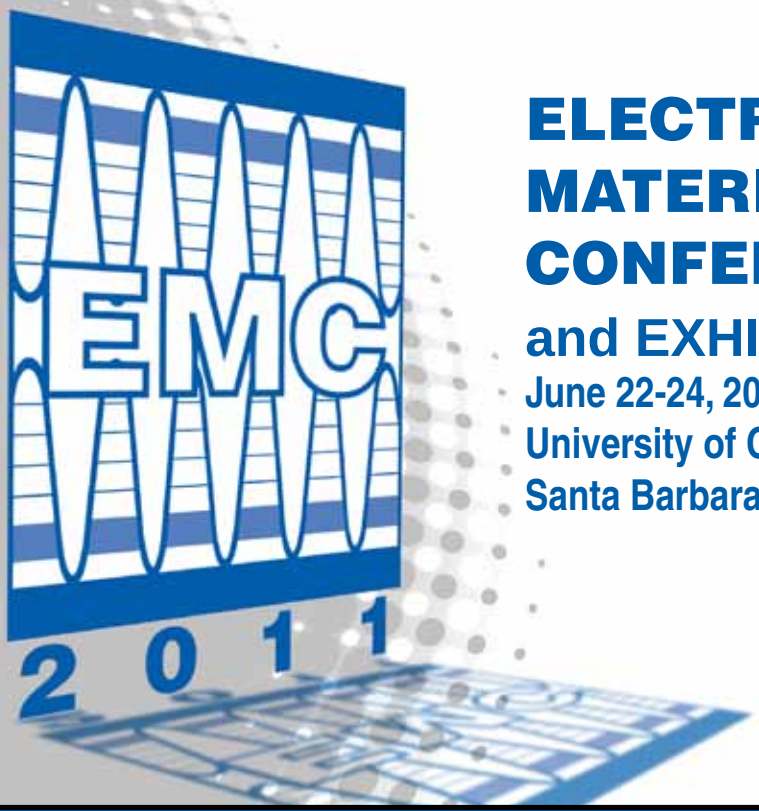
PROGRAM PREVIEW




# ELECTRONIC MATERIALS CONFERENCE

## and EXHIBITION

June 22-24, 2011
University of California – Santa Barbara
Santa Barbara, California

## *53rd Annual Forum on Preparation and Characterization of Electronic Materials*

**Register by June 3 and save $100!**

Sponsored by

TMS FOUNDATION

**www.tms.org/EMC.html**

# The Premier 53rd Annual Forum Electronic Materials Conference

## June 22-24, 2011
## University of California – Santa Barbara
## Santa Barbara, California

This is your opportunity to gather with your colleagues during this premier annual forum to advance your work in the electronic materials field.

Expect to network with hundreds of scientists, engineers, researchers, technicians, research and development managers, product managers, and students from around the world who are actively engaged or interested in electronic materials research and development.

**EMC 2011** will spotlight both invited and contributed podium presentations on over 30 diverse topics.

Because of the strong interaction between electronic materials and device research, the conference is presented in conjunction with the Device Research Conference (DRC), also held at the University of California – Santa Barbara on June 20-22. This coordination provides an opportunity for the maximum exchange of information between attendees of both conferences.

**Register online at www.tms.org/EMC.html by June 3, 2011 and save $100 off the on-site fee.**

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## Register by June 3 to Save $100 Off the On-Site Fee

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

## REGISTRATION

### Advance Registration Fees

| | |
|---|---|
| Full Conference | $460 |
| One Day | $410 |
| Student | $205 |

** Please note the registration fees will increase by $100 after the June 3 advance registration deadline.*

### Your registration fee includes:

- Admission to All Technical Sessions
- Access to the Exhibition
- Wednesday Night Welcoming Reception
- Coffee Breaks
- Gainey Vineyard Event

### Value for Your Cost

**EMC** is being coordinated with the Device Research Conference, also held at the University of California - Santa Barbara from June 20 to 22. Badges will be accepted for admittance to both conferences on Wednesday, June 22.

### Refund Policy

A request for a refund due to a cancellation must be made in writing and postmarked no later than June 3, 2011. 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.

## PROGRAMMING NOTES

### Technical Sessions

The technical program commences with a plenary session on Wednesday, June 22 at 8:30 a.m. in the University/ Corwin Pavilion. All sessions are held on the campus of the University of California, Santa Barbara. See page 7 for the preliminary technical program.

### Program

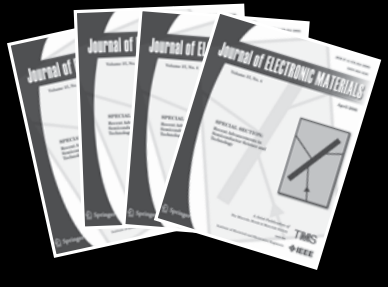
Registrants will receive a complete program at the on-site registration desk containing abstracts of papers presented at the meeting

### Late News Papers

Late News Papers will be considered through June 3 and must be submitted by accessing the Abstract Submissions link in the ProgramMaster box.

### 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. 227 to obtain a copy of the waiver release form.




## *Journal of Electronic Materials* Manuscript Submission

*JEM* employs an on-line 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**.

## ACCOMMODATIONS

### Residence Hall

On-campus accommodations will be available on a first-come, first-served basis. Reservations may be made online at **http://www.housing.ucsb.edu/conferences/web_reg/drc-emc-housing-2011.htm.**

UCSB residence halls and dining facilities are a short walk from the session meeting rooms and the beach. Residence Hall accommodations are either single or double occupancy, with single rooms reserved on a first request basis. Restroom and shower facilities are located on each floor. Lodging includes washcloth/ towel daily room service only. Please book one of the hotel blocks if you will be traveling with children.

If you have questions regarding on-campus housing, please contact:

Sally Vito
Campus Conference Services
University of California
Santa Barbara, CA 93106-6120
Phone: (805) 893-6028
Fax: (805) 893-6018
Email: svito@housing.ucsb.edu

### Off-Campus Accommodations

Blocks of rooms have been reserved at special conference rates for the hotels listed below and will be released by mid-May. After that time, reservations can be obtained only on a space available request. Rooms are available for EMC, DRC or both, Sunday through Thursday night if you identify yourself as an attendee. You may also stay Friday or Saturday night if you request it at the time you make your reservations. However, the special rates do not apply to weekend rates. Friday and Saturday rates will be higher.

For additional hotel accommodations, please go to:
**www.santabarbaraca.com**

*The following 3 hotels are located in Goleta approximately 4-5 miles from campus, with a 7-10 minute driving time.*

**Best Western South Coast Inn (Group Name: DRC/EMC-UCSB)**

Phone: (805) 967-3200
$145 single/double (Sunday – Thursday night)
Rate includes continental breakfast buffet daily and evening hospitality Monday through Thursday. Complimentary shuttle service is available to and from the Santa Barbara Airport.
**www.santa-barbara-hotel.com**

**Holiday Inn (Reservation Code DRC)**

Phone: (805) 964-6241
$139 single/double (Sunday – Thursday night)
Full service restaurant and complimentary airport shuttle between 6 a.m. and 10 p.m.
**www.hisantabarbarahotel.com**

**Pacifica Suites (Group Name: DRC/EMC-UCSB)**

Phone: (805) 683-6722
Fax: (805) 683-4121
$159 single/double (Sunday – Thursday night)
Complimentary cooked-to-order breakfast daily and evening beverages available Monday through Saturday. Complimentary airport shuttle service is offered from 7 a.m. to 7 p.m. with 24-hour notice.
**www.pacificasuites.com**

*The following hotel is located at the beach in Santa Barbara.*

**Harbor View Inn (Group Name: UCSB DRC/EMC)**

Phone: (805) 963-0780
Fax: (805) 963-7967
$165 single (Sunday to Thursday night)
Combines the intimacy of a Spanish villa with the first-class amenities you expect of a 4-Diamond, luxury hotel. All rooms include a private patio or balcony and added amenities including wireless internet access.
**www.harborviewinnsb.com**

## NETWORKING AND SOCIAL EVENTS

### Welcoming Reception

Wednesday, June 22, 6 to 8 p.m. – University Center, Lagoon Plaza

### Coffee Breaks

Offered during both morning and afternoon intermissions – University Center, Lagoon Plaza

### Gainey Vineyard Event

Thursday, June 23, 6 to 9 p.m. – Gainey Vineyard, Santa Ynez Valley

The 85-acre Gainey Vineyard is located in the heart of Santa Barbara's wine country. Conference attendees will enjoy an evening of great food, fine wine and networking in this beautiful setting.

Tickets are required for guests and attendees registered for only one day of the conference. Tickets are $70 for adults and $35 for children 12 and under. Tickets may be purchased on the conference registration form or on-site at the EMC registration desk.

## GENERAL INFORMATION

### Dress

Casual clothing is appropriate attire, along 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

The university prohibits smoking in all buildings, including residence halls. Smoking is permitted in designated areas outside and twenty-five feet from structures.

### 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.

## AWARDS

### John Bardeen Award

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.

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

**2011 Recipient:**
**Stephen Pearton,**
Professor, University of Florida

Citation: For pioneering advances in the science and application of advanced electronic and photonic device fabrication techniques for compound semiconductor devices used in cell phones, wireless communication systems, collision-avoidance radar, high density DVDs, satellite systems, wireless local area networks, GPS, broadband satellite services and automotive radar-smart-cruise control, traffic lights and other displays.

*"TMS is an enormously respected society and the John Bardeen award is one of its premier honors. I am deeply grateful to the society for this recognition and to the collaborators I have worked with over the years at the Australian Atomic Energy Commission, UC Berkeley, Bell Labs and now University of Florida for their many contributions. John Bardeen was one of the greatest scientists of the modern age and the previous winners of this award have all been esteemed leaders in the fields of semiconductors and related materials. I am very pleased and deeply honored to join this select group and to be a proud TMS member."*

### 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: www.tms.org/Society/tmsawards.aspx.

## ESPECIALLY FOR STUDENTS

### EMC Best Student Paper Award

Awards of $500 each are given to the authors of the best student papers presented at EMC 2011. Student papers are judged on both scientific content and oral presentation. Awards are funded by the TMS Foundation and presented during the plenary session on Wednesday, June 22.

### Travel Grants

Student authors who are presenting papers may be eligible for travel assistance. The deadline to apply is June 5. To apply, e-mail Mark Goorsky at goorsky@seas.ucla.edu. Student travel assistance is made possible through generous support from the TMS Foundation.



## PROCEEDINGS/PUBLICATIONS


The *Journal of Electronic Materials (JEM)* encourages both presenters and attendees of the Electronic Materials Conference to submit manuscripts of their work for an all-EMC special issue at: www.editorialmanager.com/jems/

*The deadline for the all-EMC special issue is* ***August 1, 2011****.*

### About *JEM*

*JEM* is published monthly by The Minerals, Metals & Materials Society (TMS), the Institute of Electrical and Electronics Engineers (IEEE) and Springer Business + Science Media. Articles are reviewed, selected and edited by peers who serve as voluntary members of the editorial board, associate editors, and guest editors. Editor-in-chief: Suzanne Mohney.

### *JEM's* Content

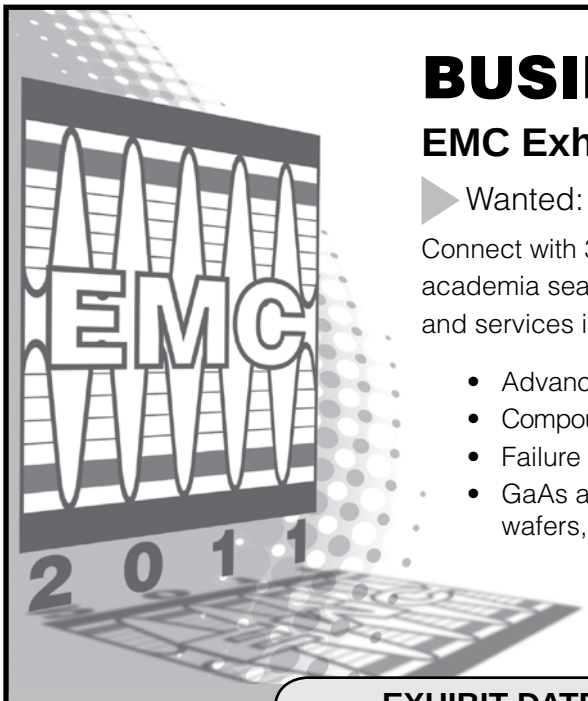
*JEM* is a forum for the rapid circulation of original research. It contains technical papers detailing critical new developments in the electronic materials field, as well as invited and contributed review articles on topics of current interest. The journal focuses on semiconductors for transistors, 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

A special *JEM* issue will include manuscripts of papers presented at EMC. Individuals may subscribe to *JEM* by contacting Springer, the journal's publisher:

**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




# BUSINESS OPPORTUNITIES

## EMC Exhibition

Wanted: Suppliers of Electronic Materials Technology

Connect with 350 professionals from industry, government laboratories, and academia searching for equipment, instrumentation, software, publications and services in electronic materials:

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

**EXHIBIT DATES AND HOURS**

Wednesday, June 22 - 9:30 a.m. to 1:30 p.m.; 3 to 4 p.m. and 6 to 8 p.m.

Thursday, June 23 - 10 a.m. to 1:30 p.m. and 3 to 4 p.m.

### What You Receive as an Exhibitor:

- One full-conference registration
- Company listing and 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: $1,400 per 8'x 10' space**

Space reservations are accepted on a first-come, first-served basis. Book your space 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:

**Great Visibility Opportunities**

- Signage
- Web Site Advertising
- Registration Bags & Lanyards

**Exclusive Sponsorship Activities**

- Welcoming Reception
- Refreshment Breaks
- Conference Banquet

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

**Telephone (800) 759-4TMS/ (724) 776-9000, ext. 275**

**E-mail exhibits@tms.org**

| Room | WEDNESDAY | | THURSDAY | | FRIDAY |
|---|---|---|---|---|---|
| | AM | PM | AM | PM | AM |
| Corwin Pavilion | EMC Student Awards and Plenary Lecture | Registration in the University Center:<br>Tuesday: 3:00 PM to 5:00 PM<br>Wednesday: 7:30 AM to 5:00 PM<br>Thursday: 7:30 AM to 4:00 PM<br>Friday: 7:30 AM to 10:00 AM | | Exhibition in University Center/Lagoon Plaza<br>Wednesday: 9:30 AM to 1:30 PM, 3:00 to 4:00 & 6:00 to 8:00 PM<br>Thursday: 10:00 AM to 1:30 PM, 3:00 to 4:00 PM | |
| Corwin East | | | Session O:<br>III-Nitrides: UV Emitters and Detectors | Session W:<br>III-Nitride: Bulk Growth and Epitaxy | Session FF:<br>III-Nitrides: Epitaxy Material and Devices II<br>Session GG:<br>Non-Polar and Semi-Polar III-Nitrides Devices |
| Corwin West | | | Session P:<br>Oxide Semiconductor Devices | Session X:<br>Oxide Thin Films | Session HH:<br>Oxide Semiconductors: Growth and Doping |
| Flying A | Session A:<br>III-Nitrides: MBE Growth | Session H:<br>III-Nitrides: Electronics I | Session Q:<br>III-Nitrides: Electronics II | Session Y:<br>Point, Defects, Doping and Extended Defects | Session II:<br>Intersubband Devices: AlInN and InGaN Materials Characterization |
| Lobero | Session B:<br>Thermoelectrics and Thermionics I | Session I:<br>Thermoelectrics and Thermionics II | Session R:<br>Narrow Bandgap Materials and Devices | Session Z:<br>Epitaxial Materials and Devices I | Session JJ:<br>Compound Semiconductor Growth on Silicon Substrates |
| Lotte Lehmann | Session C:<br>Nanoscale Characterization | Session J:<br>Nanowire Transport and Devices | Session S:<br>Nanowire Synthesis and Characterization | Session AA:<br>Four Dots and a Dash<br>Session BB:<br>Fundamentals of Low-Dimensional Structures | Session KK:<br>Nanowire Growth and Applications |
| Multicultural Center Lounge | Session D:<br>Plasmonics and Metamaterials | Session K:<br>Silicon Carbide Growth, Characterization and Devices | | | |
| Multicultural Center Theatre | Session E:<br>Organic, Printed and Flexible Electronics | Session L:<br>Graphene Fabrication and Devices | Session T:<br>Growth of Graphene and Carbon Nanotubes | Session CC:<br>Graphene Characterization and Applications | Session LL:<br>Materials Integration: Wafer Bonding and Engineered Substrates |
| Santa Barbara Harbor | Session F:<br>Devices Utilizing Low Dimensional Structures | Session M:<br>III-Nitrides: Defects and LEDs | Session U:<br>Highly Mismatched Alloys | Session DD:<br>Nano-Magnetic, Magnetic Memory and Spintronic Materials | Session MM:<br>Semiconductor Processing: Oxidation, Passivation, Etching and Contacts |
| State Street | Session G:<br>Photovoltaics: New Materials and Characterization | Session N:<br>Next Generation Solar Cell Materials and Devices | Session V:<br>Organic Photovoltaics and Photoelectrochemical Cells | Session EE:<br>Organic Thin Film and Crystalline Transistors: Devices and Materials | Session NN:<br>Molecular Electronics / Sensor / Ionic Conductors |

## TUESDAY, JUNE 21, 2011

| | | |
|---|---|---|
| Registration | 3:00 PM to 5:00 PM | University Center |

## WEDNESDAY, JUNE 22, 2011

| | | |
|---|---|---|
| Registration | 7:30 AM to 5:00 PM | University Center |
| Exhibition | 9:30 AM to 1:30 PM, 3:00 to 4:00 & 6:00 to 8:00 PM | University Center/Lagoon Plaza |
| Welcome Reception | 6:00 PM to 8:00 PM | University Center/Lagoon Plaza |

### SESSIONS

| | | |
|---|---|---|
| EMC Student Awards and Plenary Lecture | 8:20 AM | Corwin Pavilion |
| Session A: III-Nitrides: MBE Growth | 10:00 AM | Flying A |
| Session B: Thermoelectrics and Thermionics I | 10:00 AM | Lobero |
| Session C: Nanoscale Characterization | 10:00 AM | Lotte Lehmann |
| Session D: Plasmonics and Metamaterials | 10:00 AM | Multicultural Center Lounge |
| Session E: Organic, Printed and Flexible Electronics | 10:00 AM | Multicultural Center Theatre |
| Session F: Devices Utilizing Low Dimensional Structures | 10:00 AM | Santa Barbara Harbor |
| Session G: Photovoltaics: New Materials and Characterization | 10:00 AM | State Street |
| Session H: III-Nitrides: Electronics I | 1:30 PM | Flying A |
| Session I: Thermoelectrics and Thermionics II | 1:30 PM | Lobero |
| Session J: Nanowire Transport and Devices | 1:30 PM | Lotte Lehmann |
| Session K: Silicon Carbide Growth, Characterization and Devices | 1:30 PM | Multicultural Center Lounge |
| Session L: Graphene Fabrication and Devices | 1:30 PM | Multicultural Center Theatre |
| Session M: III-Nitrides: Defects and LEDs | 1:30 PM | Santa Barbara Harbor |
| Session N: Next Generation Solar Cell Materials and Devices | 1:30 PM | State Street |

## THURSDAY, JUNE 23, 2011

| | | |
|---|---|---|
| Registration | 7:30 AM to 4:00 PM | University Center |
| Exhibition | 10:00 AM to 1:30 PM, 3:00 to 4:00 PM | University Center/Lagoon Plaza |
| Banquet | 6:00 PM-9:00 PM | Gainey Vineyard |

### SESSIONS

| | | |
|---|---|---|
| Session O: III-Nitrides: UV Emitters and Detectors | 8:20 AM | Corwin East |
| Session P: Oxide Semiconductor Devices | 8:20 AM | Corwin West |
| Session Q: III-Nitrides: Electronics II | 8:20 AM | Flying A |
| Session R: Narrow Bandgap Materials and Devices | 8:20 AM | Lobero |
| Session S: Nanowire Synthesis and Characterization | 8:20 AM | Lotte Lehmann |
| Session T: Growth of Graphene and Carbon Nanotubes | 8:20 AM | Multicultural Center Theatre |
| Session U: Highly Mismatched Alloys | 8:20 AM | Santa Barbara Harbor |
| Session V: Organic Photovoltaics and Photoelectrochemical Cells | 8:20 AM | State Street |
| Session W: III-Nitride: Bulk Growth and Epitaxy | 1:30 PM | Corwin East |
| Session X: Oxide Thin Films | 1:30 PM | Corwin West |
| Session Y: Point, Defects, Doping and Extended Defects | 1:30 PM | Flying A |
| Session Z: Epitaxial Materials and Devices I | 1:30 PM | Lobero |
| Session AA: Four Dots and a Dash | 1:30 PM | Lotte Lehmann |

## THURSDAY, JUNE 23, 2011 *continued*

| | | |
|---|---|---|
| Session BB: Fundamentals of Low-Dimensional Structures | 3:30 PM | Lotte Lehmann |
| Session CC: Graphene Characterization and Applications | 1:30 PM | Multicultural Center Theatre |
| Session DD: Nano-Magnetic, Magnetic Memory and Spintronic Materials | 1:30 PM | Santa Barbara Harbor |
| Session EE: Organic Thin Film and Crystalline Transistors: Devices and Materials | 1:30 PM | State Street |

## FRIDAY, JUNE 24, 2011

| | | |
|---|---|---|
| Registration | 7:30 AM to 10:00 AM | University Center |

### SESSIONS

| | | |
|---|---|---|
| Session FF: III-Nitrides: Epitaxy Material and Devices II | 8:20 AM | Corwin East |
| Session GG: Non-Polar and Semi-Polar III-Nitrides Devices | 10:20 AM | Corwin East |
| Session HH: Oxide Semiconductors: Growth and Doping | 8:20 AM | Corwin West |
| Session II: Intersubband Devices: AlInN and InGaN Materials Characterization | 8:20 AM | Flying A |
| Session JJ: Compound Semiconductor Growth on Silicon Substrates | 8:20 AM | Lobero |
| Session KK: Nanowire Growth and Applications | 8:20 AM | Lotte Lehmann |
| Session LL: Materials Integration: Wafer Bonding and Engineered Substrates | 8:20 AM | Multicultural Center Theatre |
| Session MM: Semiconductor Processing: Oxidation, Passivation, Etching and Contacts | 8:20 AM | Santa Barbara Harbor |
| Session NN: Molecular Electronics / Sensor / Ionic Conductors | 8:20 AM | State Street |

## EMC Student Awards and Plenary Lecture

Wednesday AM Room: Corwin Pavilion
June 22, 2011 Location: University of California-Santa Barbara

**8:20 AM Awards Ceremony**

**8:30 AM Plenary**
**New Concepts and Materials for Solar Power Conversion**: *Wladyslaw Walukiewicz*[1]; [1]Lawrence Berkeley National Laboratory

**9:20 AM Break**

## Session A: III-Nitrides: MBE Growth

Wednesday AM Room: Flying A
June 22, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Michael Manfra, Purdue University; Debdeep Jena, University of Notre Dame

**10:00 AM**
**A1, Nitride Film Growth by Migration Enhanced Afterglow (MEAglow)**: *K. Scott Butcher*[1]; Penka Terziyska[1]; DImiter Alexandrov[1]; [1]Lakehead University

**10:20 AM**
**A2, Observation and Elimination of Indium Surface Segregation**: *Michael Moseley*[1]; Brendan Gunning[1]; Jonathan Lowder[1]; W. Alan Doolittle[1]; [1]Georgia Institute of Technology

**10:40 AM Student**
**A3, Depth Resolved Strain and Composition Studies on InGaN and AlInN Films Grown by Plasma-Assisted Molecular Beam Epitaxy**: *Wenyuan Jiao*[1]; Wei Kong[1]; Tongho Kim[1]; April Brown[1]; [1]Duke University

**11:00 AM Student**
**A4, Low Temperature p-GaN Grown by $NH_3$-MBE**: *Christophe Hurni*[1]; Peter Burke[1]; Jordan Lang[1]; Brian McSkimming[1]; Erin Young[1]; Umesh Mishra[1]; James Speck[1]; [1]University of California, Santa Barbara

**11:20 AM**
**A5, Epitaxial Lateral Overgrowth of Aluminum Nitride by Molecular Beam Epitaxy**: *Craig Moe*[1]; Jonathan Wright[1]; Anand Sampath[1]; Michael Wraback[1]; [1]U.S. Army Research Laboratory

**11:40 AM Student**
**A6, Effect of Superlattices and Surfactants on AlN Homoepitaxy by MBE**: *Jai Verma*[1]; Guowang Li[1]; Debdeep Jena[1]; [1]University of Notre Dame

## Session B: Thermoelectrics and Thermionics I

Wednesday AM Room: Lobero
June 22, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Hong Lu, UCSB; Peter Moran, Michigan Technological University

**10:00 AM Invited**
**B1, Phonon Engineering through Crystal Chemistry**: *Eric Toberer*[1]; Alex Zevalkink[2]; G. Jeffrey Snyder[2]; [1]Colorado School of Mines; [2]Caltech, Materials Science

**10:40 AM Student**
**B2, $Ca_3AlSb_3$ and $Ca_5Al_2Sb_6$; Inexpensive, Non-Toxic Thermoelectric Materials for Waste Heat Recovery**: *Alex Zevalkink*[1]; Eric Toberer[1]; Wolfgang Zeier[1]; Espen Flage-Larsen[2]; Jeff Snyder[1]; [1]Caltech; [2]University of Oslo

**11:00 AM**
**B3, The Impact of Nano-Inclusions Introduced by Mechanical Alloying on Thermoelectric Transport in $Pb_{1-x}Sn_xTe$: Experimental Results and Theoretical Predictions**: *Lakshmi Krishna*[1]; [1]Michigan Technological University

**11:20 AM**
**B4, Reevaluation of $PbTe_{1-x}I_x$ as High Performance n-Type Thermoelectric Material**: *Aaron LaLonde*[1]; Ynazhong Pei[1]; G. Jeffrey Snyder[1]; [1]California Institute of Technology

**11:40 AM**
**B5, The Universal Optimal Seebeck Coefficient for Maximum Power Factor**: *Paothep Pichanusakorn*[1]; Prabhakar Bandaru[1]; [1]UCSD

## Session C: Nanoscale Characterization

Wednesday AM Room: Lotte Lehmann
June 22, 2011 Location: University of California-Santa Barbara

*Session Chair:* Suneel Kodambaka, University of California, Los Angeles (UCLA)

**10:00 AM Student**
**C1, Scanning Gate Spectroscopy: A New SPM Technique for Nano-Devices on Oxide Surfaces**: *Steven Hunt*[1]; Elliot Fuller[1]; Brad Corso[1]; Phil Collins[1]; [1]Department of Physics and Astronomy, Univ. of California at Irvine

**10:20 AM**
**C2, Measurement of Nanoscale External Quantum Efficiency of Plastic Solar Cells by Photoconductive Atomic Force Microscopy**: *Xuan-Dung Dang*[1]; Thuc-Quyen Nguyen[1]; Alexander Mikhailovsky[1]; [1]UCSB

**10:40 AM**
**C3, Role of Ethylene on Thermal and Chemical Stability of TiO2(110)**: *Yuya Murata*[1]; Vania Petrova[2]; Ivan Petrov[2]; Suneel Kodambaka[1]; [1]University of California, Los Angeles (UCLA); [2]Frederick-Seitz Materials Research Laboratory, University of Illinois Urbana-Champaign

**11:00 AM**
**C4, Combined XSTM and High Resolution XRD Study for Quantitative Structural Descriptions of Type-II Superlattice IR Detectors**: *Michael Yakes*[1]; Syed Qadri[1]; Kevin Matney[2]; Changyun Yi[1]; Ed Aifer[1]; [1]Naval Research Laboratory; [2]Jordan Valley Semiconductors

**11:20 AM Student**
**C5, In Situ Transmission Electron Microscopy and Photoluminescence Study of Ge-Core/SiGe-Shell Nanowires**: *Shu Hu*[1]; Yoko Kawamura[2]; Kevin Huang[1]; Irene Goldthorpe[1]; Ann Marshall[1]; Mark Brongersma[1]; Paul McIntyre[1]; [1]Stanford University; [2]Keio University

**11:40 AM Student**
**C6, Local Strain Characterization of MEMS-Based Silicon Beams by Raman Spectroscopy**: *Ferran Ureña*[1]; Sarah Olsen[1]; Enrique Escobedo-Cousin[1]; Lidija Siller[1]; Umesh Bhaskar[2]; Jean-Pierre Raskin[2]; [1]Newcastle University; [2]Université catholique de Louvain

## Session D:
## Plasmonics and Metamaterials

Wednesday AM
June 22, 2011

Room: Multicultural Center Lounge
Location: University of California-Santa Barbara

*Session Chair:* Rachel Goldman, Univ of Michigan

**10:00 AM Student**
**D1, Tuning of Plasmonic Cavity Resonances Using Atomic Layer Deposition**: *Yan Mui Kitty Yeung*[1]; Kasey Russell[1]; Evelyn Hu[1]; [1]Harvard University

**10:20 AM**
**D2, Tunable Infrared Absorption of Nano Plasmonic Structures**: *Naresh Das*[1]; Wayne Chang[1]; [1]Army Research Laboratory

**10:40 AM**
**D3, In Situ Spectroscopic Ellipsometric Analysis of Thin Silver Films Deposited Using DC Magnetron Sputtering and HiPIMS Techniques**: *Lirong Sun*[1]; Neil Murphy[1]; Adam Waite[1]; John Jones[1]; Rachel Jakubiak[1]; [1]Air Force Research Laboratory

**11:00 AM Invited**
**D4, Second Harmonic Generation in a Metamaterial Resonating at Fundamental and Second Harmonic Frequencies**: Yasuhiro Tamayama[1]; Tetsuo Kanazawa[1]; Toshihiro Nakanishi[1]; Masao Kitano[1]; Akio Sasaki[1]; [1]Kyoto University

**11:40 AM Student**
**D5, Optical Dispersion of Amorphous Germanium Thin Films as a Function of Thickness and Deposition Parameters**: *Neil Murphy*[1]; Lirong Sun[1]; Adam Waite[1]; John Jones[1]; Rachel Jakubiak[1]; [1]Air Force Research Laboratory

## Session E:
## Organic, Printed and Flexible Electronics

Wednesday AM
June 22, 2011

Room: Multicultural Center Theatre
Location: University of California-Santa Barbara

*Session Chairs:* William Wong, University of Waterloo; Oana Jurchescu, Wake Forest University

**10:00 AM**
**E1, Quantum Dot Red/Green/Blue/White Light-Emitting Electroluminescent Devices with a Low Turn-on Voltage and High Brightness**: *Seonghoon Lee*[1]; [1]Seoul National University

**10:20 AM Student**
**E2, Fabrication of Flexible Single-Crystal Devices on Electrically-Conductive Substrates**: *C. Doran*[1]; W. Chen[1]; K. Henttinen[2]; T.L. Alford[3]; S.S. Lau[1]; [1]Department of Electrical and Computer Engineering, University of California, San Diego; [2]Okmetic Oyj; [3]School for Engineering of Matter, Transport and Energy, Arizona State University

**10:40 AM**
**E3, A Compensation Mechanism for Flexible and Electrically Stable Solution-Processed Organic Field-Effect Transistors**: *Do Kyung Hwang*[1]; Canek Fuentes-Hernandez[1]; Junbae Kim[1]; Willliam Potscavage[1]; Bernard Kippelen[1]; [1]Georgia Institute of Technology

**11:00 AM**
**E4, On the Correlation between Structure, Morphology, and Charge Transport in Organic Molecular Films: The Tetracene Case**: Giuseppe Tarabella[1]; Simone Bertolazzi[2]; Julia Wuensche[2]; Luca Lutterotti[3]; Fabio Cicoira[1]; *Clara Santato*[2]; [1]CNR; [2]École Polytechnique de Montréal; [3]Università di Trento

**11:20 AM Student**
**E5, Application of Vapor Forms 1-Octanethiol Coated Copper Conductive Ink for Ink-Jet Printing**: *Shinyoung Park*[1]; Jinhyeong Kwon[1]; Jaehak Her[1]; Md. Mominul Haque[1]; Young-Suk Kim[2]; Caroline Sunyong Lee[1]; [1]Hanyang University; [2]Korea Electronics Technology Institute

**11:40 AM E6, Late News**

## Session F:
## Devices Utilizing Low Dimensional Structures

Wednesday AM
June 22, 2011

Room: Santa Barbara Harbor
Location: University of California-Santa Barbara

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

**10:00 AM Student**
**F1, Design and Growth of InAs Quantum Dash Based MWIR VECSELs**: *Victor Patel*[1]; Simon Reissmann[1]; Thomas Rotter[1]; Pankaj Ahirwar[1]; Stephen Clark[1]; Alexander Albrecht[1]; Huiwen Xu[1]; Christopher Hains[1]; Larry Dawson[1]; Ganesh Balakrishnan[1]; [1]Center For High Technology Materials (CHTM), University of New Mexico

**10:20 AM Student**
**F2, Influence of Surface Patterning on Droplet Epitaxy and Photovoltaic Properties of InAs/GaAs Quatum Dots**: *Simon Huang*[1]; Jia-Hung Wu[1]; Rachel Goldman[1]; [1]University of Michigan, Ann Arbor

**10:40 AM Student**
**F3, Novel 3-State Quantum Dot Gate FET in Silicon-on-Insulator Substrate**: *Supriya Karmakar*[1]; John A Chandy[1]; Faquir C Jain[1]; [1]University of Connecticut

**11:00 AM Student**
**F4, Visible Light Emitting Diodes Based on Self-Assembled $In_{0.5}Ga_{0.5}As$ Quantum Dots on GaP**: *Yuncheng Song*[1]; Paul Simmonds[1]; Minjoo Lee[1]; [1]Yale University

**11:20 AM Student**
**F5, Large Area Growth of GaAs Solar Cell Based on Nanowire Structure**: *Chun-Yung Chi*[1]; Anuj Madaria[1]; Maoqing Yao[1]; Ruijuan Li[1]; Chongwu Zhou[1]; Pauel Dapkus[1]; [1]University of Southern California

**11:40 AM Student**
**F6, Output Polarization Dependence of Asymmetric Current Injection VCSELs on Crystalline Direction and Ion Implantation**: *Yan Zheng*[1]; Chin-Han Lin[1]; Matthias Gross[2]; Larry Coldren[1]; [1]University of California Santa Barbara; [2]Ziva Corporation

## Session G: Photovoltaics: New Materials and Characterization

Wednesday AM Room: State Street
June 22, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Jerry Woodall, Purdue University; David Janes, Purdue University

**10:00 AM Student**
**G1, Molecular Beam Epitaxial Growth of $Zn_3P_2$/GaAs and ZnS/GaAs Heterostructures for Photovoltaics**: *Jeffrey Bosco*[1]; Gregory Kimball[1]; Harry Atwater[1]; [1]California Institute of Technology

**10:20 AM**
**G2, $ZnSnN_2$: A New Earth-Abundant Semiconductor for Solar Energy Conversion**: *Lise Lahourcade*[1]; Naomi Coronel[1]; Harry Atwater[1]; [1]California Institute of Technology

**10:40 AM Student**
**G3, Electrodeposition of Indium Sulfide Films from Organic Electrolytes**: Robert Engelken[1]; Jason Newell[1]; *Maqsood Mughal*[1]; John Hall[1]; Joshua Vangilder[1]; Frederick Felizco[1]; [1]Arkansas State University

**11:00 AM**
**G4, Investigation of Bandgap Electronic States in Cadmium Telluride Solar Cells by Impedance Spectroscopy**: *Behrang Hamadani*[1]; Nhan Nguyen[1]; Nikolai Zhitenev[1]; Alec Talin[1]; Michelle Sestak[2]; David Gundlach[1]; Robert Collins[2]; [1]National Institute of Standards and Technology; [2]University of Toledo

**11:20 AM Student**
**G5, Spatially Resolved Responses of Nanoscale Photovoltaic Model Devices**: *Thomas Dufaux*[1]; Jens[1]; Jens Dorfmueller[1]; Ralf Vogelgesang[1]; Marko Burghard[1]; Klaus Kern[1]; [1]Max Planck Institute for Solid State Research

**11:40 AM**
**G6, Challenges of Hall Measurements on Low Mobility Materials and How to Overcome Them**: *Jeffrey Lindemuth*[1]; Shin Mizuta[2]; [1]Lake Shore Cryotronics; [2]Toyo Corp

## Session H: III-Nitrides: Electronics I

Wednesday PM Room: Flying A
June 22, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Edwin Piner, Texas State University; Michael Manfra, Purdue University

**1:30 PM Student**
**H1, Quantization and Bias Effects on Gate Capacitance of Scaled GaN HFETs**: *Vincent Lee*[1]; Atsushi Ohoka[1]; Lingquan Wang[1]; Peter Asbeck[1]; [1]University of California, San Diego

**1:50 PM Student**
**H2, Direct Correlation between $E_C$-0.57 eV Trap Generation and Field-Induced Degradation in AlGaN/GaN High Electron Mobility Transistors**: *Anup Sasikumar*[1]; Aaron Arehart[1]; Stephen Kaun[2]; Man Hoi Wong[2]; James Speck[2]; Umesh Mishra[2]; Steven Ringel[1]; [1]The Ohio State University; [2]University of California, Santa Barbara

**2:10 PM Student**
**H3, Temperature Dependent Off-State Degradation of AlGaN/GaN HEMTs**: *Erica Douglas*[1]; C. Y. Chang[1]; Lu Liu[1]; S. J. Pearton[1]; F. Ren[1]; [1]University of Florida

**2:30 PM**
**H4, Noise Measurements of Nanowire FET Sensors for Sensitivity Determination**: Devin Rourke[1]; *Mary Rowe*[1]; Paul Blanchard[1]; Aric Sanders[1]; Kristine Bertness[1]; Norman Sanford[1]; [1]NIST Boulder

**2:50 PM Student**
**H5, Piezoresistive Microcantilever with Embedded AlGaN/GaN HFET for Sensing Applications**: Muhammad Qazi[1]; Md. Nomani[1]; *Goutam Koley*[1]; [1]Department of Electrical Engineering, University of South Carolina, Columbia, SC29208, USA

**3:10 PM Break**

**3:30 PM Student**
**H6, N-Polar GaN HEMTs Grown by MBE and MOCVD with fmax of 255 and 250 GHz, Respectively**: *Dan Denninghoff*[1]; Sansaptak Dasgupta[1]; Jing Lu[1]; David Brown[2]; Stacia Keller[1]; Jim Speck[1]; Umesh Mishra[1]; [1]University of California Santa Barbara; [2]HRL

**3:50 PM Student**
**H7, Flattened Transconductance (gm) in a Highly Scaled AlGaN/GaN HEMT Using a Polarization-Induced 2D/3D Hybridized Channel Design**: *Pil Sung Park*[1]; Digbijoy Nath[1]; Sriram Krishnamoorthy[1]; Siddharth Rajan[1]; [1]The Ohio State University

**4:10 PM**
**H8, Fabrication of AlGaInN/GaN Transistors with ft and fmax Exceeding 100 GHz**: Taek Lim[1]; *Patrick Waltereit*[1]; Rolf Aidam[1]; Rüdiger Quay[1]; Lutz Kirste[1]; Peter Brückner[1]; Rudolf Kiefer[1]; Oliver Ambacher[1]; [1]Fraunhofer IAF

**4:30 PM Student**
**H9, Effects of Threading Dislocation Density on the Gate Leakage of AlGaN/GaN Heterostructures for High Electron Mobility Transistors**: *Stephen Kaun*[1]; Man Hoi Wong[1]; Sansaptak Dasgupta[1]; Soojeong Choi[1]; Umesh Mishra[1]; James Speck[1]; [1]University of California, Santa Barbara

**4:50 PM Student**
**H10, Growth and Characterization of npn-GaN/InGaN/GaN Double-Heterojunction Bipolar Transistors on a Free-Standing GaN Substrate**: *Zachary Lochner*[1]; Hee Jin Kim[1]; Yun Zhang[1]; Suk Choi[1]; Yi-Che Lee[1]; Jae-Hyun Ryou[1]; Shyh-Chiang Shen[1]; Russell D. Dupuis[1]; [1]Georgia Institute of Technology

## Session I: Thermoelectrics and Thermionics II

Wednesday PM Room: Lobero
June 22, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Lakshmi Krishna, Michigan Technological University; Joshua Zide, University of Delaware

**1:30 PM**
**I1, A Tubular Thermoelectric Generator with Piled Conical Rings Structure**: *Tsutomu Kanno*[1]; Akihiro Sakai[1]; Kouhei Takahashi[1]; Atsushi Omote[1]; Hideaki Adachi[1]; Yuka Yamada[1]; [1]Panasonic Corporation

**1:50 PM I2, Late News**

**2:10 PM**
**I3, Thermoelectric Properties of ErSb:$In_xGa_{1-x}Sb$ Thin Films Grown by MBE**: *Hong Lu*[1]; Peter Burke[1]; Nathan Hackman[1]; John Bowers[1]; Arthur Gossard[1]; [1]UCSB

**2:30 PM Student**
**I4, Nanoparticle Size Dependence of the Electrical, Thermal, and Optical Properties of Er-Doped $In_{0.53}Ga_{0.47}As$**: *Peter Burke*[1]; John Bowers[1]; Arthur Gossard[1]; [1]University of California, Santa Barbara

**2:50 PM Student**
**I5, Improving Thermoelectric Power Generation Efficiency with Epitaxial TbAs/III-V Nanocomposites**: *Laura Cassels*[1]; Ashok Ramu[2]; Gilles Pernot[3]; Trevor Buehl[2]; Peter Burke[2]; Art Gossard[2]; Chris Palmstrøm[2]; John Bowers[2]; Ali Shakouri[3]; Joshua Zide[1]; [1]University of Delaware; [2]University of California, Santa Barbara; [3]University of California, Santa Cruz

**3:10 PM Break**

**3:30 PM Student**
**I6, The MOCVD Growth of Erbium Antimonide Nanocomposite Embedded III-V Host Materials and Characterization for Thermoelectrics**: *Takehiro Onishi*[1]; Tela Favaloro[1]; Ali Shakouri[1]; Elane Coleman[2]; Gary Tompa[2]; Nobuhiko Kobayashi[1]; [1]UCSC; [2]Structured Materials Industries, Inc.

**3:50 PM Student**
**I7, Cross-Plane Transport Properties of p-Type La0.67Sr0.33MnO3/LaMnO3 Perovskite Oxide Metal/Semiconductor Superlattices**: *Pankaj Jha*[1]; Timothy D. Sands[2]; Laura Cassels[3]; Tela Favaloro[4]; Benjamin Kirk[5]; Philip Jackson[4]; Polina Burmistrova[1]; Xianfan Xu[5]; Joshua Zide[3]; Ali Shakouri[4]; [1]Electrical and Computer Engineering and Birck Nanotechnology Center, Purdue University; [2]ECE,MSE and Birck Nanotechnology Center, Purdue University; [3]Material Science and Engineering, University of Delaware; [4]Electrical Engineering, University of California, Santa Cruz; [5]Mechnical Engineering and Birck Nanotechnology Center, Purdue University

**4:10 PM**
**I8,Temperature-Dependent Thermal Properties of HgCdTe Superlattices**: *Kejia Zhang*[1]; Abhishek Yadav[1]; Lei Shao[1]; Ramana Bommena[2]; Jun Zhao[2]; Silviu Velicu[2]; Kevin Pipe[1]; [1]University of Michigan; [2]EPIR Technologies, Inc.

**4:30 PM Student**
**I9, Development of III-Nitride Materials for Thermoelectric Applications**: *Alexander Sztein*[1]; John Haberstroh[1]; Hiroaki Ohta[1]; Steven Denbaars[1]; John Bowers[1]; Shuji Nakamura[1]; [1]UCSB

**4:50 PM Student**
**I10, Highly Ordered Vertical Silicon Nanowire Arrays Embedded in Polymer for Thin-Film Thermoelectric Devices**: *Benjamin Curtin*[1]; John Bowers[1]; [1]Department of Electrical and Computer Engineering, University of California, Santa Barbara

## Session J:
## Nanowire Transport and Devices

Wednesday PM
June 22, 2011

Room: Lotte Lehmann
Location: University of California-Santa Barbara

*Session Chairs:* David Janes, Purdue University; Raymond Tsui, Motorola Laboratories

**1:30 PM**
**J1, Molecular Surface Passivation Effects on Indium Oxide Nanowire Transistors**: *Seongmin Kim*[1]; Patrick Carpenter[1]; Rand Jean[1]; Sanghyun Ju[2]; David Janes[1]; [1]Purdue University; [2]Kyonggi University

**1:50 PM Student**
**J2, Electrically Pumped ZnO Nanowire p-n Junction Laser**: *Sheng Chu*[1]; Guoping Wang[1]; Jianze Zhao[1]; Jieying Kong[1]; Lin Li[1]; Jingjian Ren[1]; Jianlin Liu[1]; [1]University of California Riverside

**2:10 PM Student**
**J3, Electrical Transport Study of Schottky Barrier Based ZnO NanoWire FETs**: *Ye Shao*[1]; Jongwon Yoon[2]; Hyeongnam Kim[1]; Venkatesh Balasubramanian[1]; Takhee Lee[2]; Jae-Hyung Jang[2]; Wu Lu[1]; [1]Ohio State University; [2]Gwangju Institute of Science and Technology

**2:30 PM Student**
**J4, ZnO Nanowire-Based Field Effect Transistors with Non-Volatile Memory Function Using Mobile Protons**: *Jongwon Yoon*[1]; Woong-Ki Hong[2]; Minseok Jo[1]; Gunho Jo[1]; Minhyeok Choe[1]; Woojin Park[1]; Jung Inn Sohn[2]; Hyunsang Hwang[1]; Mark Welland[2]; Takhee Lee[1]; [1]Gwangju Institute of Science and Technology; [2]Nanoscience Centre

**2:50 PM**
**J5, Raman and Electrical Probes of Carrier Concentration in Si-Doped GaN Nanowires Grown by Plasma-Assisted MBE**: *Lawrence Robins*[1]; Norman Sanford[1]; John Schlager[1]; Kris Bertness[1]; Paul Blanchard[1]; [1]NIST

**3:10 PM Break**

**3:30 PM Student**
**J6, Electrodeposited InSb Nanowires: Structural Properties and Transistor Performance**: *Suprem Das*[1]; Collin Delker[1]; Dmitri Zakharov[1]; Yong Chen[1]; Timothy Sands[1]; David Janes[1]; [1]Purdue University

**3:50 PM Student**
**J7, Electron Transport in One-Dimensional InAs Nanowire Transistors**: *Hanshuang Liang*[1]; Ganesh Subramanian[1]; Hao Wu[1]; Hongbin Yu[1]; Ping-Show Wang[2]; Joshua Shapiro[2]; Diana Huffaker[2]; [1]Arizona State University; [2]University of California at Los Angeles

**4:10 PM**
**J8, Electrical Properties of Axial and Radial Nanowire pn-Junctions – A Comparison**: *Christoph Gutsche*[1]; Andrey Lysov[1]; Ingo Regolin[1]; Werner Prost[1]; Franz-Josef Tegude[1]; [1]University of Duisburg-Essen

**4:30 PM Student**
**J9, GaAs Core-Shell Nanowire-Based Vertical p-n Diodes**: *Hao Wu*[1]; Hanshuang Liang[1]; Hongbin Yu[1]; Joshua Shapiro[2]; Ping-Show Wong[2]; Diana Huffaker[2]; [1]Arizona State University; [2]University of California at Los Angeles

**4:50 PM Student**
**J10, Role of Defect States in Charge Transport in Semiconductor Nanowires**: *Dongkyun Ko*[1]; Xianwei Zhao[1]; Kongara Reddy[1]; Oscar Restrepo[1]; Wolfgang Windl[1]; Nitin Padture[1]; Nandini Trivedi[1]; Fengyuan Yang[1]; Ezekiel Johnston-Halperin[1]; [1]The Ohio State University

## Session K:
## Silicon Carbide Growth, Characterization and Devices

Wednesday PM
June 22, 2011

Room: Multicultural Center Lounge
Location: University of California-Santa Barbara

*Session Chairs:* Joshua Caldwell, Naval Research Laboratory; Robert Stahlbush, Naval Research Laboratory

**1:30 PM Invited**
**K1, The Evolution of the SiC Power MOSFET from Lab Demonstration to Commercial Product**: *Brett Hull*[1]; Jon Zhang[1]; Mrinal Das[1]; Sei-Hyung Ryu[1]; Michael O'Loughlin[1]; Al Burk[1]; Anant Agarwal[1]; John Palmour[1]; [1]Cree, Inc.

**2:10 PM**
**K2, A Bondable Metallization Stack that Prevents Diffusion of Oxygen and Gold into Monolithically Integrated Circuits Operating above 500 °C**: *David Spry*[1]; Dorothy Lukco[2]; [1]NASA Glenn; [2]ASRC

**2:30 PM**
**K3, High-Low Temperature Performance of 20 A, 1200 - 1700 V 4H-SiC Power MOSFETs**: *Lin Cheng*[1]; Anant Agarwal[1]; Sarit Dhar[1]; Sei-Hyung Ryu[1]; Brett Hull[1]; John Palmour[1]; [1]Cree, Inc.

**2:50 PM Student**
**K4, Improved Microstructure and Ohmic Contact of Nb Electrode on N-Type 4H-SiC**: *Kunhwa Jung*[1]; Yuji Sutou[1]; Junichi Koike[1]; [1]Tohoku Univ.

**3:10 PM Break**

**3:30 PM**
**K5, Slow Thermal Emission from Traps in 4H-SiC Epilayers**: *Paul Klein*[1]; Amitesh Shrivastava[2]; Tangali Sudarshan[2]; [1]Naval Research Laboratory; [2]University of South Carolina

**3:50 PM Student**
**K6, Deflection of Threading Dislocations with Burgers Vector c/c+a Observed in 4H-SiC Substrates and Axial Slices with Associated Stacking Faults**: *S. Byrappa*[1]; F. Wu[1]; H. Wang[1]; B. Raghothamachar[1]; G. Choi[1]; S. Sun[1]; M. Dudley[1]; E.K. Sanchez[1]; D. Hansen[1]; R. Drachev[1]; S.G. Mueller[1]; M.J. Laboda[1]; [1]Stony Brook University

**4:10 PM**
**K7, Stacking Faults Originating from BPDs in High-Doped Buffer Layers**: *Nadeemullah Mahadik*[1]; Robert Stahlbush[1]; Eugene Imhoff[1]; Karl Hobart[1]; Rachael Myers-Ward[1]; Charles Eddy Jr.[1]; D. Gaskill[1]; Fritz Kub[1]; [1]Naval Research Laboratory

**4:30 PM Student**
**K8, Step Controlled Epitaxy on 4° and 1° Off-Cut 4H and 6H-SiC Substrate Using Dichlorosilane**: *Sabih Omar*[1]; Haizheng Song[1]; Iftekhar Chowdhury[1]; MVS Chandrashekhar[1]; Tangali Sudarshan[1]; [1]University of South Carolina

**4:50 PM Student**
**K9, Defect Structures of $B_{12}As_2$ Single Crystalline Epitaxial Layers on Off-Axis (0001) 4H-SiC Substrates**: *Yu Zhang*[1]; Hui Chen[1]; Michael Dudley[1]; Yi Zhang[2]; James Edgar[2]; Yinyan Gong[3]; Silvia Bakalova[3]; Martin Kuball[3]; Lihua Zhang[4]; Dong Su[4]; Yimei Zhu[4]; [1]Stony Brook University; [2]Kansas State University; [3]University of Bristol; [4]Brookhaven National Laboratory

## Session L: Graphene Fabrication and Devices

Wednesday PM, June 22, 2011
Room: Multicultural Center Theatre
Location: University of California-Santa Barbara

*Session Chairs:* Debdeep Jena, University of Notre Dame; Avik Ghosh, University of Virginia

**1:30 PM Invited**
**L1, Single-Layer MoS2 Transistors**: Branimir Radisavljevic[1]; Aleksandra Radenovic[1]; Jacopo Brivio[1]; *Andras Kis*[1]; [1]EPFL

**2:10 PM**
**L2, Role of Optical Phonon in Graphene Nanoribbon Tunnel Transistors: Strategy for Abrupt Switching from Material's Point of View**: *Youngki Yoon*[1]; Sayeef Salahuddin[1]; [1]University of California - Berkeley

**2:30 PM**
**L3, Fabrication of Top-Gated Sub-10 nm Epitaxial Graphene Nanoribbon FETs Using Hydrogen Silsesquioxane(HSQ)**: *W. S. Hwang*[1]; K. Tahy[1]; J. L. Tedesco[2]; R. L. Myers-Ward[2]; P. M. Campbell[2]; C. R. Eddy Jr.[2]; D. K. Gaskill[2]; H. Xing[1]; A. C. Seabaugh[1]; D. Jena[1]; [1]University of Notre Dame; [2]U. S. Naval Research Laboratory

**2:50 PM Student**
**L4, Semiconducting Graphene: Prospects and Challenges**: *Frank Tseng*[1]; Avik Ghosh[1]; [1]University of Virginia

**3:10 PM Break**

**3:30 PM**
**L5, Influence of Trapped Single Charges in Single Walled Carbon Nanotube Transistor with $SiN_x$ /$Al_2O_3$ Double Wrapped Layers**: *Takafumi Kamimura*[1]; Kazuhiko Matsumoto[2]; [1]National Institute of Advanced Industrial Science and Technology; [2]Osaka University

**3:50 PM**
**L6, Deposition and Characterization of AlN Dielectric Films on Graphene**: *Mark Fanton*[1]; Joshua Robinson[1]; David Rearick[1]; Michael LaBella[1]; Kathleen Trumbull[1]; Randal Cavalero[1]; Matthew Hollander[1]; Zachery Hughes[1]; David Snyder[1]; [1]Penn State University

**4:10 PM Student**
**L7, Graphene as a Heat-Spreading Layer in Blue LEDs**: *Chongmin Lee*[1]; [1]Korea University

**4:30 PM**
**L8, RCA Clean Assisted Transfer of CVD Grown Graphene**: *Xuelei Liang*[1]; Brent Sperling[1]; Irene Calizo[1]; Guangjun Cheng[1]; Christina Hacker[1]; Qin Zhang[1]; Yaw Obeng[1]; Kai Yan[2]; Hailin Peng[2]; Qiliang Li[3]; Xiaoxiao Zhu[3]; Curt Richter[1]; [1]National Institute of Standards and Technology; [2]College of Chemistry and Molecular Engineering; [3]Department of Electrical and Computer Engineering

**4:50 PM Student**
**L9, Electrical Property and Photoconductivity of Highly Dense and Vertically Aligned ZnO Nanowires Using Graphene as Electrodes**: *Jian Lin*[1]; Jiebin Zhong[1]; Mirosalv Penchev[1]; Mihri Ozkan[1]; Cengiz Ozkan[1]; [1]University of California Riverside

## Session M: III-Nitrides: Defects and LEDs

Wednesday PM, June 22, 2011
Room: Santa Barbara Harbor
Location: University of California-Santa Barbara

*Session Chairs:* Andrew Allerman, Sandia National Laboratories; Russell Dupuis, Georgia Institute of Technology

**1:30 PM**
**M1, A Defect-Based Mechanism for Efficiency Droop in Nitride Light Emitting Diodes**: *Normand Modine*[1]; Andrew Armstrong[1]; Mary Crawford[1]; Weng Chow[1]; [1]Sandia National Laboratories

**1:50 PM**
**M2, Impact of Extended and Point Defects on InGaN LED Efficiency**: *Andrew Armstrong*[1]; Tania Henry[1]; Daniel Koleske[1]; Mary Crawford[1]; [1]Sandia National Laboratories

**2:10 PM Student**
**M3, Effect of $In_xAl_{1-x}N$ Electron Blocking Layer on Quantum Efficiency in Visible Light-Emitting Diodes Grown by Metalorganic Chemical Vapor Deposition**: *Suk Choi*[1]; Mi-Hee Ji[1]; Jeomoh Kim[1]; Hee Jin Kim[1]; Jae-Hyun Ryou[1]; P. Douglas Yoder[1]; Russell Dupuis[1]; Kewei Sun[2]; Alec Fischer[2]; Fernando Ponce[2]; [1]Georgia Institute of Technology; [2]Arizona State University

**2:30 PM Student**
**M4, Semipolar AlGaN Buffers for Deep Ultraviolet Diode Lasers**: *Roy Chung*[1]; Erin Young[1]; Dan Haeger[1]; Steven DenBaars[1]; James Speck[1]; Dan Cohen[1]; [1]University of California Santa Barbara

**2:50 PM**
**M5, Low Dislocation Density $Al_{0.32}Ga_{0.68}N$ by Overgrowth of Patterned Templates**: *Andrew Allerman*[1]; Mary Crawford[1]; Stephen Lee[1]; Karen Cross[1]; Mary Miller[1]; Jonathan Wierer[1]; Blythe Clark[1]; [1]Sandia National Laboratories

**3:10 PM Break**

**3:30 PM Student**
**M6, Enhancement of Hole Transport and Carrier Distribution in InGaN/GaN Multiple Quantum Wells by Controlling Indium Content of p-Type Layer in Visible Light-Emitting Diodes**: *Jeomoh Kim*[1]; Mi-Hee Ji[1]; Suk Choi[1]; Jae-Hyun Ryou[1]; Russell Dupuis[1]; Kewei Sun[2]; Reid K. Juday[2]; Alec M. Fischer[2]; Fernando A. Ponce[2]; [1]Georgia Institute of Technology; [2]Arizona State University

**3:50 PM**
**M7, P-Side-Down, Ga-Polar, Green-Emitting Single Heterostructure LEDs**: *Scott Newman*[1]; Jonathan Wright[1]; Chad Gallinat[1]; Ryan Enck[1]; Anand Sampath[1]; Hongen Shen[1]; Meredith Reed[1]; Michael Wraback[1]; [1]US Army Research Laboratory

**4:10 PM**
**M8, Characterization of Green Semi-Polar (10-11) GaInN/GaN Light Emitting Diodes**: *Christoph Stark*[1]; Shi You[1]; Liang Zhao[1]; Theeradetch Detchprohm[1]; Christian Wetzel[1]; Edward Preble[2]; Tanya Paskova[2]; [1]Rensselaer Polytechnic Institute; [2]Kyma Technologies, Inc.

**4:30 PM**
**M9, Optical Properties of Molecular Beam Epitaxy Grown High in Content (~20%) InGaN film Emitting in Green (540 nm)**: *Vladimir Protasenko*[1]; Jai Verma[1]; Guowang Li[1]; Huili (Grace) Xing[1]; Debdeep Jena[1]; [1]University of Notre Dame

**4:50 PM Student**
**M10, Effects of Dislocations on Luminescence in *m*-Plane InGaN Quantum Wells**: *Yu Huang*[1]; Kewei Sun[1]; Alec Fischer[1]; Qiyuan Wei[1]; Reid Juday[1]; Fernando Ponce[1]; R. Kato[2]; Toshiya Yokogawa[2]; [1]Arizona State University; [2]Panasonic Corporation

## Session N:
## Next Generation Solar Cell Materials and Devices

Wednesday PM
June 22, 2011

Room: State Street
Location: University of California-Santa Barbara

*Session Chairs:* Christian Wetzel, Rensselaer Polytechnic Institute; Mark Goorsky, University of California, Los Angeles

**1:30 PM**
**N1, Preparation of the Red Phosphor Nanoparticle Films for the Application to Silicon Solar Cells**: *Masakazu Kobayashi*[1]; Ayaka Yagi[1]; Miwa Inaguma[1]; Sayako Hamaguchi[1]; [1]Waseda University

**1:50 PM Student**
**N2, GaAs Nanopillar Photovoltaics Based on Catalyst-Free Patterned Growth**: *Giacomo Mariani*[1]; Ping-Show Wong[1]; Joshua Shapiro[1]; Diana Huffaker[1]; [1]University of California, Los Angeles

**2:10 PM Student**
**N3, Wafer Bonded GaAs-Sapphire for Photovoltaic Applications via Adhesive Bonding**: *Nikholas Toledo*[1]; Carl Neufeld[1]; Michael Scarpulla[2]; Trevor Buehl[2]; Samantha Cruz[2]; Arthur Gossard[2]; Steven Denbaars[2]; James Speck[2]; Umesh Mishra[1]; [1]Department of Electrical and Computer Engineering, University of California, Santa Barbara; [2]Materials Department, University of California, Santa Barbara

**2:30 PM**
**N4, Thin Film III-V Photovoltaics on Flexible Metal Substrates and Defect Mitigation Strategies**: *Venkat Selvamanickam*[1]; Senthil Sambandam[2]; Aarthi Sundaram[1]; Akhil Mehrotra[1]; Alex Freundlich[1]; [1]University of Houston; [2]SuperPower

**2:50 PM N5, Late News**

**3:10 PM Break**

**3:30 PM**
**N6, Towards >15% Solar Cells on Metal Foils: Heteroepitaxial Crystal Silicon on Alumina**: *Charles Teplin*[1]; M. Parans Paranthaman[2]; Thomas Fanning[3]; Kirstin Alberi[1]; Lee Heatherly[2]; Kyunghoon Kim[2]; Frederick List[2]; Jon Bornstein[3]; Claudia Cantoni[2]; Paul Schroeter[3]; David Young[1]; Howard Branz[1]; [1]National Renewable Energy Lab; [2]ORNL; [3]Ampulse

**3:50 PM Student**
**N7, High External Quantum Efficiency and Fill-Factor InGaN-Based Solar Cells Grown by $NH_3$-MBE**: *Jordan Lang*[1]; Carl Neufeld[1]; Christophe Hurni[1]; Samantha Cruz[1]; Elison Matioli[1]; Umesh Mishra[1]; James Speck[1]; [1]University of California, Santa Barbara

**4:10 PM Student**
**N8, Design Principles for Light-Trapping in Thin Silicon Films with Embedded Dielectric Nanoparticles**: *James Nagel*[1]; Michael Scarpulla[1]; [1]University of Utah

**4:30 PM Student**
**N9, Single Crystalline Si Substrate Growth by Lateral Diffusion LPE Technology for PV Applications**: *Li Bo*[1]; Adrian Kitai[1]; Huaxiang Shen[1]; [1]McMaster University

**4:50 PM N10, Late News**

## Session O:
## III-Nitrides: UV Emitters and Detectors

Thursday AM
June 23, 2011

Room: Corwin East
Location: University of California-Santa Barbara

*Session Chairs:* Michael Wraback, US Army Research Lab; Zlato Sitar, North Carolina State University

**8:20 AM**
**O1, Fabrication of UV Emitting Devices Using Vertical ZnO Nanorod Arrays on the p-GaN Films**: *Shrawan Jha*[1]; Oleksandr Kutsay[1]; Igor Bello[1]; Shuit-Tong Lee[1]; [1]City University of Hong Kong

**8:40 AM**
**O2, Low-Threshold ZnO Random Laser Diode Realized by Double Heterojunction Structure**: *Jieying Kong*[1]; Sheng Chu[1]; Zheng Zuo[1]; Jingjian Ren[1]; Mario Olmedo[1]; Jianlin Liu[1]; [1]University of California, Riverside

**9:00 AM Student**
**O3, ZnMgO-Based Photodetectors for Short Wavelength and Light Polarization Detection**: *Gema Tabares*[1]; Adrián Hierro[1]; Christiane Deparis[2]; Christian Morhain[2]; Jean-Michel Chauveau[2]; [1]ISOM-Dept. Ingenieria Electrica, Universidad Politecnica de Madrid; [2]CNRS-CRHEA

**9:20 AM**
**O4, Fabrication and Characterization of 265 nm Light Emitting Diodes on AlN Single Crystal Substrates**: *Ramón Collazo*[1]; Seiji Mita[2]; Jinqiao Xie[2]; Anthony Rice[1]; James Tweedie[1]; Rafael Dalmau[2]; Baxter Moody[2]; Raoul Schlesser[2]; Ronny Kirste[3]; Axel Hoffmann[3]; Zlatko Sitar[1]; [1]North Carolina State University; [2]HexaTech, Inc.; [3]Technical University Berlin

**9:40 AM**
**O5, Time-Resolved Photoluminescence of AlInN/AlN Multiple Quantum Well Active Regions for Mid-UV Emitters**: *Gregory Garrett*[1]; Hongen Shen[1]; Michael Wraback[1]; Hee Jin Kim[2]; Zachary Lochner[2]; Jae-Hyun Ryou[2]; Russell Dupuis[2]; [1]US Army Research Laboratory; [2]Georgia Institute of Technology

**10:00 AM Break**

**10:20 AM Student**
**O6, Enhanced Inter-Band Tunneling by Polarization Engineering in InGaN/ GaN Quantum Wells**: *Sriram Krishnamoorthy*[1]; Aaron Arehart[1]; Digbijoy Nath[1]; Fatih Akyol[1]; Pil Sung Park[1]; Michele Esposto[1]; Steve Ringel[1]; Siddharth Rajan[1]; [1]The Ohio State University

**10:40 AM**
**O7, Effects of Polarization Interface Charge on GaN/SiC Separate Absorption and Multiplication Avalanche Photodiodes**: *Chad Gallinat*[1]; Anand Sampath; Ryan Enck[1]; Paul Rotella[1]; Paul Shen[1]; Michael Wraback[1]; Qiugui Zhou[2]; Dion McIntosh[2]; Joe Campbell[2]; [1]Army Research Lab; [2]University of Virginia

**11:00 AM**
**O8, Low-Temperature Growth and Characterization of p-GaN and Graded p-InGaN Layers by MOCVD for Photovoltaic Applications**: *Matthew Laurent*[1]; Ajay Raman[1]; Daniel Denninghoff[1]; Stacia Keller[1]; Umesh Mishra[1]; [1]UC Santa Barbara

**11:20 AM Student**
**O9, Carrier Lifetimes and Recombination Phenomena in InGaN/ GaN Quantum Dot and Quantum Well LEDs: A Comparative Study**: *Animesh Banerjee*[1]; Meng Zhang[1]; Boon Ooi[2]; Pallab Bhattacharya[1]; [1]University of Michigan; [2]KAUST

**11:40 AM**
**O10, Characterization of Ultraviolet LEDs by Electrical Analysis and Laser-Based Failure Analysis Techniques**: *Mary Miller*[1]; Edward Cole Jr.[1]; Paiboon Tangyunyong[1]; [1]Sandia National Laboratories

## Session P:
## Oxide Semiconductor Devices

Thursday AM
June 23, 2011

Room: Corwin West
Location: University of California-Santa Barbara

*Session Chairs:* Jamie Phillips, University of Michigan; Holger von Wenckstern, Universität Leipzig

**8:20 AM Invited**
**P1, Memristance and Current-Driven Phase Transition in Multifunctional Binary Oxide Nanodevices**: *Matthew Pickett*[1]; Julien Borghetti[1]; J. Joshua Yang[1]; Gilberto Medeiros-Ribeiro[1]; R. Stanley Williams[1]; [1]Hewlett-Packard Laboratories

**9:00 AM**
**P2, Switching Characteristics and Mechanism of Nano-Scale Memristors Based on Epitaxial ZnO Nano-Islands**: *Jing Qi*[1]; Mario Olmedo[1]; Jingjian Ren[1]; Ning Zhan[1]; Jianze Zhao[1]; Jianlin Liu[1]; [1]University of California, Riverside

**9:20 AM Student**
**P3, Investigation of Multi-Barrier ZnO-Schottky Contacts**: *Stefan Müller*[1]; Holger von Wenckstern[1]; Jörg Lenzner[1]; Otwin Breitenstein[2]; Marius Grundmann[1]; [1]Universität Leipzig; [2]Max-Planck-Institut für Mikrostrukturphysik

**9:40 AM Student**
**P4, Interface Charge Characteristics of $HfO_2$/ZnO Thin Films**: *Jeffrey Siddiqui*[1]; Jamie Phillips[1]; Burhan Bayraktaroglu[2]; Kevin Leedy[2]; [1]University of Michigan; [2]AFRL Wright-Patterson

**10:00 AM Break**

**10:20 AM Student**
**P5, Low-Temperature Processed Schottky-Gated Field-Effect Transistors Based on Amorphous Gallium-Indium-Zinc-Oxide**: *Michael Lorenz*[1]; Alexander Lajn[1]; Heiko Frenzel[1]; Holger von Wenckstern[1]; Marius Grundmann[1]; Pedro Barquinha[2]; Elvira Fortunato[2]; Rodrigo Martins[2]; [1]University of Leipzig; [2]CENIMAT, I3N, FCT-UNL

**10:40 AM Student**
**P6, High Pressure Hydrogen Annealing of Indium-Gallium-Zinc Oxide Thin Film Transistors**: *Se-I Oh*[1]; Jae-Hyung Jang[1]; Dae-Seok Lee[1]; Hyunsang Hwang[1]; [1]GIST

**11:00 AM Student**
**P7, The Effect of Ga Doping on Bias Stress Stability of ZnO TFT**: *Chieh-Jen Ku*[1]; Ziqing Duan[1]; Yicheng Lu[1]; [1]Rutgers University

**11:20 AM**
**P8, Electrically Stable Amorphous InGaZnO Thin-Film Transistors and High-Gain Inverters**: *Jungbae Kim*[1]; Canek Fuentes-Hernandez[1]; Do Kyung Hwang[1]; Hyeunseok Cheun[1]; Shree Tiwari[1]; Bernard Kippelen[1]; [1]Georgia Institute of Technology

**11:40 AM Student**
**P9, Growth and Investigation of Hexagonal Zinc Oxide Microdisk Resonators**: *Kathryn Greenberg*[1]; John Joo[1]; Evelyn Hu[1]; [1]Harvard University

## Session Q:
## III-Nitrides: Electronics II

Thursday AM
June 23, 2011

Room: Flying A
Location: University of California-Santa Barbara

*Session Chairs:* Russell Dupuis, Georgia Institute of Technology; Huili Grace Xing, University of Notre Dame

**8:20 AM Student**
**Q1, ALD $Al_2O_3$ Thickness-Dependent Study of AlN/GaN MOS-HEMTs**: *Satyaki Ganguly*[1]; Jai Verma[1]; Guowang Li[1]; Huili Xing[1]; Debdeep Jena[1]; [1]University of Notre Dame

**8:40 AM Student**
**Q2, $Al_2O_3$ Based Etch-Stop Technology for the Gate Recess in N-Polar AlGaN/GaN MIS-HEMTs with $Si_xN_y$ Passivation**: *Seshadri Kolluri*[1]; David Brown[1]; Andrew Carter[1]; Stacia Keller[1]; Steven DenBaars[1]; Umesh Mishra[1]; [1]University of California, Santa Barbara

**9:00 AM Student**
**Q3, MBE Regrown Ohmic Contacts with Rc of 0.15 ohm-mm in InAlN/GaN High Electron Mobility Transistor**: *Jia Guo*[1]; Jai Verma[1]; Yu Cao[1]; Xiang Gao[2]; Shiping Guo[2]; Ed Beam[3]; Andrew Ketterson[3]; Michael Schuette[3]; Paul Saunier[3]; Mark Wistey[1]; Debdeep Jena[1]; Huili (Grace) Xing[1]; [1]University of Notre Dame; [2]IQE RF LLC; [3]Triquint Semiconductor

**9:20 AM**
**Q4, Pre- and Post-Treatment Investigations of Al Oxide by Atomic Layer Deposition in Schottky Metal/Al Oxide/AlGaN/GaN MOS Diodes**: *Hyeongnam Kim*[1]; Wu Lu[1]; [1]The Ohio State University

**9:40 AM**
**Q5, GaN/Diamond AlGaN/GaN/AlGaN DH-HEMT Produced by Epi-Inverted Wafer Processing**: *Edwin Piner*[1]; John Roberts[2]; [1]Texas State University; [2]Nitronex Corporation

**10:00 AM Break**

**10:20 AM**
**Q6, AlxIn1-xN/GaN Heterostructures Grown by MEMOCVD**: *Daniel Billingsley*[1]; Ajay Sattu[1]; Xuhong Hu[1]; Jianyu Deng[1]; Grigory Simin[1]; Max Shatalov[1]; Michael Shur[1]; Jinwei Yang[1]; Remis Gaska[1]; [1]Sensor Electronic Technology

**10:40 AM Student**
**Q7, Lateral Confinement of Electrons and Quasi-1D Channels Based Devices**: *Digbijoy Nath*[1]; Pil Sung Park[1]; Michele Esposto[1]; David Brown[2]; Stacia Keller[2]; Umesh Mishra[2]; Siddharth Rajan[1]; [1]The Ohio State University; [2]UC Santa Barbara

**11:00 AM**
**Q8, Polarization-Engineered GaN-Based Heterostructure for Normally-off High-Electron Mobility Transistors**: *Hyeongnam Kim*[1]; Digbijoy Nath[1]; Siddharth Rajan[1]; Wu Lu[1]; [1]The Ohio State University

**11:20 AM**
**Q9, Tunneling Current via Dislocations in AlGaN/GaN Schottky Contacts**: *Peter Kordos*[1]; Jaroslav Kovac[1]; Roman Sramaty[1]; Jaroslava Skriniarova[1]; Alexander Satka[1]; Ales Chvala[1]; Daniel Donoval[1]; [1]Department of Microelectronics

**11:40 AM Student**
**Q10, Growth Studies on Quaternary AlInGaN Layers for HEMT Application**: *Benjamin Reuters*[1]; [1]RWTH GaN Device Technology

## Session R:
## Narrow Bandgap Materials and Devices

Thursday AM
June 23, 2011

Room: Lobero
Location: University of California-Santa Barbara

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

**8:20 AM Student**
**R1, Improved Performance of Long-Wave Infrared InAs/GaSb Strained Layer Superlattices Detectors by Novel ZnTe Passivation**: *Maya Narayanan Kutty*[1]; Elena Plis[1]; Svyatoslav Smolev[1]; Nutan Gautam[1]; Mikhail Naydenkov[1]; Stephen Myers[1]; Ralph Dawson[1]; Weiming Wang[2]; Jamie Phillips[2]; Sanjay Krishna[1]; [1]University of New Mexico; [2]The University of Michigan

**8:40 AM**
**R2, Strain-Engineered Binary and Ternary Type-II Superlattice Structures and Photodiodes Grown by Metalorganic Chemical Vapor Deposition**: Yong Huang[1]; *Jae-Hyun Ryou*[1]; Russell Dupuis[1]; Elizabeth Steenbergen[2]; Jin Fan[2]; Yong-Hang Zhang[2]; Daniel Zuo[3]; Ben Kesler[3]; Adam Petschke[3]; Martin Mandl[3]; Shun-Lien Chuang[3]; Hefei Hu[3]; Kyohyun Kim[3]; Yen-Ting Lu[3]; Jian-Min Zuo[3]; [1]Georgia Institute of Technology, Atlanta, GA, USA; [2]Arizona State University; [3]University of Illinois at Urbana-Champaign

**9:00 AM Student**
**R3, Study of Minority Carrier Lifetime and Background Carrier Concentration in GaSb-InAs Strained-Layer Superlattices and Bulk Epitaxial Layers by Optical Modulation Response**: *Ding Wang*[1]; Dmitri Donetsky[1]; Stefan Svensson[2]; Sergei Suchalkin[1]; Gregory Belenky[1]; Amy Liu[3]; Joel Fastenau[3]; Dmitri Lubyshev[3]; [1]Stony Brook University; [2]US Army Research Laboratory; [3]IQE, Inc

**9:20 AM Student**
**R4, Increased Thermophotovoltaic Efficiencies Using a Two Dimensional Photonic Crystal Cavity**: *Corey Shemelya*[1]; Dante Demeo[1]; Thomas Vandervelde[1]; [1]Tufts University

**9:40 AM**
**R5, Effect of Dislocation Density on Thermal Boundary Conductance across GaSb/GaAs Interfaces**: *Patrick Hopkins*[1]; John Duda[1]; Leslie Phinney[1]; Stephen Clark[2]; Christopher Hains[2]; Thomas Rotter[2]; Ganesh Balakrishnan[2]; [1]Sandia National Laboratories; [2]University of New Mexico

**10:00 AM Break**

**10:20 AM Student**
**R6, Low Field Electron Transport in Mixed Arsenide Antimonide Quantum-Well Heterostructures**: *Ashish Agrawal*[1]; Ashkar Ali[1]; Rajiv Misra[1]; Peter Schiffer[1]; Brad Boos[2]; Brian Bennett[2]; Suman Datta[1]; [1]The Pennsylvania State University; [2]Naval Research Lab

**10:40 AM Student**
**R7, AlGaSb/InAs-Based Staggered Heterojunction Tunnel Diodes**: *Siyuan Gu*[1]; Gerry Sullivan[2]; Lingquan Wang[3]; Peter Asbeck[1]; [1]University of California San Diego; [2]Teledyne Scientific Company; [3]Global Foundries

**11:00 AM Student**
**R8, Growth and Characterization of AlInSb Metamorphic Buffers on GaSb and GaAs Substrates for the Growth of MWIR Lasers**: *Stephen Clark*[1]; P. Ahiwar[1]; V. Patel[1]; S. Reissmann[1]; T. Rotter[1]; A. Albrecht[1]; H. Xu[1]; C. Hains[1]; L. Dawson[1]; Y. Picard[2]; G. Balakrishnan[1]; [1]CHTM; [2]Carnegie Mellon University

**11:20 AM**
**R9, Optimization of MBE Growth for the Development of Mid-IR II-VI Quantum Cascade Lasers**: *Richard Moug*[1]; Humara Sultana[1]; Yu Yao[2]; Adrian Alfaro-Mantinez[1]; Le Peng[1]; Thor Garcia[1]; Aidong Shen[1]; Claire Gmachl[2]; Maria Tamargo[2]; [1]City College New York; [2]Princeton University

**11:40 AM Student**
**R10, Growth of III-Sb VECSELs for High-Power Continuous Wave Operation**: *P. Ahirwar*[1]; Thomas Rotter[1]; Alexander Albrecht[1]; Stephen Clark[1]; Victor Patel[1]; Simon Reissmann[1]; Huiwen Xu[1]; Christopher Hains[1]; Larry Dawson[1]; Ganesh Balakrishnan[1]; Jorg Hader[2]; Jerome Moloney[2]; [1]Center for High Technology Materials; [2]University of Arizona

## Session S:
## Nanowire Synthesis and Characterization

Thursday AM
June 23, 2011

Room: Lotte Lehmann
Location: University of California-Santa Barbara

*Session Chairs:* Chen Yang, Purdue University; Kris Bertness, National Institute of Standards and Technology

**8:20 AM Student**
**S1, Photoluminescence of Chemical Vapor Deposition-Grown Diamond Nanowires**: *Steven Palefsky*[1]; Chih-Hsun Hsu[1]; Sylvain Cloutier[2]; Jimmy Xu[1]; [1]Brown University; [2]University of Delaware

**8:40 AM Student**
**S2, Properties of ErAs and ErSb Nanorods Embedded in High-Index III-V Semiconductors**: *Trevor Buehl*[1]; Christopher Palmstrøm[1]; Arthur Gossard[1]; [1]UCSB

**9:00 AM Student**
**S3, Dynamic Control of Growth Kinetics for Three-Dimensional Semiconductor Nano-Heterostructures**: *Santino Carnevale*[1]; Jing Yang[1]; Patrick Phillips[1]; Michael Mills[1]; Roberto Myers[1]; [1]Ohio State University

**9:20 AM Student**
**S4, Structural Characterization of InGaAs Axial Inserts in GaAs Catalyst-Free Nanopillars Grown by Selective-Area MOCVD**: *Joshua Shapiro*[1]; Diana Huffaker[1]; [1]UCLA

**9:40 AM**
**S5, Control of III-V Nanowire Epitaxy by Precursor Chemistry**: Omid Salehzadeh[1]; *Simon Watkins*[1]; [1]Simon Fraser University

**10:00 AM Break**

**10:20 AM Student**
**S6, Temperature-Dependent Growth Direction of Epitaxial InSb Nanowires by Chemical Vapor Deposition**: *Jiebin Zhong*[1]; Jian Lin[1]; Miroslav Penchev[1]; Maziar Ghazinejad[1]; Mihri Ozkan[1]; Cengiz Ozkan[1]; [1]University of California Riverside

**10:40 AM Student**
**S7, Effect of Precursor Flow Rates on the Growth of InPSb Nanowires on InP(111)B**: Chilan Ngo[1]; Marta Pozuelo[1]; Matthew Mecklenburg[2]; Hailong Zhou[3]; Chris Regan[2]; Robert Hicks[3]; *Suneel Kodambaka*[1]; [1]UCLA Department of Materials Science; [2]UCLA Department of Physics and Astronomy; [3]UCLA Department of Chemical and Biomolecular Engineering

**11:00 AM**
**S8, Precise Placement and Diameter Control of Catalyst-Free Molecular Beam Epitaxy Grown GaN Nanowires**: *Aric Sanders*[1]; Kris Bertness[1]; Andrew Herrero[1]; Alexana Roshko[1]; Norman Sanford[1]; John Schlager[1]; Todd Harvey[1]; Devin Rourke[1]; [1]National Institute of Standards and Technology (NIST)

**11:20 AM Student**
**S9, Synthesis and Fabrication of ZnTe Nanosheet Field Effect Transistors for Photonic Applications**: *Ebraheem Azhar*[1]; Jhih-Hong Peng[1]; Ganesh Subramanian[1]; Sandwip Dey[1]; Hongbin Yu[1]; [1]Arizona State University

**11:40 AM S10, Late News**

## Session T:
## Growth of Graphene and Carbon Nanotubes

Thursday AM
June 23, 2011

Room: Multicultural Center Theatre
Location: University of California-Santa Barbara

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

**8:20 AM Student**
**T1, Epitaxial Graphene Formation on Step-Free 4H-SiC(0001)**: *Michael Bolen*[1]; Bob Colby[1]; Eric Stach[2]; Michael Capano[1]; [1]Purdue University; [2]Brookhaven National Laboratory

**9:00 AM**
**T2, Effects of Substrate Orientation and Growth Environment on the Structural and Electronic Properties of Epitaxial Graphene on SiC(0001)**: Joshua Robinson[1]; Kathleen Trumbull[1]; Michael LaBella[1]; Randall Cavalero[1]; Matthew Hollander[1]; Michael Zhu[1]; Maxwell Wetherington[1]; *Mark Fanton*[1]; David Snyder[1]; [1]Penn State University

**9:20 AM**
**T3, High Mobility Epitaxial Graphene on Sapphire via Metal-Free CVD**: *Mark Fanton*[1]; Joshua Robinson[1]; Conor Puls[1]; Brian Weiland[1]; Michael LaBella[1]; Kathleen Trumbull[1]; Richard Kasarda[1]; Casey Howsare[1]; Joseph Stitt[1]; David Snyder[1]; [1]Penn State University

**9:40 AM Student**
**T4, Study of Epitaxial Graphene on Non-Polar 6H-SiC Faces**: *Biplob Daas*[1]; KM Daniels[1]; S. Shetu[1]; TS Sudarshan[1]; MVS Chandrashekhar[1]; [1]University of South Carolina

**10:00 AM Break**

**10:20 AM Student**
**T5, Synthesis of a Pillared Graphene Nanostructure: A Three-Dimensional Hybrid Carbon Architecture**: *Maziar Ghazinejad*[1]; Shirui Gue[1]; Rajat Paul[1]; Mihri Ozkan[1]; Cengiz Ozkan[1]; [1]University of California, Riverside

**10:40 AM Student**
**T6, Electrochemical Graphane Conversion Using E-Beam Evaporated Metals for Catalytic Enhancement**: *Kevin Daniels*[1]; Biplob Daas[1]; Rui Zhang[1]; John Weidner[1]; Christopher Williams[1]; Tangali Sudarshan[1]; MVS Chandrashekhar[1]; [1]University of South Carolina

**11:00 AM**
**T7, Highly Reproducible Growth of Carbon Nanotubes for Practical Applications in Electronics**: *Yohei Yagishita*[1]; Daiyu Kondo[1]; Ikuo Soga[1]; Taisuke Iwai[1]; [1]Fujitsu Laboratories Ltd

**11:20 AM**
**T8, Graphene and Carbon Nanotube Growth in Vacuum Systems**: *Bruce Willner*[1]; Tom Salagaj[1]; Virgil Shields[2]; Michael Spencer[2]; Nick Sbrockey[1]; Gary Tompa[1]; [1]Structured Materials Industries, Inc.; [2]Cornell University

**11:40 AM T9, Late News**

## Session U: Highly Mismatched Alloys

Thursday AM
June 23, 2011

Room: Santa Barbara Harbor
Location: University of California-Santa Barbara

*Session Chairs:* Rachel Goldman, University of Michigan; Joshua Zide, University of Delaware

**8:20 AM Student**
**U1, Synthesis of $Ge_{(1-x)}Sn_x$ Alloy Thin Films Using Ion-Implantation and Pulsed Laser Melting (II-PLM)**: *Ashish Bhatia*[1]; Win Hlaing Oo[1]; Gene Siegel[1]; Peter Stone[2]; Kin-Man Yu[2]; Michael Scarpulla[1]; [1]Materials Science and Engineering, University of Utah; [2]Lawrence Berkeley National Laboratory, Berkeley

**8:40 AM**
**U2, Nitrogen Ordering in Ga(NAs) at the Atomic Scale**: Vivien Voßebürger[1]; Lena Ivanova[2]; Andrea Lenz[2]; Nadine Oswald[2]; Kakhaber Jandieri[1]; Mario Dähne[2]; Wolfgang Soltz[1]; Kerstin Volz[1]; *Holger Eisele*[2]; [1]Philipps University Marburg; [2]Technische Universität Berlin

**9:00 AM Student**
**U3, Band Edge Optical Transitions in Bulk GaSbN and InAsN Dilute-Nitride Materials**: *Ding Wang*[1]; Stefan Svensson[2]; Leon Shterengas[1]; Gregory Belenky[1]; [1]SUNY at Stony Brook; [2]Army Research Laboratory

**9:20 AM Student**
**U4, Highly Mismatched $GaN_{1-x}As_x$ Alloys across the Entire Composition Range**: *Alejandro Levander*[1]; Sergei Novikov[2]; Zuzanna Liliental-Weber[1]; Iraida Demchenko[3]; Jonathan Denlinger[1]; Franziska Luckert[3]; Robert Martin[3]; Oscar Dubon[4]; Tom Foxon[2]; Junqiao Wu[4]; Wladek Walukiewicz[1]; Kin-Man Yu[1]; [1]Lawrence Berkeley National Laboratory; [2]University of Nottingham; [3]Strathclyde University; [4]University of California - Berkeley

**9:40 AM Student**
**U5, A Study of MBE Grown $InSb_{1-x}N_x$ on GaAs for Long-Wavelength IR Applications**: *Nimai Patra*[1]; Sudhakar Bharatan[1]; Jia Li[1]; Shanthi Iyer[1]; [1]North Carolina A&T State University

**10:00 AM Break**

**10:20 AM Student**
**U6, Non-Monotonic Change/Variation in the Seebeck Coefficient of GaAs1-xNx Thin Film Thermoelectrics Due to the Addition of N (x = 0.5% to 1.5%)**: *Paothep Pichanusakorn*[1]; Yanjin Kuang[2]; Prabhakar Bandaru[1]; Charles Tu[2]; Hua Li[2]; Calvin Patel[1]; [1]UCSD-MATS; [2]UCSD-ECE

**10:40 AM Student**
**U7, $GaN_{1-x}Bi_x$: Extremely Mismatched Alloys**: *Alejandro Levander*[1]; Sergei Novikov[2]; Zuzanna Liliental-Weber[1]; Alex Tseng[3]; Jonathan Denlinger[1]; Oscar Dubon[3]; Tom Foxon[2]; Junqiao Wu[3]; Wladek Walukiewicz[1]; Kin-Man Yu[1]; [1]Lawrence Berkeley National Laboratory; [2]University of Nottingham; [3]University of California - Berkeley

**11:00 AM Student**
**U8, Electrical and Thermal Properties of $InGaBi_xAs_{1-x}$**: *Pernell Dongmo*[1]; John Petropoulos[1]; Yujun Zhong[1]; Joshua Zide[1]; [1]University of Delaware

**11:20 AM**
**U9, Incorporation of Bismuth into GaAs and InAs Grown by Molecular-Beam Epitaxy**: *Aaron Ptak*[1]; Ryan France[1]; [1]NREL

**11:40 AM Student**
**U10, Highly Mismatched Oxide Alloy for Photovoltaic and Photoelectrochemical Applications**: *Marie Mayer*[1]; Derrick Speaks[1]; Roberto dos Reis[1]; Zuzanna Liliental-Weber[1]; Kin Man Yu[1]; Samuel Mao[1]; Eugene Haller[1]; Wladek Walukiewicz[1]; [1]LBNL

## Session V: Organic Photovoltaics and Photoelectrochemical Cells

Thursday AM
June 23, 2011

Room: State Street
Location: University of California-Santa Barbara

*Session Chairs:* David Janes, Purdue University; David Gundlach, National Institute of Standards and Technology

**8:20 AM Invited**
**V1, Alkanethiol Island Formation on Single Crystal Zinc Oxide Surfaces**: Andrea Yocom[1]; Darick Baker[1]; Thomas Brenner[1]; Heather Hunt[1]; Dana Olson[1]; Thomas Furtak[1]; Timothy Ohno[1]; *Reuben Collins*[1]; [1]Colorado School of Mines

**9:00 AM**
**V2, Improved High Efficiency Organic Solar Cells via Incorporation of a Conjugated Polyelectrolyte Interlayer**: *Jung Hwa Seo*[1]; Andrea Gutacker[2]; Yanming Sun[3]; Hongbin Wu[4]; Fei Huang[4]; Yong Cao Cao[4]; Ullrich Scherf[2]; Alan J. Heeger Heeger[3]; Guillermo C. Bazan[3]; [1]Dong-A University; [2]Bergische Universitaet Wuppertal; [3]University of California Santa Barbara; [4]South China University of Technology

**9:20 AM Student**
**V3, A Systematic Approach to Solvent Selection Based on Cohesive Energy Densities in a Molecular Bulk Heterojunction System**: *Bright Walker*[1]; Arnold Tamayo[2]; Duc Duong[1]; Xuan-Dung Dang[1]; Chunki Kim[1]; Jimmy Granstrom[1]; Thuc-Quyen Nguyen[1]; [1]University of California Santa Barbara; [2]Colorado School of Mines

**9:40 AM Student**
**V4, Structure-Function-Property Relationships of Diketopyrrolopyrrole-Based Materials for Applications in Solution Processed Organic Solar Cells**: *Jason Lin*[1]; [1]UCSB

**10:00 AM Break**

**10:20 AM Student**
**V5, ALD-TiO2 to Enable Si as a Corrosion Resistant Photoelectrode for Water Oxidation and in Photoelectrochemical Solar Cells**: *Yi Wei Chen*[1]; Jonathan Prange[1]; Marika Gunji[1]; Christopher Chidsey[1]; Paul McIntyre[1]; [1]Stanford University

**10:40 AM**
**V6, Performance Optimization of Branched Nanowire Heterostructure-Based Photoelectrochemical Cells for Water Solar Splitting**: *Alireza Kargar*[1]; Ke Sun[1]; Deli Wang[1]; [1]UC San Diego

**11:00 AM**
**V7, Layer-By-Layer Assembly of Light Harvesting Arrays for Molecular Based Solar Cells**: *Peter Dinolfo*[1]; [1]Rensselaer Polytechnic Institute

**11:20 AM Student**
**V8, Low Temperature Fabrication of Hybrid Carbon Nanotube Gel as a Counter Electrode for Efficient Dye Sensitized Solar Cells**: *Gede Adhyaksa*[1]; Jin Park[1]; Ga Lee[1]; Jeung Kang[1]; [1]KAIST

**11:40 AM V9, Late News**

## Session W: III-Nitride: Bulk Growth and Epitaxy

Thursday PM
June 23, 2011

Room: Corwin East
Location: University of California-Santa Barbara

*Session Chairs:* Theeradetch Detchprohm, Rensselaer Polytechnic Institute; Edwin Piner, Texas State University

**1:30 PM Student**
**W1, Shape Transformation of Nanoporous GaN by Annealing: Buried Cavities and Nanomembranes**: *Christopher Yerino*[1]; Yu Zhang[1]; Benjamin Leung[1]; Jung Han[1]; [1]Yale University

**1:50 PM Student**
**W2, Bulk GaN Growth on GaN Seeds of Varying Orientations in Supercritical Basic Ammonia**: *Siddha Pimputkar*[1]; Shinichiro Kawabata[2]; James Speck[1]; Shuji Nakamura[1]; [1]Materials Department, University of California - Santa Barbara; [2]Optoelectronics Laboratory, Mitsubishi Chemical Corporation

**2:10 PM Student**
**W3, Large-Area, Free Standing GaN by an Novel Nanoetching Process and Substrate Recycling**: *Yu Zhang*[1]; Qian Sun[1]; Benjamin Leung[1]; John Simon[1]; Minjoo Lee[1]; Jung Han[1]; [1]Yale University

**2:30 PM Student**
**W4, Effect of Strain on Effective Masses in GaN and AlN**: *Cyrus Dreyer*[1]; Anderson Janotti[1]; Chris Van de Walle[1]; [1]University of California, Santa Barbara

**2:50 PM Student**
**W5, Quasi Equilibrium Crystal Shapes and Kinetic Wulff Plots of Gallium Nitride Grown by Hydride Vapor Phase Epitaxy**: *Benjamin Bryant*[1]; Asako Hirai[1]; Shuji Nakamura[1]; James Speck[1]; [1]Univeristy of California, Santa Barbara

**3:10 PM Break**

**3:30 PM Student**
**W6, *In Situ* Stress Measurements during GaN Growth on Ion Implanted AlN/Si Substrates**: *Jarod Gagnon*[1]; Mihir Tungare[2]; Xiaojun Weng[3]; Fatemeh (Shadi) Shahedipour-Sandvik[2]; Joan Redwing[1]; [1]Pennsylvania State University; [2]The College of Nanoscale Science and Engineering, University at Albany; [3]The Materials Research Institute

**3:50 PM Student**
**W7, Effect of Indium Surfactant on N-Polar GaN Epilayers Grown by Metalorganic Chemical Vapor Deposition**: *Dongjin Won*[1]; Xiaojun Weng[1]; Joan Redwing[1]; [1]The Pennsylvania State University

**4:10 PM Student**
**W8, Schottky Barrier Height and Interface Chemistry for Metals Contacted to Low Dislocation Density AlGaN Grown on C-Oriented AlN Wafers**: *James Tweedie*[1]; Anthony Rice[1]; Ramon Collazo[1]; Seiji Mita[2]; Jinqiao Xie[2]; Zlatko Sitar[1]; [1]North Carolina State University; [2]Hexatech, Inc.

**4:30 PM Student**
**W9, Generation Mechanism of Threading Dislocations in Heteroepitaxial Growth of 2H-AlN on 6H-SiC (0001) Substrates**: *Hironori Okumura*[1]; Tsunenobu Kimoto[1]; Jun Suda[1]; [1]Kyoto University

**4:50 PM**
**W10, Impact of AlN Wetting Layer on the Strain Development in GaN Layer Grown on Chemical Mechanical Polished 4H - SiC Substrates**: *Eunjung Cho*[1]; Frank Brunner[1]; Markus Weyers[1]; [1]Ferdinand-Braun-Institut

## Session X: Oxide Thin Films

Thursday PM
June 23, 2011

Room: Corwin West
Location: University of California-Santa Barbara

*Session Chairs:* John Conley, Oregon State University; Patrick Lenahan, Pennsylvania State University

**1:30 PM Student**
**X1, Gate First $In_{0.53}Ga_{0.47}As/Al_2O_3$ MOSFETs with In-Situ Channel Surface Cleaning**: *Andrew Carter*[1]; Jeremy Law[1]; William Mitchell[1]; Gregory Burek[1]; Brian Thibeault[1]; Arthur Gossard[1]; Mark Rodwell[1]; [1]UC Santa Barbara

**1:50 PM Student**
**X2, Structure of Electronic Defects near the SiC/SiO2 Interface**: *Corey Cochrane*[1]; Patrick Lenahan[1]; Aivars Lelis[2]; [1]Pennsylvania State University; [2]Army Research Lab

**2:10 PM**
**X3, Interface State Density for Positive Band Offset Dielectrics (Al2O3, SiO2) on GaN**: *Ramya Yeluri*[1]; Jing Lu[1]; Xiang Liu[1]; Brian Swenson[1]; Umesh Mishra[1]; Guangle Zhou[2]; Huili Xing[2]; [1]University of California Santa Barbara; [2]University of Notre Dame

**2:30 PM Student**
**X4, Comparison of Metal Deposition Methods by CV Analysis of ALD $Al_2O_3$ on $In_{0.53}Ga_{0.47}As$**: *Gregory Burek*[1]; Andrew Carter[1]; Jeremy Law[1]; Brian Thibeault[1]; William Mitchell[1]; Mark Rodwell[1]; [1]Electrical Engineering Department UCSB

**2:50 PM Student**
**X5, Passivation Effects of ALD Oxides on Self-Aligned $In_{0.53}Ga_{0.47}As$/InAs/InP Vertical Tunnel FETs**: *Guangle Zhou*[1]; Yeqing Lu[1]; Rui Li[1]; Tim Vasen[1]; Qingmin Liu[1]; Wan Sik Hwang[1]; Qin Zhang[1]; Haijun Zhu[2]; Jenn-Ming Kuo[2]; Siyuranga Koswatta[3]; Mark Wistey[1]; Tom Kosel[1]; Patrick Fay[1]; Alan Seabaugh[1]; Huili Xing[1]; [1]University of Notre Dame; [2]IntelliEPI; [3]IBM T. J. Watson Research Center

**3:10 PM Break**

**3:30 PM Student**
**X6, Influence of Trimethylaluminium (TMA) Exposure on the Growth and Electrical Characteristics of $HfO_2/In_{0.53}G_{0.47}As$ Gate Stacks**: *Yoontae Hwang*[1]; Varistha Chobpattana[1]; Roman Engel-Herbert[2]; Susanne Stemmer[1]; [1]University of California, Santa Barbara; [2]Pennsylvania State University

**3:50 PM Student**
**X7, Investigation of Electrode Roughness and High-K Dielectric Barrier on Metal-Insulator-Metal Tunnel Diode Operation**: *Nasir Alimardani*[1]; E. Cowell[1]; John Wager[1]; John Conley[1]; [1]Oregon State University

**4:10 PM**
**X8, Co-Sputtering of Barium Strontium Titanate (BST) and Barium Oxide-Boron Oxide Flux (BaO-B2O3) for Thin Film Applications**: *Peter Lam*[1]; David Harris[1]; Jon-Paul Maria[1]; [1]North Carolina State University

**4:30 PM Student**
**X9, Solution-Processed Zirconium Oxide and Integration with Zinc-Tin Oxide Thin-Film Transistors**: *Chen-Guan Lee*[1]; Ananth Dodabalapur[1]; [1]University of Texas at Austin

**4:50 PM**
**X10, Epitaxial $LaAlO_3/SrTiO_3$ Heterostructures by Atomic Layer Deposition**: *Nick Sbrockey*[1]; Michael Luong[1]; Eric Gallo[2]; Jennifer Sloppy[2]; Guannan Chen[2]; Christopher Winkler[2]; Stephanie Johnson[2]; Mitra Taheri[2]; Jonathan Spanier[2]; Gary Tompa[1]; [1]Structured Materials Industries, Inc.; [2]Drexel University

## Session Y:
## Point, Defects, Doping and Extended Defects

Thursday PM
June 23, 2011

Room: Flying A
Location: University of California-Santa Barbara

*Session Chairs:* Andrew Armstrong, Sandia National Laboratories; Emre Gur, Ohio State University

**1:30 PM**
**Y1, The Influence of Al Composition on AlGaN Point Defect Incorporation**: *Tania Henry*[1]; Andrew Armstrong[1]; Andrew Allerman[1]; Mary Crawford[1]; [1]Sandia National Laboratories

**1:50 PM Student**
**Y2, Hybrid Functional Calculations of DX Centers in AlN, GaN and AlGaN**: *Luke Gordon*[1]; John L. Lyons[1]; Anderson Janotti[1]; Chris G. Van de Walle[1]; [1]University of California, Santa Barbara

**2:10 PM Student**
**Y3, Deep Traps in M-Plane GaN Grown by Ammonia MBE**: *Zeng Zhang*[1]; Christophe Hurni[2]; Aaron Arehart[1]; James Speck[2]; Steven Ringel[1]; [1]The Ohio State University; [2]University of California Santa Barbara

**2:30 PM**
**Y4, Intrinsic Surface States and Dislocations at GaN(10-10) Surfaces Investigated by Scanning Tunneling Microscopy**: *Holger Eisele*[1]; Lena Ivanova[1]; Svetlana Borisova[2]; Mario Dähne[1]; Philipp Ebert[2]; [1]Technische Universität Berlin; [2]Forschungszentrum Jülich GmbH

**2:50 PM**
**Y5, Defect Characterization of InGaN Layer by Deep Level Transient and Optical Spectroscopies**: *Emre Gur*[1]; Sriram Krishnamoorty[1]; Zeng Zhang[1]; Siddharth Rajan[1]; Steven Ringel[1]; [1]Ohio State University

**3:10 PM Break**

**3:30 PM Student**
**Y6, Observation of *m*-Plane Slip and Relaxation Orthogonal to the Projected *c*-Direction in (20-21) InGaN/GaN Partially Relaxed Layers**: *Matthew Hardy*[1]; Feng Wu[1]; Po Shan Hsu[1]; Ingrid Koslow[1]; Erin Young[1]; James Speck[1]; Steven DenBaars[1]; [1]UC Santa Barbara

**3:50 PM Student**
**Y7, Misfit Dislocation Formation in Partially Strain-Relaxed (11-22) Semipolar InGaN**: *Po Shan Hsu*[1]; Erin Young[1]; Alexey Romanov[1]; Kenji Fujito[1]; James Speck[1]; Shuji Nakamura[1]; [1]Materials Department, University of California, Santa Barbara

**4:10 PM Student**
**Y8, Stress Mapping Analysis by Ray Tracing (SMART): A New Technique for Residual Strain/Stress Measurement of Single Crystal Material Using Synchrotron White Beam**: *Vishwanath Sarkar*[1]; Balaji Raghothamachar[1]; Michael Dudley[1]; [1]SUNY at Stony Brook

**4:30 PM Student**
**Y9, Charged Basal Stacking Fault (BSF) Scattering in Wide Band-Gap Semiconductors**: *Aniruddha Konar*[1]; Tian Fang[1]; Nan Sun[1]; Debdeep Jena[1]; [1]University of Notre Dame

**4:50 PM Student**
**Y10, Hydrogen-Related Cathodoluminescence in Mg-Doped GaN**: *Reid Juday*[1]; Kewei Sun[1]; Alec Fischer[1]; Fernando Ponce[1]; Hee Jin Kim[2]; Suk Choi[2]; Jeomoh Kim[2]; Mi-Hee Ji[2]; Jae-Hyun Ryou[2]; Russell Dupuis[2]; [1]Arizona State University; [2]Georgia Institute of Technology

## Session Z:
## Epitaxial Materials and Devices I

Thursday PM
June 23, 2011

Room: Lobero
Location: University of California-Santa Barbara

*Session Chairs:* Christine Wang, Massachusetts Institute of Technology, Lincoln Laboratory; Charles Lutz, Kopin Corporation

**1:30 PM Student**
**Z1, Growth of Epitaxially-Embedded ErAs Films in GaAs**: *Adam Crook*[1]; Hari Nair[1]; Domingo Ferrer[1]; Seth Bank[1]; [1]University of Texas at Austin

**1:50 PM Student**
**Z2, Improved Conductivity of GaAs-Based Tunnel Junctions Containing ErAs Nanostructures via Compositional Grading**: *Rodolfo Salas*[1]; Erica Krivoy[1]; Adam Crook[1]; Hari Nair[1]; Seth Bank[1]; [1]University of Texas at Austin

**2:10 PM Student**
**Z3, Photoluminescence from the Direct Bandgap of $Ge_{1-x}Sn_x$ Alloys Grown by Molecular Beam Epitaxy**: *Robert Chen*[1]; Hai Lin[1]; Yijie Huo[1]; Suyog Gupta[1]; Krishna Saraswat[1]; Ted Kamins[1]; James Harris[1]; [1]Stanford

**2:30 PM**
**Z4, Fabrication and Characterization of Whispering Galley Mode (WGM) Microdisk Resonator Based on Epitaxially Grown GeSn**: *Seongjae Cho*[1]; Robert Chen[1]; Hai Lin[1]; Yijie Huo[1]; Gary Shambat[1]; Jelena Vuckovic[1]; Theodore Kamins[1]; Byung-Gook Park[1]; James Harris[1]; [1]Stanford University

**2:50 PM Student**
**Z5, Raman Study of Strained Ge1-xSnx Alloys**: *Hai Lin*[1]; Robert Chen[2]; Yijie Huo[2]; Theodore Kamins[2]; James Harris[2]; [1]Materials Science and Engineering; [2]Electrical Engineering

**3:10 PM Break**

**3:30 PM**
**Z6, Study of Molecular Beam Epitaxial Grown HgCdSe for Infrared Applications**: *Gregory Brill*[1]; Yuanping Chen[1]; Priyalal Wijewarnasuriya[1]; [1]U.S. Army Research Laboratory

**3:50 PM Student**
**Z7, XMCD Measurement of Molecular Beam Epitaxy γ'-$Fe_4N$ Thin Films on $LaAlO_3$(100) and MgO(100) Substrates**: *Keita Ito*[1]; GeunHyoung Lee[1]; Kazunori Harada[1]; Mao Ye[2]; Yukiharu Takeda[3]; Yuji Saitoh[3]; Takashi Suemasu[1]; Akio Kimura[2]; Hiro Akinaga[4]; [1]University of Tsukuba; [2]Hiroshima University; [3]JAEA; [4]AIST

**4:10 PM**
**Z8, Sb Surfactant Use during GaInP and GaInAs Strain Relaxation**: *Ryan France*[1]; William McMahon[1]; John Geisz[1]; Aaron Ptak[1]; Myles Steiner[1]; Bobby To[1]; Manuel Romero[1]; Waldo Olavarria[1]; [1]National Renewable Energy Laboratory

**4:30 PM Student**
**Z9, Sensitivity of Strained and Unstrained Structure Growth on GaAs (111) B**: *Denzil Roberts*[1]; David Mueller[1]; Gregory Triplett[1]; [1]University of Missouri

**4:50 PM**
**Z10, Ternary InxGa1-xAs Nanowires on Silicon Substrates: 1D Heterogeneous Epitaxy, Bandgap Engineering, and Photovoltaics**: Jae Cheol Shin[1]; *Xiuling Li*[1]; [1]University of Illinois

## Session AA: Four Dots and a Dash

Thursday PM Room: Lotte Lehmann
June 23, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Akio Sasaki, Kyoto University; James Merz, University of Notre Dame

**1:30 PM**
**AA1, Self-Assembled, Tensile-Strained III-V Islands on (110) and (111)A Substrates**: *Paul Simmonds*[1]; Minjoo Larry Lee[1]; [1]Yale University

**1:50 PM**
**AA2, Atomic Structure of InAs/InGaAsP/InP(001) Quantum Dashes and Decomposition of the InGaAsP Matrix Material**: *Andrea Lenz*[1]; Holger Eisele[1]; Florian Genz[1]; Lena Ivanova[1]; Rainer Timm[1]; Dieter Franke[2]; Harald Künzel[2]; Udo Pohl[1]; Mario Dähne[1]; [1]Technische Universität Berlin; [2]Fraunhofer Heinrich Hertz Institut

**2:10 PM Student**
**AA3, Photoluminescence and Thermal Carrier Activation in Type-II ZnTe/ZnSe Quantum Dots**: *Bor-Chau Juang*[1]; Weiming Wang[1]; Jamie Phillips[1]; [1]University of Michigan, Ann Arbor

**2:30 PM Student**
**AA4, Temperature Dependent Photoluminescence of Ensemble and Single InAs/InGaAlAs Quantum Dots**: *Nahid Jahan*[1]; Claus Hermannstädter[1]; Jae-Hoon Huh[1]; Hirotaka Sasakura[1]; K. Akahane[2]; M. Sasaki[2]; Pankaj Ahirwar[3]; Thomas J. Rotter[3]; Ganesh Balakrishnan[3]; Hidekazu Kumano[1]; Ikuo Suemune[1]; [1]Laboratory of Nano-photonics; [2]National Institute of Information and Communication Technology; [3]Center for High Technology Materials

**2:50 PM**
**AA5, Atomic Structure and Optical Properties of Submonolayer InAs/GaAs Depositions**: Andrea Lenz[1]; *Holger Eisele*[1]; Jonas Becker[1]; Jan-Hindrick Schulze[1]; Tim Germann[1]; Franziska Luckert[1]; Konstantin Pötschket[1]; Ernst Lenz[1]; Lena Ivanova[1]; Andre Strittmatter[1]; Udo Pohl[1]; Mario Dähne[1]; Dieter Bimberg[1]; [1]Technische Universität Berlin

**3:10 PM Break**

## Session BB: Fundamentals of Low-Dimensional Structures

Thursday PM Room: Lotte Lehmann
June 23, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Glenn Solomon, National Institute of Standards and Technology; James Merz, University of Notre Dame

**3:30 PM Student**
**BB1, Local Density of States and Semimetallic Behavior of Rare Earth-V Nanoparticles Embedded in a III-V Semiconductor Matrix**: *Jason Kawasaki*[1]; Rainer Timm[2]; Trevor Buehl[1]; Edvin Lundgren[2]; Arthur Gossard[1]; Anders Mikkelsen[2]; Chris Palmstrom[1]; [1]University of California Santa Barbara; [2]Lund University

**3:50 PM Student**
**BB2, A Simple Thermodynamic Model for the Doping and Alloying of Nanoparticles**: *John Petropoulos*[1]; Thomas Cristiani[1]; Pernell Dongmo[1]; Joshua Zide[1]; [1]University of Delaware

**4:10 PM Student**
**BB3, Band Structure and Thermal Escape Processes of Strained InGaSb/AlGaSb Quantum Wells**: *Nahid Jahan*[1]; Hitoshi Iijima[1]; Claus Hermannstädter[1]; Thomas Rotter[2]; Pankaj Ahirwar[2]; Ganesh Balakrishnan[2]; Hidekazu Kumano[1]; Ikuo Suemune[1]; [1]Hokkaido University; [2]University of New Mexico

**4:30 PM Student**
**BB4, Formation and Templating of III-V Semiconductor Nanospikes by Focused Ion Beams**: *Kevin Grossklaus*[1]; Joanna Millunchick[1]; [1]University of Michigan

**4:50 PM Student**
**BB5, A Detailed Temperature-Dependent Photoluminescence Investigation into the Growth Pause Induced Ripening of InAs/GaAs Quantum Dot Heterostructures**: *Rahul Makhijani*[1]; Saumya Sengupta[1]; Subhananda Chakrabarti[1]; [1]Indian Institute of Technology Bombay

## Session CC: Graphene Characterization and Applications

Thursday PM Room: Multicultural Center Theatre
June 23, 2011 Location: University of California-Santa Barbara

*Session Chairs:* Huili Grace Xing, University of Notre Dame; M.V.S. Chandrashekhar, Cornell University

**1:30 PM**
**CC1, In Situ High-Temperature Scanning Tunneling Microscopy Studies of Graphene Growth on 6H-SiC(0001)**: *Suneel Kodambaka*[1]; Yuya Murata[1]; Vania Petrova[2]; Ivan Petrov[2]; [1]University of California, Los Angeles (UCLA); [2]Frederick Seitz Materials Research Laboratory, University of Illinois Urbana-Champaign

**1:50 PM**
**CC2, Electrical Characterization of Graphene-Semiconductor Heterojunctions**: *Travis Anderson*[1]; Karl Hobart[1]; Luke Nyakiti[1]; Virginia Wheeler[1]; Rachel Myers-Ward[1]; Boris Feigelson[1]; Joshua Caldwell[1]; Francisco Bezares[1]; Jennifer Hite[1]; Michael Mastro[1]; D Gaskill[1]; Charles Eddy[1]; Francis Kub[1]; Glenn Jernigan[1]; [1]Naval Research Laboratory

**2:10 PM Student**
**CC3, Correlated Conductivity and Work Function in Epitaxial Graphene**: *Mohammad Nomani*[1]; Amol Singh[1]; Goutam Koley[1]; Virgil Shields[2]; Mike Spencer[2]; Gary Tompa[3]; Nick Sbrockey[3]; [1]University of South Carolina; [2]Cornell University; [3]Structured Materials Industries, Inc.

**2:30 PM**
**CC4, Response of Graphene-Based Field Effect Devices Exposed to Gamma and Neutron Irradiation**: *Mark Fanton*[1]; Joshua Robinson[1]; Michael LaBella[1]; Randal Cavalero[1]; Brenden Heidrich[1]; Matthew Hollander[1]; Zachery Hughes[1]; Kathleen Trumbull[1]; [1]Penn State University

**2:50 PM Student**
**CC5, Surface Adsorption and Charge Transport in Epitaxial Graphene on 6H-SiC**: *Shamaita Shetu*[1]; MWK Nomani[1]; Goutam Koley[1]; MVS Chandrashekhar[1]; [1]University of South Carolina

**3:10 PM Break**

**3:30 PM Student**
**CC6, Graphene Reinforced Composites as Efficient Thermal Interface Materials**: *Khan Shahil*[1]; Samia Subrina[1]; Alexander Balandin[1]; [1]University of California, Riverside (UCR)

**3:50 PM Student**
**CC7, Frequency Domain THz Characterization of Graphene**: *Berardi Sensale-Rodriguez*[1]; Rusen Yan[1]; Michelle Kelly[1]; Tian Fang[1]; Kristof Tahy[1]; Debdeep Jena[1]; Lei Liu[1]; Huili Grace Xing[1]; [1]University of Notre Dame

**4:10 PM**
**CC8, Charge Carrier Dynamics in Graphene: Suspended vs. Supported**: *Bo Gao*[1]; Libai Huang[1]; Gregory Hartland[1]; Michelle Kelly[1]; Huili Xing[1]; Debdeep Jena[1]; [1]University of Notre Dame

**4:30 PM Student**
**CC9, Polariton Enhanced IR-Reflectivity of Epitaxial Graphene on SiC**: *Biplob Daas*[1]; KM Daniels[1]; S. Shetu[1]; W.K. Nomani[1]; Goutam Koley[1]; T.S. Sudarshan[1]; MVS Chandrashekhar[1]; [1]University of South Carolina

**4:50 PM Student**
**CC10, Centimeter-Scale Metrology of CVD Graphene on Glass**: *Jennifer Reiber Kyle*[1]; Ali Guvenc[1]; Wei Wang[1]; Jian Lin[1]; Maziar Ghazinejad[1]; Cengiz Ozkan[1]; Mihrimah Ozkan[1]; [1]University of California Riverside

## Session DD: Nano-Magnetic, Magnetic Memory and Spintronic Materials

Thursday PM, June 23, 2011
Room: Santa Barbara Harbor
Location: University of California-Santa Barbara

*Session Chairs:* Michael Flatte, Univ of Iowa; Xinyu Liu, Univ of Notre Dame

**1:30 PM Student**
**DD1, Enhanced Spin Injection and Spin Lifetimes in Graphene**: *Wei Han*[1]; Roland Kawakami[1]; [1]University of California, Riverside

**1:50 PM Student**
**DD2, Enhancement of Spin Torque by Proximity to Other Domain Walls**: *Elizabeth Golovatski*[1]; Michael Flatte[1]; [1]University of Iowa

**2:10 PM Student**
**DD3, Spin Seebeck Effect in MnAs/GaMnAs Bilayers**: *Kurtis Wickey*[1]; Christopher Jaworski[2]; Jing Yang[3]; Shawn Mack[4]; David Awschalom[4]; Joseph Heremans[2]; Roberto Myers[3]; Ezekiel Johnston-Halperin[1]; [1]Physics Department, The Ohio State University; [2]Mechanical Engineering Department, The Ohio State University; [3]Materials Science and Engineering Department, The Ohio State University; [4]Center for Spintronics and Quantum Computation, UCSB

**2:30 PM**
**DD4, Universal Valence-Band Picture of the Ferromagnetic Semiconductor GaMnAs Obtained by the Resonant Tunneling Spectroscopy**: *Shinobu Ohya*[1]; Kenta Takata[1]; Yufei Xin[1]; Masaaki Tanaka[1]; [1]The University of Tokyo

**2:50 PM Student**
**DD5, Fe3O4/GaAs Hybrid Ferromagnet/Semiconductor Nanostructures**: *Paul Riechers*[1]; Jun Chen[2]; Christopher Murray[2]; Richard Kiehl[1]; [1]UC Davis; [2]University of Pennsylvania

**3:10 PM Break**

**3:30 PM Student**
**DD6, Magnetic Depth Profile of Mn-Graded (Ga,Mn)As**: *J. Leiner*[1]; B. Kirby[2]; K. Tivakornsasithorn[1]; Xinyu Liu[1]; J. Furdyna[1]; M. Dobrowolska[1]; [1]University of Notre Dame; [2]National Institute of Standards and Technology

**3:50 PM**
**DD7, Manganese-Doping of Group IV Semiconductor Surfaces and Nanostructures**: Christopher Nolph[1]; Kiril Simov[1]; Catherine Jenkins[2]; Anders Glans[2]; *Petra Reinke*[1]; [1]University of Virginia; [2]Lawrence Berkeley National Laboratory

**4:10 PM**
**DD8, Unexpected Exchange-Bias Effect at Paramagnetic/Ferromagnetic Interfaces in Oxide-Based Structures**: *Laura Steren*[1]; Juan Rojas Sanchez[2]; Brittany Nelson-Cheeseman[3]; Mara Granada[4]; E. Arenholz[5]; [1]Centro Atomico Constituyentes; [2]Centro Atomico Bariloche; [3]University of California; [4]Laboratoire de Photonique et Nanostructures-CNRS; [5]Lawrence Berkeley National Laboratory

**4:30 PM Student**
**DD9, Formation of Half-Metallic Ferromagnet Tunnel Junctions of $Co_2FeSi/SiO_xN_y/Si$ Using Radical Oxynitridation Technique**: *Yota Takamura*[1]; Kengo Hayashi[1]; Yusuke Shuto[2]; Satoshi Sugahara[2]; [1]Dept. of Electronics and Appl. Phys., Tokyo Inst. of Tech.; [2]ISEL, Tokyo Inst. of Tech., and CREST, JST

**4:50 PM Student**
**DD10, Characterization of** $L2_1$-Ordered Full-Heusler $Co_2FeSi_{1-x}Al_x$ Alloy Thin Films Formed by Silicidation Technique Employing Silicon-on-Insulator Substrate: *Mitsuhiro Satoh*[1]; Yota Takamura[1]; Satoshi Sugahara[2]; [1]Dept. of Electronics and Appl. Phys., Tokyo Inst. of Tech.; [2]ISEL, Tokyo Inst. of Tech., and CREST, JST

## Session EE: Organic Thin Film and Crystalline Transistors: Devices and Materials

Thursday PM, June 23, 2011
Room: State Street
Location: University of California-Santa Barbara

*Session Chairs:* Alberto Salleo, Stanford University; David Gundlach, National Institute of Standards and Technology

**1:30 PM Student**
**EE1, Quantitative Analysis of Lattice Disorder and Crystallite Size in Organic Semiconductor Thin Films, and Implications for Charge Transport**: *Jonathan Rivnay*[1]; Rodrigo Noriega[1]; Michael Toney[2]; John Northrup[3]; R. Kline[4]; Alberto Salleo[1]; [1]Stanford University; [2]Stanford Synchrotron Radiation Lightsource; [3]Palo Alto Research Center; [4]NIST

**1:50 PM Student**
**EE2, Following Charge-Trapping Chemical Reactions in Pentacene Films by Selective Chemical Doping and Wavelength-Resolved Electric Force Microscopy**: *Louisa Brown*[1]; Vladimir Pozdin[1]; Justin Luria[1]; Chad Lewis[1]; John Marohn[1]; [1]Cornell University

**2:10 PM Student**
**EE3, Molecular Contact Doping for Organic n-Channel TFTs and Fast Complementary Circuits**: *Frederik Ante*[1]; Tobias Canzler[2]; Jan Blochwitz-Nimoth[2]; Florian Letzkus[3]; Joachim Burghartz[3]; Ute Zschieschang[1]; Hagen Klauk[1]; [1]Max Planck Institute for Solid State Research; [2]Novaled AG; [3]IMS CHIPS

**2:30 PM Student**
**EE4, Charge Trapping and Localization Due to Paracrystalline Disorder in High Performance Polymeric Semiconductors**: *Rodrigo Noriega*[1]; Jonathan Rivnay[1]; John Northrup[2]; R. Joseph Kline[3]; Michael Toney[4]; Alberto Salleo[1]; [1]Stanford University; [2]Palo Alto Research Center; [3]NIST; [4]Stanford Synchrotron Radiation Lightsource

**2:50 PM Student**
**EE5, Probing the Microstructure of Buried Polymer-Polymer Interfaces with Thin Film Transistors**: *Justin Cochran*[1]; Michael Chabinyc[1]; [1]University of California Santa Barbara

**3:10 PM Break**

**3:30 PM**
**EE6, Organic Electrochemical Transistors: Working Principle and Applications in Sensing**: *Fabio Cicoira*[1]; George Malliaras; [1]CNR

**3:50 PM Invited**
**EE7, Materials Requirements for Low-Voltage Flexible Organic Transistors and Circuits**: *Hagen Klauk*[1]; [1]Max Planck Institute for Solid State Research

**4:30 PM**
**EE8, Organic Transistor-Based Memory**: *Martin Burkhardt*[1]; Abdesselam Jedaa[2]; Michael Novak[2]; Marcus Halik[2]; [1]Materials Department, University of California Santa Barbara; [2]Institute of Polymer Materials, University Erlangen-Nürnberg

**4:50 PM Student**
**EE9, From Nano- to Micro-Scale Control of Crystalline Order in Soluble Small-Molecule Organic Semiconductors**: *Jeremy Ward*[1]; Marsha Loth[2]; John Anthony[2]; Oana Jurchescu[1]; [1]Wake Forest University; [2]University of Kentucky

## NOTES

## Session FF:
## III-Nitrides: Epitaxy Material and Devices II

Friday AM
June 24, 2011

Room: Corwin East
Location: University of California-Santa Barbara

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

**8:20 AM**
**FF1, n+GaAs Sheet Resistance Saturation and Implications to BiHEMT Growth**: Kevin Stevens[1]; Nuvee Kunathai[1]; Tom Nunes[1]; Charles Lutz[1]; *Wayne Johnson*[1]; [1]Kopin Corporation

**8:40 AM Student**
**FF2, Metamorphic p-i-n InGaAs Photodetectors Grown by MOCVD**: *Yan Gao*[1]; Zhenyu Zhong[1]; Hu Liang[1]; Yu Geng[1]; Shaoqi Feng[1]; Kei May Lau[1]; Andrew W. Poon[1]; [1]HKUST

**9:00 AM Student**
**FF3, Optimized Growth Condition and Dot Geometry in InAs/InGaAs Sub-Monolayer Quantum Dot Infrared Photodetector**: *Jiayi Shao*[1]; [1]CHTM at University of New Mexico

**9:20 AM**
**FF4, Epitaxial Growth of InGaAs/InAlAs/InP Quantum Cascade Lasers by Metalorganic Chemical Vapor Deposition**: Yong Huang[1]; *Jae-Hyun Ryou*[1]; Russell Dupuis[1]; Christian Pflugl[2]; Federico Capasso[2]; Kewei Sun[3]; Alec Fischer[3]; Fernando Ponce[3]; [1]Georgia Institute of Technology; [2]Harvard University; [3]Arizona State University

**9:40 AM Student**
**FF5, GaInNAsSb Quantum Wells with Strain-Compensating GaAsP Layers for GaAs-Based 1.55 µm Lasers**: *Tomas Sarmiento*[1]; James Harris[1]; [1]Stanford University

**10:00 AM Break**

## Session GG:
## Non-Polar and Semi-Polar III-Nitrides Devices

Friday AM
June 24, 2011

Room: Corwin East
Location: University of California-Santa Barbara

*Session Chairs:* Russell Dupuis, Georgia Institute of Technology; Jae-Hyun Ryou, Georgia Institute of Technology

**10:20 AM Student**
**GG1, Highly Polarized Spontaneous Emission from Semipolar (20-2-1) InGaN/GaN Light-Emitting Diodes**: *Yuji Zhao*[1]; Shinichi Tanaka[2]; Roy Chung[2]; Chih-Chien Pan[2]; Kenji Fujito[3]; Daniel Feezell[2]; James Speck[2]; Steven Denbaars[1]; Shuji Nakamura[1]; [1]Electrical and Computer Engineering Department, University of California, Santa Barbara; [2]Materials Department, University of California, Santa Barbara; [3]Optoelectronics Laboratory, Mitsubishi Chemical Corporation

**10:40 AM Student**
**GG2, Characterization of Green Semipolar (20-21) GaInN/GaN Multiple Quantum Well Light-Emitting Diodes Grown on Freestanding GaN Substrate**: *Liang Zhao*[1]; Shi You[1]; Christopher Stark[1]; Wenting Hou[1]; Theeradetch Detchprohm[1]; Edward Preble[2]; Tanya Paskova[2]; Christian Wetzel[1]; [1]Rensselaer Polytechnic Institute; [2]Kyma Technologies, Inc.

**11:00 AM Student**
**GG3, Optical Emission Patterns in Semipolar (11-22) GaN Light Emitting Diodes on Planar m-Plane and Etched r-Plane Sapphire**: *Benjamin Leung*[1]; Yu Zhang[1]; Christopher Yerino[1]; Jung Han[1]; Bo Kong[2]; Hyung Cho[2]; Qian Sun[3]; Zhen Chen[3]; Steve Lester[3]; Kuan Liao[4]; Yun Li[4]; [1]Yale University; [2]Sungkyunkwan University; [3]Bridgelux, Inc.; [4]Genesis Photonics Inc.

**11:20 AM Student**
**GG4, Microscopic Optical Properties of Semi-/Nonpolar GaN with InGaN SQWs on Top Grown Directly on Patterned Si Substrate**: *Sebastian Metzner*[1]; Frank Bertram[1]; Christopher Karbaum[1]; Jürgen Christen[1]; Shujian Liu[2]; Natalia Izyumskaya[2]; Vitaliy Avrutin[2]; Ümit Özgür[2]; Hadis Morkoç[2]; [1]Institute of Experimental Physics, Otto-von-Guericke-University Magdeburg; [2]Department of Electrical and Computer Engineering, Virginia Commonwealth University

**11:40 AM Student**
**GG5, Strain Relaxation in Semipolar Nitrides for Optoelectronic Device Applications**: *Ingrid Koslow*[1]; Matthew Hardy[1]; Po-Shan Hsu[1]; Erin Young[1]; Shuji Nakamura[1]; James Speck[1]; Steven Denbaars[1]; [1]UCSB Materials

## Session HH:
## Oxide Semiconductors: Growth and Doping

Friday AM
June 24, 2011

Room: Corwin West
Location: University of California-Santa Barbara

*Session Chairs:* Leonard Brillson, Ohio State University; Patrick Kung, University of Alabama

**8:20 AM**
**HH1, Surface Donors Dominate the Conductivity of $In_2O_3$ Thin Films**: *Stephan Lany*[1]; Andriy Zakytayev[1]; Thomas Mason[2]; John Wager[3]; John Perkins[1]; Joseph Berry[1]; David Ginley[1]; Alex Zunger[1]; [1]National Renewable Energy Laboratory; [2]Northwestern University; [3]Oregon State University

**8:40 AM Student**
**HH2, The Role of Native Point Defects in Highly n-Type Degenerate (Zn,Ga) O Films**: *Daniel Doutt*[1]; Snjezana Balaz[1]; Louis Isabella[1]; Leonard Brillson[1]; [1]The Ohio State University

**9:00 AM**
**HH3, High Resolution Photoluminescence Spectroscopy of Donors in Undoped and Indium-Doped ZnO Grown by Metalorganic Vapor Phase Epitaxy**: Zhiwei Deng[1]; Dichen Li[1]; He Huang[1]; *Simon Watkins*[1]; [1]Simon Fraser University

**9:20 AM Student**
**HH4, Fermi Level Dependent Li Diffusion in Melt Grown ZnO Proving Amphoteric Behavior of Li**: *Knut Erik Knutsen*[1]; Pekka Tapio Neuvonen[1]; Klaus Magnus Johansen[1]; Bengt Gunnar Svensson[1]; Andrej Kuznetsov[1]; [1]University of Oslo

**9:40 AM Student**
**HH5, Identification of Acceptor States in Li Doped ZnO Using Nanoscale Depth-Resolved Cathodoluminescence Spectroscopy**: *Zhichun Zhang*[1]; K-E. Knutsen[2]; Andrej Kuznetsov[2]; Bengt Svensson[2]; Leonard Brillson[1]; [1]Ohio State University; [2]University of Oslo

**10:00 AM Break**

**10:20 AM**
**HH6, Zn(Mg,Cd)O Epitaxy for Optoelectronic Applications**: *Jizhi Zhang*[1]; Jin Joo Song[2]; [1]ZN Technology, Inc.; [2]ZN Technology and UCSD

**10:40 AM Student**
**HH7, ZnO and Al2O3 Thin Films Deposited by Plasma Enhanced Atomic Layer Deposition and Plasma Enhanced Chemical Vapor Deposition**: *Yuanyuan Li*[1]; J. Ramirez[1]; Thomas Jackson[1]; [1]Penn State University

**11:00 AM Student**
**HH8, Thin Films of ZnO Prepared by Reactive Pulsed Arc Molecular Beam Deposition**: David Eno[1]; *Juhyung Yun*[2]; Tingfang Yen[2]; Robert DeLeon[1]; James Garvey[1]; Wayne Anderson[2]; [1]Dept of Chemistry, University at Buffalo; [2]Dept of Electrical Engineering, University at Buffalo

**11:20 AM**
**HH9, Atom Probe Tomography of ZnO Nanowires**: Nabil Dawahre[1]; Joseph Brewer[1]; Gang Shen[1]; Nicholas Harris[1]; Soner Balci[1]; William Baughman[1]; Lee Butler[1]; Shawn Wilbert[1]; Richard Martens[1]; Seongsin Kim[1]; *Patrick Kung*[1]; [1]University of Alabama

**11:40 AM**
**HH10, Strain: A New Strategy of Tuning Doping Site and Type in Semiconductors**: *Junyi Zhu*[1]; Su-huai Wei[1]; [1]National Renewable Energy Lab

## Session II: Intersubband Devices: AlInN and InGaN Materials Characterization

Friday AM
June 24, 2011

Room: Flying A
Location: University of California-Santa Barbara

*Session Chairs:* Oana Malis, Purdue University; Michael Manfra, Purdue University

**8:20 AM Student**
**II1, MBE Growth Study of AlInN and AlInN/GaN Heterostructures for Intersubband Device Applications**: *Liang Tang*[1]; Geoff Gardner[1]; Bob Colby[1]; Rich Molnar[2]; Colin Edmunds[1]; Michael Manfra[1]; Oana Malis[1]; [1]Purdue University; [2]MIT Lincoln Laboratory

**8:40 AM**
**II2, Room Temperature near-Infrared AlInN/GaN and AlGaN/GaN Quantum Well Photodetectors Grown by Molecular Beam Epitaxy**: *Colin Edmunds*[1]; Donghui Li[1]; Liang Tang[1]; Richard Molnar[2]; Michael Manfra[1]; Oana Malis[1]; [1]Purdue University; [2]MIT Lincoln Laboratories

**9:00 AM Student**
**II3, Characterization of Lateral and Vertical Inhomogeneities in InAlN Grown by Plasma-Assisted Molecular Beam Epitaxy**: *Wei Kong*[1]; Wenyuan Jiao[1]; Tongho Kim[1]; Maria Losurdo[2]; Giovanni Bruno[2]; April Brown[1]; [1]Duke University; [2]Institute of Inorganic Methodologies and of Plasmas

**9:20 AM Student**
**II4, Electrical Tuning of InGaN Quantum Dots in GaN Photonic Crystal Cavities**: *Alexander Woolf*[1]; Kasey Russell[1]; Fabian Rol[1]; Evelyn Hu[1]; H.A.R. El-Ella[2]; M.J. Kappers[2]; R.A. Oliver[2]; [1]Harvard; [2]Departmnet of Materials Science and Metallurgy, University of Cambridge

**9:40 AM Student**
**II5, Investigation of Indium and Impurity Incorporation of InGaN Films on Polar, Nonpolar, and Semipolar GaN Orientations Grown by Ammonia MBE**: *David Browne*[1]; Erin Young[1]; James Speck[1]; [1]UCSB

**10:00 AM Break**

**10:20 AM Student**
**II6, Piezoresponse Force Microscopy of InGaN/GaN Quantum Dots**: *Adrian Bayraktaroglu*[1]; Meng Zhang[1]; Pallab Bhattacharya[1]; Jamie Phillips[1]; [1]University of Michigan

**10:40 AM Student**
**II7, InGaN/GaN Core-Shell Nanorod Arrays Grown by Selective Area Growth for InGaN-Based Light Emitting Diodes**: *Ting-Wei Yeh*[1]; Lawrence Stewart[1]; Hyung-Joon Chu[1]; Yen-Ting Lin[1]; P. Dapkus[1]; [1]Center for Energy Nanoscience, University of Southern California

**11:00 AM**
**II8, Absence of Electron Accumulation at InN(11-20) Cleavage Surfaces**: *Philipp Ebert*[1]; Sarah Schaafhausen[1]; Andrea Lenz[2]; Aizhan Sabitova[1]; Lena Ivanova[2]; Mario Dähne[2]; Y.-L. Hong[3]; Shangjr Gwo[3]; Holger Eisele[2]; [1]Forschungszentrum Jülich GmbH; [2]Technische Universität Berlin; [3]National Tsing Hua University

**11:20 AM**
**II9, Molecular Beam Epitaxial Growth and Characterization of InN Nanocolumns on GaN Templates**: *Ke Wang*[1]; Tomohiro Yamaguchi[1]; Tsutomu Araki[1]; Euijoon Yoon[2]; Yasushi Nanishi[1]; [1]Ritsumeikan University; [2]Seoul National University

**11:40 AM II10, Late News**

## Session JJ: Compound Semiconductor Growth on Silicon Substrates

Friday AM
June 24, 2011

Room: Lobero
Location: University of California-Santa Barbara

*Session Chairs:* Thomas Rotter, UNM; Gregory Triplett, University of Missouri-Columbia

**8:20 AM Invited**
**JJ1, Growth Investigations of Lattice-Matched III/V Compound Materials on (001) Si Substrate for Optoelectronics**: *Bernardette Kunert*[1]; Sven Liebich[2]; Martin Zimprich[2]; Andreas Beyer[2]; Stefan Ziegler[1]; Kerstin Volz[2]; Wolfgang Stolz[2]; [1]NAsP III/V GmbH; [2]Material Sciences Center and Department of Physics

**9:00 AM Student**
**JJ2, Coalescence Phenomena in Narrow-Angle Stripe Epitaxial Lateral Overgrown InP by MOCVD**: *Nicholas Julian*[1]; Philip Mages[1]; Steven DenBaars[1]; Larry Coldren[1]; Pierre Petroff[1]; John Bowers[1]; [1]University of California, Santa Barbara

**9:20 AM**
**JJ3, Growth Habit Control of Epitaxial Lateral Overgrown InP on Si Substrates by MOCVD**: *Phil Mages*[1]; Nick Julian[1]; Chong Zhang[1]; Larry Coldren[1]; Steve DenBaars[1]; John Bowers[1]; [1]Univ. of California Santa Barbara

**9:40 AM**
**JJ4, Integration of InAs/GaAs Nano/Micro Structures with Silicon by Selective Area Epitaxy**: *Guan Huang*[1]; Faxian Xiu[1]; Liang He[1]; Yong Wang[2]; Xufeng Kou[1]; Xinxin Yu[1]; Kang Wang[1]; [1]University of California at Los Angeles; [2]University of Queensland

**10:00 AM Break**

**10:20 AM**
**JJ5, The Electrical Nature of Structural Defects in InSb Synthesized by Molecular Beam Epitaxy on Si (100) and GaAs (100)**: *Madhavie Edirisooriya*[1]; Tong-Ho Kim[1]; Aruna Dedigama[1]; Yang Yang[1]; April Brown[1]; [1]Duke University

**10:40 AM**
**JJ6, Low Leakage Current AlGaN/GaN HEMTs on Si Substrates with Partially Mg-Doped GaN Buffer Layer by MOCVD**: *Li Ming*[1]; [1]The Hong Kong University of Science and Technology

**11:00 AM Student**
**JJ7, Effect of Growth Temperature on Composition of InAlN Alloy Grown by GSMBE on Si (111)**: *Md Rakib Uddin*[1]; Mahesh Pandikunta[1]; Vladimir Mansurov[1]; Sandeep Sohal[2]; Georgiy Guryanov[3]; Mark Holtz[2]; Sergey Nikishin[1]; [1]Nano Tech Center/Department of Electrical and Computer Engineering, Texas Tech University; [2]Nano Tech Center/Department of Physics, Texas Tech University; [3]Corning Inc.

**11:20 AM Student**
**JJ8, Vapor Phase Epitaxial Growth of (211)B CdTe on Nanopatterned Si for HgCdTe Based Infrared Device Applications**: *Shashidhar Shintri*[1]; Sunil Rao[1]; Charles Schaper[2]; Ishwara Bhat[1]; [1]Rensselaer Polytechnic Institute; [2]Transfer Devices

**11:40 AM Student**
**JJ9, Synthesis and Characterization of ZnTe Grown by VLS Method**: *Jhih-hong Peng*[1]; Ebraheem Azhar[1]; Ronald Roedel[1]; Sandwip Dey[1]; Hongbin Yu[1]; [1]Arizona State University

## Session KK: Nanowire Growth and Applications

Friday AM
June 24, 2011

Room: Lotte Lehmann
Location: University of California-Santa Barbara

*Session Chairs:* William Wong, University of Waterloo; Suzanne Mohney, Pennsylvania State University

**8:20 AM Student**
**KK1, Size Effects in Ni Catalyzed Germanium Nanowire Growth**: *Shruti Thombare*[1]; Ann Marshall[1]; Paul McIntyre[1]; [1]Stanford University

**8:40 AM Student**
**KK2, Effects of Annealing on Sub-Eutectic Heteroepitaxial Growth of Germanium Nanowire on Si (111) Substrate**: *Sung Hwan Chung*[1]; Se Jun Park[1]; Bong Joong Kim[1]; Minghao Qi[1]; Xianfan Xu[1]; Eric Stach[1]; Chen Yang[1]; [1]Purdue University

**9:00 AM Student**
**KK3, Catalyzed Vapor-Liquid-Solid Oxidation: Germanium Oxide Nanowires**: *Marika Gunji*[1]; Shruti Thombare[1]; Paul McIntyre[1]; [1]Stanford University

**9:20 AM**
**KK4, Catalyst Proximity Effects on the Synthesis of Si Nanowires for In Situ Scanning Electron Microscope Li Intercalation Experiments**: *Steven Boles*[1]; Andreas Sedlmayer[1]; Charles Ho[2]; Di Chen[1]; Oliver Kraft[1]; Eugene Fitzgerald[2]; Reiner Mönig[1]; Carl Thompson[2]; [1]Karlsruhe Institute of Technology; [2]Massachusetts Institute of Technology

**9:40 AM**
**KK5, A-Si / Si Nanowire Hybrid Photovoltaics**: *Sourobh Raychaudhuri*[1]; Rene Lujan[1]; Katherine Song[1]; Chris Paulson[1]; Robert Street[1]; [1]Palo Alto Research Center

**10:00 AM Break**

**10:20 AM**
**KK6, Internal Quantum Efficiency in Nanorod LED Arrays Created by Top-Down Techniques**: *Qiming Li*[1]; George Wang[1]; Karl Westlake[1]; Mary Crawford[1]; Stephen Lee[1]; Daniel Koleske[1]; Jeffery Figiel[1]; Karen Cross[1]; Saeed Fathololoumi[2]; Zetian Mi[2]; [1]Sandia National Laboratories; [2]McGill University

**10:40 AM Student**
**KK7, Electrochemically Deposited Branched Indium Antimonide (InSb) Nanowire Arrays as "In-Situ" Anti-Reflective Structures**: *Asaduzzaman Mohammad*[1]; Suprem Das[1]; Mohammad Khan[1]; Muhammad Alam[1]; David Janes[1]; [1]Purdue University

**11:00 AM**
**KK8, Aligned Assembly of Nanowire Arrays with Intrinsic Control**: *Kyeong-Sik Shin*[1]; Chi On Chui[1]; [1]UCLA

**11:20 AM**
**KK9, Nanostructure Decorated AlGaN/GaN HEMTs for Chemical Sensing**: *Shrawan Jha*[1]; Igor Bello[1]; [1]City University of Hong Kong

**11:40 AM**
**KK10, Environmental Stabilization and Functionalization of ZnO Nanobridge Sensors Fabricated Using Carbonized Photoresist**: Ashley Mason[1]; Chien-Chih Huang[1]; Chris Heist[1]; Myra Koesdjojo[1]; Nate Stephon[1]; Vincent Remcho[1]; *John Conley*[1]; [1]Oregon State University

## Session LL: Materials Integration: Wafer Bonding and Engineered Substrates

Friday AM
June 24, 2011

Room: Multicultural Center Theatre
Location: University of California-Santa Barbara

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

**8:20 AM Student**
**LL1, Electrochemical Etched InP Porous Layer Formation for Layer Transfer**: *Xiaolu Kou*[1]; Mark Goorsky[1]; [1]UCLA

**8:40 AM Student**
**LL2, Ion-cut Transfer of InP-Based High Electron Mobility Transistors Using Adhesive Bonding**: *Wayne Chen*[1]; Christopher Doran[1]; Thomas Kuech[2]; S Lau[1]; [1]UCSD; [2]University of Wisconsin, Madison

**9:00 AM**
**LL3, Investigation of PECVD Silicon Nitride Deposition on Porous Si**: *Caroline Moulet*[1]; Mark Goorsky[1]; [1]UCLA

**9:20 AM Student**
**LL4, Double Layer Transfer Made by the Smart Cut™ Technology and Embedded Porous Silicon Layer**: *Anne-Sophie Stragier*[1]; Thomas Signamarcheix[1]; Patrice Gergaud[1]; Thierry Salvetat[1]; Chrystel Deguet[1]; Mustapha Lemiti[1]; [1]CEA-LETI

**9:40 AM**
**LL5, $LiNbO_3$ Thin Single Crystal Layer Transfer by Smart Cut□ Technology**: *Bruno Imbert*[1]; Francois de Guerville[2]; Nicolay Cherkashin[2]; Vincent Paillard[2]; Alain Claverie[2]; Frederic Mazen[1]; Chrystel Deguet[1]; [1]CEA; [2]CEMES

**10:00 AM Break**

**10:20 AM Student**
**LL6, InGaAs-InGaN Wafer-Bonded Current Aperture Vertical Transistors**: *Shalini Lal*[1]; Eric Snow[1]; Jing Lu[1]; Stacia Keller[1]; Umesh K. Mishra[1]; [1]Department of Electrical and Computer Engineering, University of California, Santa Barbara

**10:40 AM**
**LL7, Electrical Conductivity of Directly Bonded Silicon/Germanium Hetero-Structures**: Isabelle Ferain[1]; John Hayes[1]; Ran Yu[1]; Ki Yeol Byun[1]; Farzan Gity[1]; *Brenda Long*[1]; Cindy Colinge[1]; [1]Tyndall National Institute

**11:00 AM Student**
**LL8, Interface Barrier Height Reduction in Wafer Bonded n-GaAs / n-GaAs by Sulfur Passivation Methods**: *Michael Jackson*[1]; Mark Goorsky[1]; [1]UCLA Materials Science and Engineering

**11:20 AM Student**
**LL9, Comprehensive Investigation of Ge-Si Bonded Interfaces Using Surface Activation**: *Ki Yeol Byun*[1]; Isabelle Ferain[1]; Brenda Long[1]; Susan Holl[2]; Cindy Colinge[1]; [1]Tyndall National Institute; [2]California State University

**11:40 AM**
**LL10, 3C-Silicon Carbide Epitaxy by Means of Silicon Carbide-on-Silicon Wafer Bonding**: *Michael Jennings*[1]; Tony Rogers[2]; Amador Pérez-Tomas[3]; Nick Aitken[2]; Peter Ward[4]; Andrea Severino[5]; Craig Fisher[1]; Peter Gammon[1]; Philip Mawby[1]; [1]University of Warwick; [2]Applied Microengineering Limited; [3]Centro Nacional de Microelectronica; [4]PWC; [5]CNR-IMM

## Session MM: Semiconductor Processing: Oxidation, Passivation, Etching and Contacts

Friday AM
June 24, 2011

Room: Santa Barbara Harbor
Location: University of California-Santa Barbara

*Session Chairs:* Douglas Hall, University of Notre Dame; Thomas Jackson, Pennsylvania State University

**8:20 AM Student**
**MM1, Surface Preparation of GaP for Regrowth on Epitaxially-Inverted Structures on Silicon**: *Angie Lin*[1]; Martin Fejer[1]; James Harris[1]; [1]Stanford University

**8:40 AM Student**
**MM2, Oxide Surface Passivation of Ge for Optoelectronic Applications**: *William O'Brien*[1]; Bin Wu[1]; Chad Stephenson[1]; Christina Arisio[1]; Marya Lieberman[1]; Mark Wistey[1]; [1]University of Notre Dame

**9:00 AM Student**
**MM3, Oxygen-Enhanced Wet Thermal Oxidation of $In_{0.53}Ga_{0.47}As$**: *Christopher Seibert*[1]; Jinyang Li[1]; Wangqing Yuan[1]; Douglas Hall[1]; [1]University of Notre Dame

**9:20 AM Student**
**MM4, Wet Etching Technique for Fabrication of GaSb Based Mid Infrared Single Lateral Mode Lasers**: *Seungyong Jung*[1]; Sergey Suchalkin[2]; Leon Shterengas[1]; Gela Kipshidze[1]; Gregory Belenky[1]; [1]Stony Brook University; [2]Power Photonics Corporation

**9:40 AM Student**
**MM5, Fabrication of GaAs Micromechanical Resonator Arrays for Single Molecule Detection**: *Andrew Hollowell*[1]; Christopher Hains[1]; Vakhtang Putkaradze[2]; Mario Marconi[2]; Larry Dawson[1]; Ganesh Balakrishnan[1]; [1]University of New Mexico; [2]Colorado State University

**10:00 AM Break**

**10:20 AM Student**
**MM6, Hydrogenated Amorphous Silicon-Carbon Alloy Thin Films for Uncooled Microbolometers**: *Hang-Beum Shin*[1]; David John[1]; MyungYoon Lee[1]; Nikolas Podraza[1]; Thomas Jackson[1]; [1]The Penn State University

**10:40 AM**
**MM7, Metal and Semiconductor Contacts (Si, V, Au) to Organic Molecules: The Fullerene Model System**: Harmonie Sahalov[1]; Hui Liu[1]; *Petra Reinke*[1]; [1]University of Virginia

**11:00 AM Student**
**MM8, Silicide/Silicon/Silicide Heterostructures with Ultra-Thin Silicon Gap and Realization of FET Device**: *Wei Tang*[1]; Shadi Dayeh[2]; Tom Picraux[2]; King-Ning Tu[2]; [1]UCLA; [2]Los Alamos National Lab

**11:20 AM**
**MM9, Improved Electrical Properties of N-Contacts to N-Face GaN for Vertical Light-Emitting Diodes by Laser-Annealing**: Joon Woo Jeon[1]; Sang Youl Lee[2]; June-O Song[2]; *Tae-Yeon Seong*[1]; [1]Korea University; [2]LG Innotek

**11:40 AM Student**
**MM10, Resistance and Transparency Study of Contacts to p-Type GaN**: *Wenting Hou*[1]; Christoph Stark[1]; Theeradetch Detchprohm[1]; Christian Wetzel[1]; [1]Rensselaer Polytechnic Institute

## Session NN: Molecular Electronics / Sensor / Ionic Conductors

Friday AM
June 24, 2011

Room: State Street
Location: University of California-Santa Barbara

*Session Chairs:* David Janes, Purdue University; Theresa Mayer, Pennsylvania State University

**8:20 AM Student**
**NN1, Au-Molecule-GaAs Devices with Graphene Barrier Layer**: *Patrick Carpenter*[1]; Ting-Fung Chung[1]; David Janes[1]; Yong Chen[1]; [1]Purdue University

**8:40 AM Student**
**NN2, Gap Mode Plasmonic Cavity with Coupled Organic Gain Medium**: *Shanying Cui*[1]; Kasey Russell[1]; Evelyn Hu[1]; [1]Harvard University

**9:00 AM**
**NN3, Conductance Statistics of Molecular Junctions Fabricated with a Large Array of Sub-10 nm Single-Grain Au Nanodots Electrodes**: Nicolas Clement[1]; Kacem Smaali[1]; Gilles Patriarche[2]; *Dominique Vuillaume*[1]; [1]IEMN-CNRS; [2]LPN-CNRS

**9:20 AM Student**
**NN4, Surface Functionalization of Si Nanowires on SOI Substrates for Biosensing Applications**: *Paul Bertani*[1]; Xuejin Wen[1]; Wu Lu[1]; [1]The Ohio State University

**9:40 AM Student**
**NN5, Switching Characteristics of Nonvolatile Organic Resistive Memory Devices with Interfacial Oxide Layers Tuned by O2 Plasma Treatment**: *Byungjin Cho*[1]; Sunghoon Song[1]; Yongsung Ji[1]; Takhee Lee[1]; [1]Gwangju Institute of Science and Technology

**10:00 AM Break**

**10:20 AM Student**
**NN6, Synthesis and Lithium Battery Applications of Nitrogen Doped Graphene Films**: *Leela Mohana Reddy Arava*[1]; Anchal Srevastava[1]; Sanketh Gowda[1]; Hemtej Gullapalli[1]; Madan Dubey[2]; Pulickel Ajayan[1]; [1]Rice University; [2]U.S. Army Research Laboratory

**10:40 AM Student**
**NN7, Conformal Coating of Thin Polymer Electrolyte Layer on Nanostructured Electrode Materials for 3D Battery Applications**: Sanketh Gowda[1]; *Leela Mohana Reddy Arava*[1]; Pulickel Ajayan[1]; [1]Rice University

**11:00 AM Student**
**NN8, Nanostructured Co3O4 Supercapacitors via Solution Precursor Plasma Spray**: *Raghavender Tummala*[1]; Ramesh K. Guduru[1]; Pravansu Mohanty[1]; [1]University of Michigan

**11:20 AM Student**
**NN9, Performance of MnO2 Crystallographic Phases in Rechargeable Lithium-Air Oxygen Cathode**: *Olubukun Oloniyo*[1]; [1]Newcastle University

**11:40 AM**
**NN10, Investigation on Activated Charcoal-Carbon Fabrics Composite Electrode Materials for Supercapacitor Application**: *Amrita Jain*[1]; Ashish Gupta[1]; Manju Mishra[2]; S.K. Tripathi[1]; [1]Jaypee University of Engineering and Technology; [2]Viva Institute of Technology

# NOTES

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## Questions?

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