran¹; ¹Michigan Technological University

11:40 AM

GG10, Late News

Session HH:

Semiconductor Processing, Surfaces and Contacts

Friday AM
June 25, 2010

Room: 138
Location: University of Notre Dame

Session Chairs: Douglas Hall, University of Notre Dame; Suzanne Mohney, Pennsylvania State University; Lisa Porter, Carnegie Mellon University

8:20 AM Student

HH1, Effect of Contact Modification on Charge Transport at Different Length Scales in Poly(3-Hexylthiophene)-Based Bottom-Contact Field-Effect Transistors: *Kumar Singh*¹; Tomasz Young¹; Toby Nelson¹; John Belot¹; Richard McCullough¹; Tomasz Kowalewski¹; Ponnusamy Nachimuthu²; Suntharampillai Thevuthasan²; Lisa Porter¹; ¹Carnegie Mellon University; ²Pacific Northwest National Laboratory

8:40 AM Student

HH2, Low Pressure Chemical Vapor Deposition of Conformal Boron Thin Films on Deep RIE-Etched Si Substrates: *Nicholas LiCausi*¹; Justin Clinton¹; Yaron Danon¹; James Lu¹; Ishwara Bhat¹; ¹Rensselaer Polytechnic Institute

9:00 AM Student

HH3, Assessment of the Passivation Capabilities of Two Different Covalent Modifications on GaP (100): *David Richards*¹; Dmitry Zemlyanov¹; Albena Ivanisevic¹; ¹Purdue University

9:20 AM Student

HH4, Comparison of Ga-Polar and N-Polar GaN by KOH Photoelectrochemical Etching: *Younghun Jung*¹; Fan Ren²; Soohwan Jang³; Jihyun Kim¹; ¹Korea University; ²University of Florida; ³Dankook University

9:40 AM

HH5, N-Type Electrodes for GaN-Based Vertical Light Emitting Diodes: Joon-woo Jeon¹; Seong-Han Park¹; Jihyung Moon²; June-O Song²; Gon Namgoong³; *Tae-Yeon Seong*¹; ¹Korea University; ²LG Innotek; ³Old Dominion University

Session GG:

Thermoelectrics and Thermionics

Friday AM
June 25, 2010

Room: 131
Location: University of Notre Dame

Session Chairs: Joshua Zide, University of Delaware; Peter Moran, Michigan Technological University

8:20 AM Student

GG1, Bulk-like Thermionic Energy Conversion Device Fabricated from Laminated Nanostructured Metal/Semiconductor Superlattices: *Jeremy Schroeder*¹; David Ewoldt¹; Polina Burmistrova¹; Robert Wortman¹; Timothy Sands¹; ¹Purdue University

8:40 AM Student

GG2, Epitaxial Growth of Transition Metal Nitrides on MgO via DC Magnetron Sputtering: *Robert Wortman*¹; Jeremy Schroeder¹; Polina Burmistrova¹; Laura Cassels²; Joshua Zide²; Timothy Sands¹; ¹Purdue University; ²University of Delaware

9:00 AM Student

GG3, Enhancement of Thermoelectric Efficiency in Si_{1-x}Ge_x/Si Heterostructures: *Md Hossain*¹; Harley Johnson¹; ¹University of Illinois at Urbana-Champaign

9:20 AM

GG4, Isothermal Method for Rapid, Steady-State Measurement of Thermoelectric Materials and Devices: *Patrick Taylor*¹; Sudhir Trivedi²; Witold Palosz²; ¹US Army Research Laboratory; ²Brimrose Corporation

10:00 AM Break

10:20 AM Student

HH6, In-situ Ohmic Contacts to p-InGaAs: *Ashish Baraskar*¹; Vibhor Jain¹; Mark Wistey²; Evan Lobisser¹; Brian Thibeault¹; Yong Ju Lee³; Arthur Gossard¹; Mark Rodwell¹; ¹University of California, Santa Barbara; ²University of Notre Dame; ³Intel Corporation

10:40 AM Student

HH7, Degradation of Ohmic and Schottky Contacts on InGaAs MHEMTs during Bias Stressing: *Erica Douglas*¹; Ke Hung Chen¹; Chih Yang Chang¹; Li-Cherng Leu¹; Chien-Fong Lo¹; Byunghwan Chu¹; Fan Ren¹; Stephen Pearton¹; ¹University of Florida

11:00 AM Student

HH8, Characterization of Thin InAlP Native Oxide Gate Dielectric Layers for GaAs MOSFET Applications: *Wangqing Yuan*¹; Douglas Hall¹; ¹University of Notre Dame

11:20 AM

HH9, Post-Growth InGaAsP Quantum Well Intermixing for High Saturation Power Semiconductor Optical Amplifiers: *Jonathan Klamkin*¹; Jason Plant¹; David Chapman¹; Douglas Oakley¹; Antonio Napoleone¹; Kevin Ray¹; Paul Juodawlkis¹; ¹Lincoln Laboratory, Massachusetts Institute of Technology

11:40 AM

HH10, Late News

10:00 AM Break

10:20 AM

II6, Silicon Nanostructures Ion Implanted with Carbon and Nitrogen as an Electron Emitting Device: *Damian Carder*¹; Andreas Markwitz¹; John Kennedy¹; ¹GNS Science

10:40 AM

II7, High-Quality (211)B CdTe on (211) Si Substrates Using Metal-Organic Vapor-Phase Epitaxy: *Sunil Rao*¹; Shashidhar Shintri¹; Justin Markunas²; Randolph Jacobs²; Ishwara Bhat¹; ¹Rensselaer Polytechnic Institute; ²U. S. Army RDECOM CERDEC

11:00 AM Student

II8, Metalorganic Vapor Phase Epitaxial Growth of (211)CdTe on Nanopatterned (211)Ge/Si Substrates Using Full Wafer Block Copolymer Lithography: *Shashidhar Shintri*¹; Sunil Rao¹; Huafang Li¹; Smita Jha²; C. Liu²; Thomas Kuech²; Ishwara Bhat¹; ¹Rensselaer Polytechnic Institute; ²University of Wisconsin-Madison

11:20 AM Student

II9, Effects of Ex-Situ Cycle Annealing on Dislocation Densities of HgCdTe/CdTe/Si Layers: *Stuart Farrell*¹; Gregory Brill²; Yuamping Chen²; Priyalal Wijewarnasuriya²; Rao Mulpuri¹; Nibir Dhar³; Karl Harris⁴; ¹George Mason University; ²U.S. Army Research Laboratory, Sensors and Electronic Devices Directorate; ³DARPA; ⁴Pennsylvania State Electro-Optics Center

11:40 AM

II10, Late News

Session II: Heteroepitaxy on Silicon

Friday AM
June 25, 2010

Room: 141
Location: University of Notre Dame

Session Chairs: Ralph Dawson, University of New Mexico; Ganesh Balakrishnan, University of New Mexico

8:20 AM Student

II1, Reduction in Operation Voltage of Light Emitting Diodes Fabricated in Si/III-V-N/Si Heterostructure: *Keisuke Yamane*¹; Shintaro Yamada¹; Yuzo Furukawa¹; Hiroshi Okada¹; Akihiro Wakahara¹; ¹Toyohashi University of Technology

8:40 AM

II2, GaN/AlN Heterostructures on Vertical {111} Fin Facets of Si (110) Substrates: *Mark Holtz*¹; Vladimir Kuryatkov¹; Wen Feng¹; Mahesh Pandikunta¹; J. Woo²; H. Harris²; D. Garcia³; Sergey Nikishin¹; ¹Texas Tech University; ²Texas A&M University; ³SVTC

9:00 AM Student

II3, 2 μm Thick Device Quality GaN on Si(111) Using AlGaIn Graded Buffer: *Benjamin Leung*¹; Qian Sun¹; Christopher Yerino¹; Yu Zhang¹; Jung Han¹; Hongwei Li²; Dong Lee²; Eric Armour²; Ajit Paranjpe²; ¹Yale University; ²Veeco Compound Semiconductor, Inc.

9:20 AM Student

II4, Compositionally-Graded Layers Composed of Tandem InGaAs InGaP Alloys and Pure GaAsSb Alloys to Engineer the InP Lattice Constant on GaAs Substrates: *Li Yang*¹; Mayank Bulsara¹; Kenneth Lee¹; Eugene Fitzgerald¹; ¹Massachusetts Institute of Technology

9:40 AM

II5, Characterization of Standard and Ferromagnetic Schottky Barriers on GaP/GaP and GaP/Si Epi-Layers: *Chris Ratcliff*¹; Tyler Grassman¹; Andrew Carlin¹; Mark Brenner¹; Jonas Beardsley¹; Jon Pelz¹; Steven Ringel¹; ¹Ohio State University

Session JJ: Nonpolar-Semipolar III-Ns

Friday AM
June 25, 2010

Room: 155
Location: University of Notre Dame

Session Chairs: Jae-Hyun Ryou, Georgia Institute of Technology; Christian Wetzel, Rensselaer Polytechnic Institute

8:20 AM Student

JJ1, Internal Quantum Efficiency of Polar and Non-Polar GaInN/GaN Multiple Quantum Wells: *Liang Zhao*¹; Yufeng Li¹; Theeradetch Detchprohm¹; Christian Wetzel¹; ¹Rensselaer Polytechnic Institute

8:40 AM Student

JJ2, Optical Polarization of Non-Polar GaInN/GaN LEDs: *Shi You*¹; Theeradetch Detchprohm¹; Mingwei Zhu¹; Wenting Hou¹; Christian Wetzel¹; ¹Rensselaer Polytechnic Institute

9:00 AM Student

JJ3, Anisotropic Carrier Mobility in GaN Quantum Well Grown in Non-Polar Direction: Polarization Induced Dipole and Interface Roughness Scattering: *Aniruddha Konar*¹; Tian Fang¹; Nan Sun¹; Debdeep Jena¹; ¹University of Notre Dame

9:20 AM

JJ4, MBE Growth of Nitrogen-Face Aluminum Nitride by Polarity Inversion Using Magnesium Overdoping: *Craig Moe*¹; Wendy Sarney¹; Anand Sampath¹; Michael Wraback¹; ¹U.S. Army Research Laboratory

9:40 AM

JJ5, Electro-Thermo-Mechanical Simulation of AlGaIn/GaN HFETs and MOSHFETs: *Anusha Venkatachalam*¹; William James¹; Samuel Graham¹; ¹Georgia Institute of Technology

10:00 AM Break

Session KK: Indium Nitride

Friday AM
June 25, 2010

Room: 155
Location: University of Notre Dame

Session Chairs: Thomas Myers, Texas State University; Steven Durbin, University of Canterbury

10:20 AM

KK1, Mg Doped InN and Search for P-Type InN: *Ke Wang*¹; Ryosuke Iwamoto¹; Tomohiro Yamaguchi¹; Kazuaki Kagawa¹; Tsutomu Araki¹; Yasushi Nanishi¹; Nate Miller²; Marie Mayer²; Joel W. Ager²; Kin Man Yu²; Wladek Walukiewicz²; ¹Ritsumeikan University; ²Lawrence Berkeley National Laboratory

10:40 AM Student

KK2, Dislocation Reduction via Epitaxial Lateral Overgrowth of InN by Selective-Area-Growth of RF-MBE: *Junpei Kamimura*¹; Katsumi Kishino¹; Akihiko Kikuchi¹; ¹Sophia University

11:00 AM

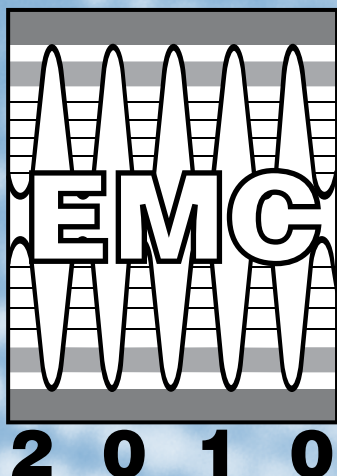
KK3, Growth Orientation Control of InN by Pulsed eXcitation Deposition: *Hiroshi Fujioka*¹; Tomoaki Fujii²; Atsushi Kobayashi²; Jitsuo Ohta²; Masaharu Oshima¹; ¹The University of Tokyo, JST-CREST; ²The University of Tokyo

11:20 AM Student

KK4, Optical and Electrical Transport Properties of Nearly Intrinsic and Si-Doped InN Nanowires: *Yi-Lu Chang*¹; Feng Li¹; Jiale Wang¹; Hieu Nguyen¹; Zetian Mi¹; ¹McGill University

11:40 AM Student

KK5, Growth Optimization of Si₃N₄ on GaN by Metal-Organic Chemical Vapor Deposition: *Brian Swenson*¹; Ramya Yeluri¹; Umesh Mishra¹; ¹University of California at Santa Barbara



Questions?

Registration

TMS Meeting Services
Telephone: (724) 776-9000, ext. 243
Fax: (724) 776-3770
E-mail: mtgserv@tms.org

Exhibition

Trudi Dunlap
TMS Director of Partner Relations
Telephone: (724) 776-9000, ext. 275
E-mail: tdunlap@tms.org

Logistics

Michele Sawka
TMS Meetings Specialist
Telephone: (724) 776-9000, ext. 213
Fax: (724) 776-3770
E-mail: msawka@tms.org

Technical Program

Mark Goorsky, EMC General Chair
University of California, Los Angeles
Telephone (310) 206-0267
Fax: (310) 206-7353
E-mail: goorsky@seas.ucla.edu

Christian Wetzel, EMC Program Chair
Rensselaer Polytechnic Institute
Telephone: (518) 276-3755
Fax: (518) 276-8042
E-mail: wetzel@rpi.edu

Device Research Conference

David Gundlach
National Institute of Standards
and Technology
Tel: (301) 975-2048
Fax: (301) 975-8069
E-mail: david.gundlach@nist.gov

About TMS

The Minerals, Metals & Materials Society (TMS) is a professional organization that encompasses the entire range of materials and engineering, from minerals processing and primary metals production to basic research and the advanced applications of materials. If at any time before, during or after the symposium you would like to offer suggestions or comments, your input is always welcome. TMS is committed to environmental responsibility as we fulfill our mission to promote global science and engineering by going green at our headquarters, conferences and through membership communication. Join us by reducing, reusing and recycling!

For more information on TMS membership, please contact **Bryn Simpson, Member Services Manager** at:
bsimpson@tms.org
(800) 759-4867 ext. 259 (U.S. and Canada Only)
(724) 776-9000 ext. 259 (elsewhere)

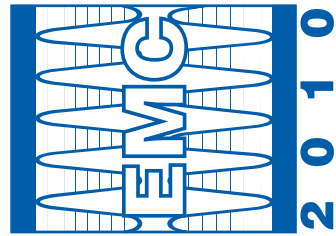


TMS

184 THORN HILL ROAD
WARRENDALE, PA 15086-7514
USA

www.tms.org

PRESORTED
FIRST-CLASS MAIL
U.S. POSTAGE PAID
WARRENDALE, PA
PERMIT NO. 16



Register before June 4 and Save!