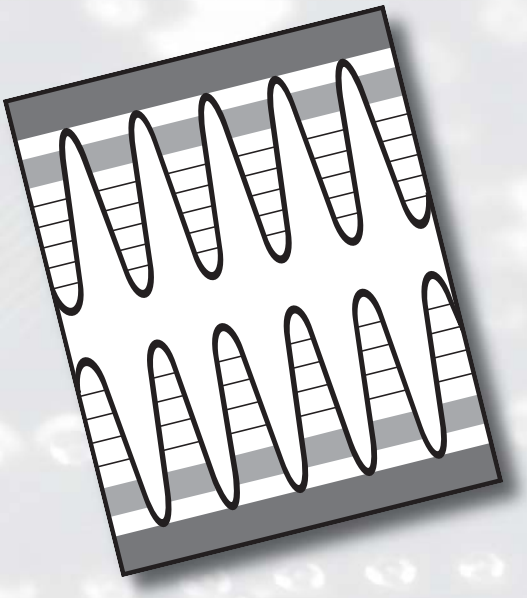
The Premier Conference for
Advances in Electronic Materials

47th ANNUAL TMS ELECTRONIC MATERIALS CONFERENCE AND EXHIBIT

University of California, Santa Barbara
June 22-24, 2005



ADVANCE PROGRAM

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www.tms.org/EMC.html

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- Print and electronic subscription to *JOM*, the magazine that explores the traditional, innovative, and revolutionary issues in the minerals, metals, and materials fields
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To begin enjoying these benefits, complete the enclosed membership application and return it to TMS' registration desk during the conference with the $52.50 membership fee. You may also join online at www.tms.org/Society/membership.html, or mail your application to TMS, 184 Thorn Hill Road, Warrendale, PA 15086, USA. For more information, visit www.tms.org, e-mail membership@tms.org, or call (724) 776-9000, ext 259.

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http://www.tms.org

TMS

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EMC registration and campus housing forms are at the back of this brochure. Early registration and housing reservations are advised.

GENERAL INFORMATION

INTENDED AUDIENCE

The Electronic Materials Conference (EMC) covers significant topics in the areas of preparation and characterization of electronic materials. Individuals actively engaged or interested in electronic materials research and development find this conference invaluable. With an international audience of 20 percent, each year more than 500 students, professors, scientists, engineers, researchers, technicians, R&D managers, and product managers attend.

DATE AND LOCATION

EMC is being held at the University of California, Santa Barbara, California, June 22-24, 2005. This conference is being coordinated with the Device Research Conference (DRC) sponsored by IEEE, which takes place June 20-22 at the same location.

CONFERENCE REGISTRATION

Advance registration is encouraged to avoid delays with check-in at the conference. Both EMC and DRC badges are accepted by both conferences on Wednesday, June 22. ***EMC advance registration fees:*** full conference $385; one day $325; student $150.

EMC registration fee includes welcoming reception, coffee breaks, Thursday banquet, all technical sessions and exhibition. One-day fee does not include the Thursday banquet.

Register in advance at www.tms.org/EMC.html or complete the registration form provided in the center of this mailer. ***Advance registrations are accepted until June 1, 2005.*** For questions concerning registration, telephone TMS Meeting Services at (724) 776-9000, ext. 243; fax (724) 776-3770; or e-mail mtgserv@tms.org.

On-site registration is at an increased rate. On-site registration and advance registrant badge pick-up are located in the Multicultural Lounge during the following hours:

Tuesday, June 21…….....3 to 5 p.m.
Wednesday, June 22 ..... 7:30 a.m. to 5 p.m.
Thursday, June 23…….. ..... 7:30 a.m. to 4 p.m.
Friday, June 24..... 7:30 to 10 a.m.

REFUND POLICY

A written request must be sent to TMS, 184 Thorn Hill Road, Warrendale, PA 15086, USA, postmarked no later than June 1s, 2005. A $75 processing fee is charged on all cancellations. NO refunds are issued after the deadline date.

TECHNICAL SESSIONS

The technical program commences at 8:30 a.m. on Wednesday, June 22. All sessions are held on grounds at the University of California. University Center/Corwin Pavilion is the location of the conference plenary session. Session and paper titles are included in this brochure.

For technical program information regarding EMC, contact:

April S. Brown, EMC General Chair
Telephone (919) 660-5498
Fax (919) 660-5293
E-mail abrown@ee.duke.edu

Or

Edward Yu, EMC Program Chair
Telephone (858) 534-6619
Fax (858) 822-3425
E-mail ety@ece.ucsd.edu

LATE NEWS PAPERS

Late news papers are considered. Authors must submit their abstracts by June 3, 2005, online at http://cmsplus.tms.org. Click on 2005 Electronic Materials Conference. Authors of accepted papers are notified before the conference.

COMPUTER/NETWORK FACILITIES

Registrants have Internet access through UCSB's ResNet Ethernet network in the residence halls only. A temporary username and password is provided to on-campus registrants upon check-in.

DRESS

Casual clothing is in order with a sweater or light jacket occasionally needed for the evenings. The university is essentially a pedestrian campus, so be sure to wear comfortable walking shoes.

STUDENT TRAVEL ASSISTANCE

Student authors who plan to present papers at EMC may be eligible for travel assistance. To apply for assistance, submit an application no later than June 1, 2005 to:

April S. Brown, EMC General Chair
Duke University
130 Hudson Hall
Durham, NC 27708
Telephone (919) 660-5498
Fax (919) 660-5293
E-mail abrown@ee.duke.edu

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

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 attendees of EMC requiring specific equipment or services to indicate their needs on the enclosed housing form or to contact TMS Meeting Services.

POLICY ON AUDIO AND VIDEO RECORDING OF PRESENTATIONS/SESSIONS

TMS reserves the right to any audio and video reproduction of all presentations at every TMS sponsored meeting. 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 to obtain a copy of the waiver release form.

FOR MORE INFORMATION

Regarding conference logistics, contact:

Michael Packard, CMP
Manager, TMS Meeting Services
Telephone (724) 776-9000, ext. 225
Fax (724) 776-3770
E-mail packard@tms.org

Regarding meeting registration and pricing, contact:

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

Pertaining to the Device Research Conference (DRC), contact:

Alan Seabaugh, DRC General Program Chair
Telephone (574) 631-4473
Fax (574) 631-4393
E-mail seabaugh.1@nd.edu

Or

Theresa Mayer, DRC Technical Program Chair
Telephone (814) 863-8458
Fax (814) 863-8341
E-mail tsm2@psu.edu

EXHIBITION & SPONSORSHIP

EMC is hosting a unique showcase for suppliers of technology related to the preparation and characterization of electronic materials. Exhibitors are invited to display equipment, instrumentation, products, software, publications and services relating to electronic materials science, industry and research.

EXHIBITOR PRODUCTS AND SERVICES AT A GLANCE

- Advanced Thin-film Characterization
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- High Purity Metalorganics
- III-V Materials
- Materials Characterization
- MOCVD
- Optoelectronics
- Sapphire Substrates
- Scanning Probe and Electron Microscopes
- Silicon Heterostructures
- Ultra High Purity (UHP) Metals, Gas and Chemical
- Wafer Processing Equipment
- Wide Bandgap Semiconductors

EXHIBIT DATES AND HOURS

Wednesday, June 22 .....9:20 a.m. to 4 p.m. and 6 to 8 p.m.
Thursday, June 23.....10 a.m. to 4 p.m.

EXHIBITION FEE OF $1200 INCLUDES:

- One (1) eight foot table
- Two (2) chairs
- Standard electrical service
- Complimentary listing in show directory—distributed to all meeting registrants
- One (1) complimentary registration to technical sessions and exhibits
- Hosted welcoming reception in exhibition area
- Hosted coffee and refreshment breaks in exhibition area
- Post-show report of meeting participants
- Exhibition management services

EMC EXHIBITORS TO DATE

- Accent Optical Technologies
- Intrinsic Semiconductor
- IQE
- Johnson Matthey
- k-Space Associates, Inc.
- Kurt J Lesker Co.
- Lake Shore Cryotronics, Inc.
- MMR Technologies Inc.
- Riber
- SAES Pure Gas, Inc.
- Sypris Test and Measurement
- United Minerals & Chemical Corp.
- VBS International, Inc.
- Veeco Instruments
- Wafer Technology Ltd.

EMC 2005 – an unparalleled gathering of industry, science and research professionals in electronic materials. Ensure they learn about your product and services--Reserve your exhibit space today! Complete and return the enclosed exhibition and sponsorship reservation form. Space reservations are accepted on a first-come, first-served basis.

CORPORATE SPONSORSHIP

As the exclusive sponsor of one of EMC's activities, your company name and logo will be prominent to all conference and exhibit attendees via:

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

Proposed Sponsor Activities

- Welcoming Reception
- Coffee Breaks
- Continental Breakfast
- Conference Social Event/Banquet

To sponsor an EMC activity, or for more information on exhibition and sponsorship opportunities, contact:

Cindy A. Wilson, TMS Exhibits Coordinator
Telephone (724) 776-9000, ext 231
Fax (724) 776-3770
E-mail wilson@tms.org

HOUSING & ACCOMMODATIONS

ON CAMPUS

We are pleased to invite EMC attendees to reside on the seaside campus of UCSB. On-campus accommodations are available on a first request basis; therefore, early registrations and reservations are essential.

UCSB residence halls and dining facilities are located within a 5-10 minute 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. No rooms have private restrooms; restroom and shower facilities are located on each floor. Lodging includes beds made on arrival day and daily room service with washcloth and towel change. Unfortunately, there is no housing on campus for those with children. We recommend a selection from one of the hotel blocks if you are traveling with children. Check the hotel listings in the off-campus housing section of this brochure.

UCSB offers the following package plans to provide planning flexibility and the option to attend both DRC and EMC. Residence hall package plans C, D, and E include full meal service. Residence hall room packages without meals are not available.

No adjustments from the chosen package for lodging or meals are made for late arrival or early departure.

Please indicate your plan preference on the enclosed reservation form and return it with your payment to:

Pam Allen
Campus Conference Services
University of California
Santa Barbara, CA 93106-6120
Fax (805) 893-7287
E-mail pallen@housing.ucsb.edu

Confirmations are sent by the conference office for reservations received at the university by ***May 31, 2005***. Prepayment is required.

METHOD OF PAYMENT

Payment in U.S. dollars may be made by check or money order. Checks must be drawn on a U.S. bank and made payable to "U.C. Regents."

Visa, MasterCard, or American Express credit cards are also accepted.

PLAN C

(for those attending DRC and EMC) Includes lodging Sunday through Thursday night and 13 meals:

Sunday ..... dinner
Monday..... breakfast, lunch, and dinner
Tuesday ..... breakfast and lunch (no dining commons meal offered Tuesday night due to DRC banquet)
Wednesday... breakfast, lunch, and dinner
Thursday ..... breakfast and lunch (no dining commons meal offered Thursday night due to EMC banquet)
Friday ..... breakfast and lunch

Per person $429.05/single occupancy; $349.75/double occupancy

PLAN D

Includes lodging Tuesday through Thursday night and eight meals:

Tuesday ..... dinner
Wednesday... breakfast, lunch, and dinner
Thursday ..... breakfast and lunch (dinner at Natural History Museum included with EMC registration - no dining commons meal offered)
Friday ..... breakfast and lunch

Per person $267.63/single occupancy; $220.04/double occupancy

PLAN E

Includes lodging Wednesday through Thursday night and six meals:

Wednesday... lunch and dinner
Thursday ..... breakfast and lunch (dinner at Natural History Museum included with EMC registration - no dining commons meal offered)
Friday ..... breakfast and lunch

Per person $192.02/single occupancy; $160.30/double occupancy

EARLY ARRIVAL

Monday night (June 20) includes Monday dinner, Tuesday breakfast and lunch

Per person $85.81/single occupancy; $69.95/double occupancy

LATE DEPARTURE

Friday night (June 24) includes Friday dinner, Saturday breakfast

Per person $75.61/single occupancy; $59.75/double occupancy

COMMUTER LUNCH PACKAGE

Attendees who plan to make off-campus housing arrangements directly with the hotel/motel may purchase commuter lunch packages for on-campus meals through UCSB:

Three lunches $30
Five lunches $50

It is important to apply early.

ON-CAMPUS DINING HOURS

Meals are served in the De La Guerra Dining Hall:

Breakfast ..... 7 to 8 a.m.
Lunch ..... 11:45 a.m. to 1:15 p.m.
Dinner..... 5:30 to 7 p.m.

Food facilities on campus close at 7 p.m.

No refunds are made for late arrivals, early departures, or missed meals.

OFF-CAMPUS HOUSING

Blocks of rooms have been reserved at special conference rates for the hotels listed below. Rooms may be released as early as May 31. Thereafter, reservations can be obtained only on a space available basis. Make your reservations directly with the hotel via mail, telephone, or fax as soon as possible. Rooms are available for DRC and EMC, Sunday through Thursday nights. You must identify yourself as either a DRC or EMC attendee. Friday or Saturday nights are available if requested at the time a reservation is made. However, the special rates below do not apply to weekend rates. Friday and Saturday rates are higher. The following rates do not include tax.

Hotels in Goleta, approximately five miles from campus (within 10 minutes driving time):

BEST WESTERN SOUTH COAST INN
5620 Calle Real
Goleta, CA 93117
Telephone (805) 967-3200 / Fax (805) 683-4466
$113 single; $123 double (Sunday through Thursday night)

All rooms have high speed Internet access, refrigerator, coffeemaker, hairdryer, iron and ironing board. Rate includes daily continental breakfast buffet, evening hospitality Monday through Thursday, and complimentary shuttle service to and from the Santa Barbara Airport.

HOLIDAY INN
5650 Calle Real
Goleta, CA 93117
Telephone (805) 964-6241 / Fax (805) 964-8467
$139 single/double (Sunday through Thursday night)

Full service restaurant, heated pool, and complimentary airport shuttle between 6 a.m. and 10 p.m.

The following hotel is located off the main entrance of campus (three minutes driving time):

PACIFICA SUITES
5490 Hollister Avenue
Goleta, CA 93117
Telephone (805) 683-6722 / Fax (805) 683-4121
$169 single/double (Sunday through Thursday night)

Complimentary cooked-to-order breakfast daily, complimentary evening beverages Monday through Saturday, heated pool and spa, and complimentary airport shuttle 7 a.m. to 7 p.m. with 24-hour notice

Hotels in Santa Barbara:

EL ENCANTO HOTEL AND GARDEN VILLAS
1900 Lasuen Road
Santa Barbara, CA 93103
Telephone (805) 687-5000 / Fax (805) 687-0943
$199 single (Sunday through Thursday night)

Charter Member of Historic Hotels of America

Overlooking the Pacific Ocean, this historic hotel features garden villas and cottages, many with wood-burning fireplaces, private patios or balconies, and dining rooms with outdoor terraces.

RADISSON HOTEL SANTA BARBARA
1111 East Cabrillo Boulevard
Santa Barbara, CA 93103
Telephone (805) 963-0744 / Fax (805) 962-5555
$129 single/$139 double (Sunday through Thursday night)

Full American breakfast is included in rate. A Mediterranean style property located across from the East Beach, the hotel has 173 guest rooms plus a swimming pool, fitness center and restaurant. All rooms include a coffeemaker, hairdryer, iron, ironing board and data port modem for online access.

SOCIAL EVENTS

WELCOMING RECEPTION

Attendees are invited to a welcoming reception on Wednesday, June 22 from 6 to 8 p.m. at the University of California in the University Center/Lagoon Plaza.

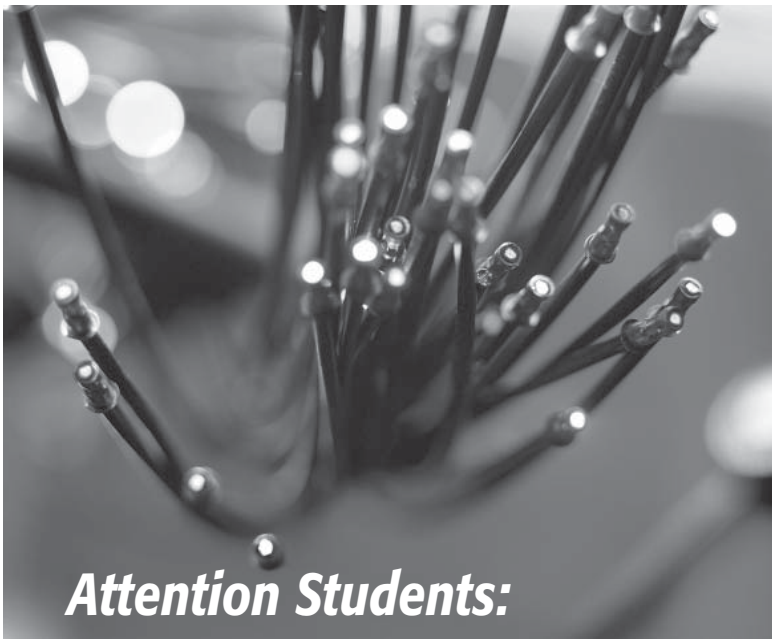
EVENING AT THE NATURAL HISTORY MUSEUM

Conference attendees and their guests may enjoy a catered dinner at the Santa Barbara Natural History Museum on Thursday, June 23. The cost of this event is included in the full conference and student registration fees. It is not included in the one-day registration fee.

One-day registrants and guests may purchase tickets for the Natural History Museum dinner at a cost of $60 for adults and $25 for children 12 and under. Tickets may be ordered on the registration form. Advance purchase is encouraged. Tickets are available for purchase at the EMC registration desk until 5 p.m. on Wednesday, June 22.

INFORMAL COFFEE BREAKS

During the intermission of morning and afternoon sessions (approximately 10 to 10:40 a.m. and 3 to 3:40 p.m.) coffee, tea, and sodas are served in the exhibition area (University Center/Lagoon Plaza).



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VEHICLE

UCSB is easily accessible from US 101.

From the south, take UCSB/Highway 217 exit. Bear to the left when entering campus and follow directional signs to the residence halls.

From the north, take US 101 to the Storke/Glen Annie Road exit. Turn right onto Storke Road and proceed two miles to El Colegio Road. Turn left onto El Colegio Road, proceed through the campus West Gate, and follow directional signs to the residence halls.

For those residing off campus, refer to the UCSB campus map for directions to the University Center.

TRAIN

Santa Barbara is served by Amtrak Train Service. The Amtrak terminal is located in downtown Santa Barbara and in Goleta. From the terminal, you may reach campus or the hotel by SuperRide Shuttle or taxi. UCSB campus shuttle cannot provide transportation from the train station for on-campus housing.

AIR

Most people traveling by air land at Los Angeles International Airport (LAX), about two hours from Santa Barbara. From LAX, you may fly to Santa Barbara, take the Santa Barbara Airbus, or rent a car and drive to Santa Barbara.

Flying into Santa Barbara A free UCSB shuttle bus is available for attendees with on-campus housing for transportation from the airport to campus residence halls. To arrange for pick-up, upon landing, attendees must call the telephone number assigned in their confirmation e-mail. Following the conference, the UCSB shuttle bus transports on-campus participants to the airport. Those staying in local hotels are responsible for their own transportation; check the hotel descriptions to determine which hotels provide this service. Alternatives are SuperRide Airport Shuttle, reserve in advance, at (805) 683-9636, Yellow Cab at (805) 965-5111, and Orange Cab at (805) 964-2800.

Santa Barbara Airbus provides several daily bus trips from LAX to Santa Barbara. Within U.S./Canada, phone (800) 423-1618; outside U.S./Canada, (805) 964-7759; or fax (805) 683-0307. For those residing on campus, the Goleta drop-off site must be used. The UCSB shuttle bus transports from Goleta to campus. Attendees must call the number assigned in the confirmation e-mail to secure the shuttle bus. Following the conference, the shuttle bus returns on-campus participants to the Goleta airbus drop-off site. Those staying in hotels are responsible for their transportation from the airbus drop-off site.

Taxi service is available at hotels not offering free shuttle service.

PARKING

Parking is by permit only. On-campus residents receive a complimentary permit at check-in for the duration of their stay.

Off-campus residents are encouraged to purchase permits in advance on the registration form; permits may also be purchased at registration:

EMC Only Parking Permit $28
DRC/EMC Parking Permit $37

All attendees must have a temporary parking permit for check-in/registration which can be printed from the following Web site: http://www.housing.ucsb.edu/conferences/web_reg/drc-emc-park.pdf.

Parking citations are issued for cars incorrectly parked or lacking permits. UCSB is a walking campus and parking is limited. Parking assignments may not necessarily be close to assigned residence halls or session locations. Additional parking details are included when confirmations are sent.

CAR RENTAL SPECIAL

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Official Car Rental Company of the 47th Annual EMC

Advance reservations may be made by booking online at www.hertz.com or calling the Hertz reservations line at (800) 654-2240 in the U.S. or (800) 263-0600 in Canada. International customers should contact the nearest Hertz reservation center. Advance reservations are recommended.

Travelers must identify themselves as attendees of EMC and reference **CV#02QJ0013** in order to receive the special rates.

Rates are available from Hertz locations in Southern California.

Terms and Conditions

-Unlimited mileage allowance on rates
-One-way service fee applies when cars are not returned to renting location.
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-Drivers must meet standard Hertz age, driver, and credit requirements.
-Hertz is a frequent flyer partner with US Airways, Delta, Northwest, United, and American Airlines. Frequent flyer information may be requested at time of car booking.
-Weekly rentals are from five to seven days. Weekend rentals have a minimum two-day keep, and Thursday pick-up requires a minimum three-day keep.

SPECIAL AIRFARE

U·S AIRWAYS

Official Carrier of the 47th Annual EMC

US Airways is pleased to offer the various discount options listed below.

For travel into Santa Barbara, California, attendees receive a five-percent discount off First Class and any published US Airways round trip fare booked in F, C, D, A, Y, B, M or U class of service. A 10% discount on unrestricted "Y" or B8US/B4AUS fares applies with seven-day advance reservations and ticketing required. Plan ahead and receive an additional five-percent discount by ticketing 60 days or more prior to departure. These discounts are valid provided all rules and restrictions are met and are applicable for travel from all points on US Airways' route system. The above discounts are not combinable with other discounts or promotions and are valid three days before and after the meeting dates. Additional restrictions may apply on international travel.

US Airways also offers zone fairs for attendees who are unable to meet the restrictions of the discounts listed above. Certain restrictions, including advance purchase requirements, may apply.

These special rates are applicable for travel from the continental United States. To obtain these discounts, travelers or their professional travel consultants must call US Airways' Group and Meeting Reservation Office toll-free at (877) 874-7687; Monday through Friday, 8 a.m. to 8 p.m, Saturday and Sunday, 8 a.m. to 6 p.m., Eastern time.

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S. Ankem, C.S. Pande, I. Ovid'ko, and R. Ranganathan, editors

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SURFACES AND INTERFACES IN NANOSTRUCTURED MATERIALS AND TRENDS IN LIGA, MINIATURIZATION, AND NANOSCALE MATERIALS
5th MPMD Global Innovations Symposium

Sharmila M. Mukhopadhyay, John Smugeresky, Sudipta Seal, Narendra B. Dahotre, and Arvind Agarwal, editors

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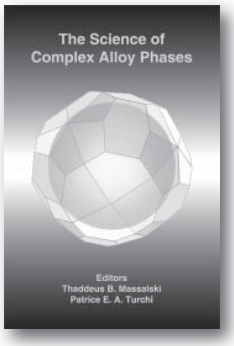

P. Turchi and T. Massalski, editors

324 pp., illus., index, hardcover

Published in honor of 2005 Hume-Rothery Award recipient Uichiro Mizutani. This book emphasizes both theoretical and experimental aspects of electronic, structural, and thermodynamic properties of complex alloy phases. Leading experts provide an assessment of the current understanding of the structural properties of complex materials, including quasicrystalline and amorphous alloys. Special emphasis is placed on the understanding of why nature is able to stabilize complex atomic arrangements and on recent results related to structurally complex alloy phases.

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M $125 ✦ S $99 ✦ L $179

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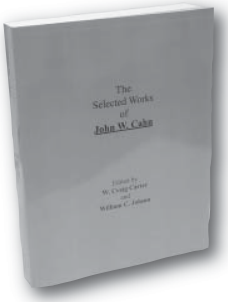

W. Craig Carter and William C. Johnson, editors

559 pp., illus., softcover, CD-ROM, or Portable Document Format

This book represents a collection of 30 selected papers from the work of John W. Cahn. Dr. Cahn is Senior Fellow at the Materials Science and Engineering Laboratory of the National Institute of Standards and Technology, and is widely recognized as a founder of modern theory and thought in materials science. The range of his research included kinetics and mechanisms of metallurgical phase changes, surfaces, interfaces, defects, quasicrystals, thermodynamics, and other areas impacting the fundamental understanding of materials science.

Each paper includes a 2-4 page review of the impact and historical perspective of the work. This is an important collection for scientists, instructors and students interested in materials science.

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For more details on these titles, including online tables of contents, visit the TMS Document Center at http://doc.tms.org.

4 Convenient Ways to Order:

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AWARDS

STUDENT AWARDS

The top five percent of student papers presented at EMC receive awards. Winning students receive $500 awarded by TMS' Electronic Materials Committee. Student papers are judged on both scientific content and oral presentation at the conference. Awards are presented during the plenary session on Wednesday, June 22.

2005 JOHN BARDEEN AWARD WINNER

The John Bardeen Award, established in 1994, recognizes an individual who has made outstanding contributions and is a leader in the field of electronic materials.

Recipient: Arthur C. Gossard

Citation: For outstanding contributions and leadership to the materials science of epitaxial crystal growth and to the physics of electronic structure and devices.

Arthur Gossard is a professor at the University of California, Santa Barbara. He graduated summa cum laude from Harvard University in 1956 with a bachelor of arts and earned a doctorate from the University of California, Berkeley in 1960, both in physics. Prior to joining the University of California in 1987, Professor Gossard was a distinguished member of the technical staff at AT&T Bell Laboratories (1960–1987).

Among his many honors, he was elected to the National Academy of Sciences in 2001, named a Fellow of the Institute of Electrical and Electronic Engineers in 2001, and received the American Physical Society McGroddy Prize for New Materials in 2001.

"It is an honor to join the very distinguished ranks of the previous recipients of the John Bardeen Award. I am pleased by the recognition from TMS and my colleagues and by what this represents. It is very special to be associated with an award that recognizes the name of John Bardeen and his many contributions to both physics and electronic materials and devices."

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For award criteria and additional information, obtain a nomination form at TMS' registration desk at EMC, or download the nomination form from TMS online at http://www.tms.org/Society/honors.html.

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PRELIMINARY SCHEDULE OF EVENTS
47TH TMS ELECTRONIC MATERIALS CONFERENCE

TUESDAY, JUNE 21, 2005

Registration.....3:00 PM – 5:00 PM
Location..... Multicultural Lounge

WEDNESDAY, JUNE 22, 2005

Registration.....7:30 AM – 5:00 PM
Location.....Multicultural Lounge

Exhibition .....9:20 AM – 4:00 PM & 6:00 PM – 8:00 PM
Location.....University Center/Lagoon Plaza

Welcome Reception .....6:00 PM – 8:00 PM
Location..... University Center/Lagoon Plaza

SESSIONS

Plenary Session .....8:20 AM
(Including Student Awards Ceremony)
Location.....Corwin Pavilion

Session A. Group III-Nitrides: Growth, Processing and Characteriztion for Light-Emitting Diodes.....10:00 AM

Session B. Defects in Mismatched Semiconductor Materials..... 10:00 AM

Session C. Contacts to Organic Semiconductors and Device Performance..... 10:00 AM

Session D. Spintronics I - Dilute Magnetic Semiconductors..... 10:00 AM

Session E. High-K Gate Dielectrics I..... 10:00 AM

Session F. Dilute Nitrides I..... 10:00 AM

Session G. Non-Destructive Testing and In Situ Monitoring and Control..... 10:00 AM

Joint DRC/EMC Invited Session.....1:30 PM

Session H. Processing of Nitrides for Electronic Devices..... 1:30 PM

Session I. ZnO: Doping and Devices..... 1:30 PM

Session J. Spintronics II - Spin-Dependent Electronic Materials..... 1:30 PM

Session K. High-K Gate Dielectrics II..... 1:30 PM

Session L. Dilute Nitrides II..... 1:30 PM

Session M. Narrow Bandgap Semiconductors..... 1:30 PM

THURSDAY, JUNE 23, 2005

Registration.....7:30 AM – 4:00 PM
Location..... Multicultural Lounge

Exhibition .....10:00 AM – 4:00 PM
Location..... University Center/Lagoon Plaza

Conference Banquet .....6:00 PM – 9:00 PM
Location..... Natural History Museum

SESSIONS

Session N. Group III-Nitride Growth..... 8:20 AM

Session O. ZnO: Impurities and Characterization..... 8:20 AM

Session P. Dielectric/Semiconductor Interfaces and Non-Ideal Behavior in Organic Transistors..... 8:20 AM

Session Q. Semiconductor Nanowires..... 8:20 AM

Session R. Si-Based Heterojunctions and Strained Si: Growth, Characterization, and Applications..... 8:20 AM

Session S. Materials Integration: Wafer Bonding and Alternative Substrates..... 8:20 AM

Session T. Basic and Applied Optical Properties of Quantum Dots..... 8:20 AM

Session U. IR Quantum Dots and Wells..... 10:20 AM

Session V. Group III-Nitrides: Characterization, Defects, and Ordering..... 1:30 PM

Session W. ZnO: Nanostructures.....1:30 PM

Session X. Flexible Thin-Film Electronics..... 1:30 PM

Session Y. Nanotubes and Nanowires..... 1:30 PM

Session Z. Chemical and Biological Sensors: Materials, Interfaces, and Integration..... 1:30 PM

Session AA. Lattice-Engineered Materials and Devices..... 1:30 PM

Session BB. Wide Bandgap Wells, Wires, and Dots..... 1:30 PM

FRIDAY, JUNE 24, 2005

Registration.....7:30 AM – 10:00 AM
Location..... Multicultural Lounge

SESSIONS

Session CC. Bulk GaN..... 8:20 AM

Session DD. Properties of Nitrides for Electronics.....10:20 AM

Session EE. ZnO: Thin-Film and Bulk Growth..... 8:20 AM

Session FF. Contacts to Semiconductor Structures..... 8:20 AM

Session GG. Silicon Carbide: Growth, Processing, and Characterization..... 8:20 AM

Session HH. Molecular Electronics..... 8:20 AM

Session II. InN and In-Rich Nitrides..... 8:20 AM

Session JJ. Epitaxial Quantum Dot Growth and Properties..... 8:20 AM

Session KK. Structure and Optical Properties of Complexes and Quantum Dots..... 10:20 AM

Session LL. Group III-Nitrides: Non-Polar Structures..... 1:30 PM

Session MM. Nanocharacterization..... 1:30 PM

Session NN. Epitaxy for Devices..... 1:30 PM

2005 Electronic Materials Conference

EMC Plenary Lecture/Student Awards

Ceremony: 8:20 AM

Room: Corwin Pavilion

Plenary Speaker: *Prof. Angela Belcher, Massachusetts Institute of Technology*

Topic: *A Genetic Toolkit for the Synthesis and Assembly of Electronic Materials*

Break: 9:20 AM

Joint DRC/EMC Invited Session

Wednesday PM
June 22, 2005

Room: Lotte Lehmann
Location: Music Hall

Session Chair: Theresa Mayer, Pennsylvania State University

1:30 PM Invited
Semiconductor Nanowires as a Novel Electronic Materials Technology for Future Electronic Devices: *L. Samuelson*[1]; [1]Lund University

2:10 PM Invited
Nanocrystal Lasing in the Single-Exciton Regime Using Engineered Exciton-Exciton Interactions: *V. I. Klimov*[1]; S. Ivanov[1]; J. Nanda[1]; I. Bezel[1]; M. Achermann[1]; L. P. Balet[1]; [1]Los Alamos National Laboratory

2:50 PM Invited
Electric Field Effect Transport in Mesoscopic Graphite and Graphene: *Philip Kim*[1]; [1]Columbia University

Session A: Group III-Nitrides: Growth, Processing and Characterization for Light-Emitting Diodes

Wednesday AM
June 22, 2005

Room: Corwin Pavilion
Location: University Center

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

10:00 AM Student
A1, Optimization of InGaN/GaN LED External Efficiency Using ITO p-Current-Spreading Layer Prepared by E-Beam Evaporation: *Jian*

Feng[1]; Chak Wah Tang[1]; Yun Dong Qi[1]; Kei May Lau[1]; [1]Hong Kong University of Science and Technology

10:20 AM
A2, Growth and Characterization of High-Quality AlxGa1-xN Multiple-Quantum-Well Structures for 280nm Deep-UV LEDs: *Peng Li*[1]; Jae Limb[1]; Jae-Hyun Ryou[1]; Dongwon Yoo[1]; Shichi Kubo[1]; Theodore Chung[1]; Russell Dupuis[1]; Pete Cherns[2]; Colin Humphreys[2]; Yiping He[3]; Arto Nurmikko[3]; [1]Georgia Institute of Technology; [2]University of Cambridge; [3]Brown University

10:40 AM
A3, Double Heterostructure UV LEDs Based on Carrier Localization in MBE-Grown AlGaN: *Charles J. Collins*[1]; Anand V. Sampath[1]; Gregory A. Garrett[1]; H. Shen[1]; Michael Wraback[1]; Eric D. Readinger[2]; [1]U.S. Army Research Laboratory; [2]University of Maryland

11:00 AM
A4, Photocurrent and Capacitance Studies of Polarization Fields and Charge Storage in InGaN/GaN SQW LEDs: *Robert J. Kaplar*[1]; Steven R. Kurtz[1]; Daniel D. Koleske[1]; Arthur J. Fischer[1]; [1]Sandia National Laboratories

11:20 AM Student
A5, Effect of Gallium Precursor on InGaN/GaN Multi-Quantum-Wells and Mg-Doped Layer for Green LEDs: *Wonseok Lee*[1]; Jae Limb[1]; Jae-Hyun Ryou[1]; Dongwon Yoo[1]; Theodore Chung[1]; Russell Dupuis[1]; [1]Georgia Institute of Technology

11:40 AM Student
A6, Optimized Doping and Contact Scheme for Low Voltage 275 nm Deep Ultraviolet LEDs: *Craig Moe*[1]; Hisashi Masui[1]; Arpan Chakraboty[1]; Kenneth Vampola[1]; Matthew Schmidt[1]; Scott Newman[1]; Likun Shen[1]; Brendan Moran[1]; Stacia Keller[1]; Steve DenBaars[1]; David Emerson[2]; [1]University of California, Santa Barbara; [2]Cree, Inc.

Session B: Defects in Mismatched Semiconductor Materials

Wednesday AM — Room: Flying A
June 22, 2005 — Location: University Center

Session Chairs: David M. Wilt, NASA Glenn Research Center; William Hoke, Raytheon Company

10:00 AM Student
B1, Study of Defect Density in Lattice Mismatched $In_{.75}Al_{.25}As$/GaP Avalanche Photodiode: *Abigail Lubow*[1]; Aristo Yulius[1]; Hironori Tsukamoto[1]; Jerry M. Woodall[2]; [1]Yale University; [2]Purdue University

10:20 AM Student
B2, 2 µm Laser on Si(100) using AlSb Quantum Dot Nucleation: *Ganesh Balakrishnan*[1]; Shenghong Huang[1]; Arezou Khoshakhlagh[1]; Paul Rotella[1]; Abdenour Amtout[1]; Ralph Dawson[1]; Sanjay Krishna[1]; Diana Huffaker[1]; [1]University of New Mexico

10:40 AM
B3, Challenges in Epitaxial Growth of SiGe Buffers on Si (111), (110), and (112): *Minjoo Larry Lee*[1]; Dimitri Antoniadis[1]; Eugene A. Fitzgerald[1]; [1]Massachusetts Institute of Technology

11:00 AM Student
B4, Deep Level Defects in GaAs Grown on Metamorphic SiGe Substrates and Evidence for Dislocation-Enhanced Point Defect Gettering: *Maria Gonzalez*[1]; Carrie L. Andre[1]; Matthew R. Lueck[1]; Robert J. Walters[2]; Scott R. Messenger[2]; Jeffrey H. Warner[2]; Justin R. Lorentzen[2]; Eugene A. Fitzgerald[3]; Steven A. Ringel[1]; [1]Ohio State University; [2]Naval Research Laboratory; [3]Massachusetts Institute of Technology

11:20 AM Student
B5, Conductivity of InAs Nanorods Grown in GaAs Via Holes: *Kangho Lee*[1]; Ajit K. Mahapatro[1]; Aristo Yulius[2]; Eric Harmon[3]; David B. Janes[1]; Jerry M. Woodall[1]; [1]Purdue University; [2]Yale University; [3]LightSpin Technologies, Inc.

Session C: Contacts to Organic Semiconductors and Device Performance

Wednesday AM — Room: Lotte Lehmann
June 22, 2005 — Location: Music Hall

Session Chairs: Alberto Salleo, Palo Alto Research Center; Lisa M. Porter, Carnegie Mellon University

10:00 AM Student
C1, Characterization and Improvement of Electrical Contacts to Novel n-Channel Organic Transistors: *Byungwook Yoo*[1]; Antonio Facchetti[2]; Siddharth Mohapatra[3]; Myung-Han Yoon[2]; Klaus Dimmler[3]; Tobin Marks[2]; Ananth Dodabalapur[1]; [1]University of Texas at Austin; [2]Northwestern University; [3]OrganicID

10:20 AM Student
C2, Nonlinear Charge Injection in Organic Field-Effect Transistors: *Behrang H. Hamadani*[1]; Douglas Natelson[1]; [1]Rice University

10:40 AM Student
C3, Influence of Electrode Contamination on α-NPD/Electrode Hole-Injection Barriers: *Alan Shu-Chung Wan*[1]; Jaehyung Hwang[1]; Fabrice Amy[1]; Antoine Kahn[1]; [1]Princeton University

11:00 AM
C4, Electronic Polarization at the Gold/Pentacene Interface: *Fabrice Amy*[1]; Calvin Chan[1]; Antoine Kahn[1]; [1]Princeton University

11:20 AM
C5, High Mobility PTCDI-Based n-Channel TFTs and Complementary Inverters: *David J. Gundlach*[1]; Kurt Pernstich[1]; Mathias Grueter[1]; Georg Wilckens[1]; Bertram Batlogg[1]; [1]Eidgenossische Technische Hochschule

Session D: Spintronics I - Dilute Magnetic Semiconductors

Wednesday AM — Room: Multicultural Theater
June 22, 2005 — Location: Multicultural Center

Session Chairs: Nitin Samarth, Pennsylvania State University; Bruce W. Wessels, Northwestern University

10:00 AM Student
D1, Nanoengineered Curie Temperature in Laterally-Patterned Ferromagnetic Semiconductor Heterostructures: *B. L. Sheu*[1]; K. F. Eid[1]; O. Maksimov[1]; M. B. Stone[2]; P. Schiffer[1]; Nitin Samarth[1]; [1]Pennsylvania State University; [2]Oak Ridge National Laboratory

10:20 AM Student
D2, Effect of Nitrogen Incorporation in Ferromagnetic (Ga,Mn)As Epilayers: *Itaru Oshiyama*[1]; Tsuyoshi Kondo[1]; Hiroo Munekata[1]; [1]Tokyo Institute of Technology

10:40 AM
D3, Band Structure Model for Magnetic Coupling in Semiconductors: *Gustavo Martini Dalpian*[1]; Su-Huai Wei[1]; [1]National Renewable Energy Laboratory

11:00 AM
D4, Magnetic Property Investigations on MBE-Grown ZnMnO Layers: Augustine Che Mofor[1]; Abdel-Hamid El-Shaer[1]; Andrey Bakin[1]; *Andreas Waag*[1]; Heiko Ahlers[2]; Uwe Siegner[2]; Wladimir Schoch[3]; Natalija Izyumskaya[3]; Vitaliy Avrutin[3]; Sergey Sorokin[4]; Sergey Ivanov[4]; Johannis Stoimenos[5]; [1]Technical University Braunschweig; [2]Physikalisch-Technische Bundesanstalt; [3]University Ulm; [4]Ioffe Phys.-Tech. Institute; [5]Aristotele University Thessaloniki

11:20 AM
D5, Electronic Structure of Transition Metal Impurities in ZnO: *Leon Petit*[1]; [1]Oak Ridge National Laboratory

11:40 AM
D6, Late News

Session E: High-K Gate Dielectrics I

Wednesday AM — Room: SB Harbor
June 22, 2005 — Location: University Center

Session Chairs: Susanne Stemmer, University of California; Evgeni Gusev, IBM Corporation

10:00 AM
E1, Improvement of Dielectric Properties of ZrO2 Thin Films by Plasma Nitriding / Cathodic Arc Deposition: *Anping Huang*[1]; Ricky K.Y. Fu[1]; Zengfeng Di[1]; Paul K. Chu[1]; [1]City University of Hong Kong

10:20 AM
E2, Mixed TiO_2 and SiO_2 by PECVD: Physical, Optical and Electrical Characterization: *Tito Busani*[1]; Roderick Devine[1]; [1]CHTM/UNM

10:40 AM Student
E3, The Growth and Characteristics of ZrO2 Gate Oxides for SiGe Metal-Oxide-Semiconductor Devices: Sang Yul Baek[1]; Jae Sung Hur[1]; Jeong-Seop Lee[1]; In-Hoon Choi[1]; [1]Korea University

11:00 AM Student
E4, Microstructure and Electronic Structure at ZrO_2/Silicon Interface: *Y. F. Dong*[1]; S. J. Wang[2]; Y. P. Feng[1]; A. C.H. Huan[2]; [1]National University of Singapore; [2]Institute of Materials Research & Engineering

11:20 AM
E5, Epitaxial Growth of Artificial $SrTiO_3$/$BaTiO_3$ Superlattices on TiN Buffered Si Substrates by Pulsed Laser Deposition: Tae-Un Kim[1]; Jong-Ha Moon[1]; Byung-Teak Lee[1]; Won Jae Lee[2]; Hong Seung Kim[3]; *Jin Hyeok Kim*[1]; [1]Chonnam National University; [2]Dongeui University; [3]Korea Maritime University

11:40 AM
E6, Prolonging the Usage of Conventional NO Storage Dielectric by N2O Wet Oxidation and Treatment for Trench DRAM: *Yung-Hsien Wu*[1]; Hwei-Lin Chuang[2]; Sierra Lai[1]; P. B. Wei[1]; R. J. Wu[1]; [1]ProMOS Technologies Inc.; [2]United Microelectronics Corporation

Session F:
Dilute Nitrides I

Wednesday AM Room: State Street
June 22, 2005 Location: University Center

Session Chairs: Thomas F. Kuech, University of Wisconsin; Charles W. Tu, University of California

10:00 AM
F1, Quantitative Structural Analysis and Optimization of (GaIn)(NAs)/GaAs: *Kerstin Volz*[1]; Torsten Torunski[1]; Oleg Rubel[1]; David Lackner[1]; Wolfgang Stolz[1]; [1]Philipps University Marburg

10:20 AM
F2, Annealing Behaviour of N Containing III/V-Semiconductors: *Torsten Torunski*[1]; Oleg Rubel[1]; Wolfgang Stolz[1]; Kerstin Volz[1]; Peer Kruse[2]; Dagmar Gerthsen[2]; Marco Schowalter[3]; Andreas Rosenauer[3]; [1]Philipps-University Marburg; [2]University of Karlsruhe; [3]University of Bremen

10:40 AM Student
F3, Band Offset Analysis of Dilute Nitride Single Quantum Well Structures Employing Surface Photo Voltage Measurements: *Massimo Galluppi*[1]; Lutz Geelhaar[1]; Henning Riechert[1]; [1]Infineon Technologies AG

11:00 AM Student
F4, Study of Electronic Properties in GaNxAs1-x Probed by Persistent Photoconductivity Measurement: *Shuo-Hsien Hsu*[1]; Yan-Kuin Su[1]; Shoou-Jinn Chang[1]; Ricky W. Chuang[1]; Wei-Cheng Chen[1]; [1]National Cheng Kung University

11:20 AM
F5, Correlation Between Electron Trap and Degradation of GaNAs Solar Cells: Sarah Kurtz[1]; Steve Johnston[1]; *Aaron Ptak*[1]; [1]National Renewable Energy Laboratory

11:40 AM
F6, Late News

Session G:
Non-Destructive Testing and In Situ Monitoring and Control

Wednesday AM Room: Lobero
June 22, 2005 Location: University Center

Session Chairs: Andrew M. Hoff, University of South Florida; Kurt G. Eyink, Air Force Research Laboratory

10:00 AM
G1, GaSb(001) Surface Kinetics During Molecular Beam Epitaxy: *Brad P. Tinkham*[1]; Wolfgang Braun[1]; Vladimir M. Kaganer[1]; Dillip K. Satapathy[1]; Bernd Jenichen[1]; Brian R. Bennett[2]; Klaus H. Ploog[1]; [1]Paul Drude Institute for Solid State Electronics; [2]Naval Research Laboratory

10:20 AM Student
G2, In-Situ Investigation of Surface Stoichiometry During InGaN and GaN Growth by Plasma-Assisted Molecular Beam Epitaxy Using RHEED-TRAXS: Brenda VanMil[1]; *Randy P. Tompkins*[1]; Kyoungnae Lee[1]; David Lederman[1]; Thomas H. Myers[1]; [1]West Virginia University

10:40 AM Student
G3, Spectroscopic Ellipsometry for Monitoring the Synthesis of GaN by Plasma-Assisted Molecular Beam Epitaxy: *Soojeong Choi*[1]; Tong-Ho Kim[1]; Michael Morse[1]; Pae Wu[1]; April Brown[1]; Maria Losurdo[2]; Giovanni Bruno[2]; Akihiro Moto[3]; [1]Duke University; [2]Institute of Inorganic Methodologies and of Plasmas; [3]Innovation Core SEI, Inc.

11:00 AM
G4, Phonons and Plasmons in Doped ZnO and ZnO Based Alloys: *Carsten Bundesmann*[1]; Mathias Schubert[1]; Holger von Wenckstern[1]; Daniel Spemann[1]; Evgeni M. Kaidashev[1]; Michael Lorenz[1]; Marius Grundmann[1]; [1]Universitaet Leipzig

11:20 AM
G5, Novel Low Coherence Interferometry for In-Situ Characterization of Bonded Wafers: *Wojtek J. Walecki*[1]; Alexander Pravdivtsev[1]; Kevin Lai[1]; Talal Azfar[1]; Manuel Santos[1]; Mihail Mihaylov[1]; Ann Koo[1]; [1]FSM

Session H:
Processing of Nitrides for Electronic Devices

Wednesday PM Room: Corwin Pavilion
June 22, 2005 Location: University Center

Session Chairs: Andrew Allerman, Sandia National Laboratories; Jung Han, Yale University

1:30 PM Student
H1, In Situ-Grown Ultra-Thin Si_3N_4 Passivation and Gate Dielectric Layers for AlGaN/GaN Insulating Gate HFET: *Wenfei Wang*[1]; Joff Derluyn[1]; Maarten Leys[1]; Marianne Germain[1]; Dominique Schreurs[1]; Gustaaf Borghs[1]; [1]IMEC

1:50 PM Student
H2, A Comparative Study of Surface Passivation Effects on DC Characteristics of AlGaN/GaN HEMTs: *Chang Liu*[1]; Eng Fong Chor[1]; Leng Seow Tan[1]; [1]National University of Singapore

2:10 PM
H3, Surface Leakage Currents and Peripheral Charging in Nanometer-Scale Schottky Gates of AlGaN/GaN Heterostructure Transistors: *Seiya Kasai*[1]; Junji Kotani[1]; Tamotsu Hashizume[1]; Hideki Hasegawa[1]; [1]Hokkaido University

2:30 PM
H4, Novel Oxide Passivation of AlGaN/GaN High Electron Mobility Transistor and Reliability of Passivation: *Brent P. Gila*[1]; M. Hlad[1]; T. Anderson[1]; A. H. Onstine[1]; R. Frazier[1]; G. T. Thaler[1]; A. Herrero[1]; E.

Lambers[1]; C. R. Abernathy[1]; S. J. Pearton[1]; N. Moser[2]; R. Fitch[2]; F. Ren[1]; [1]University of Florida; [2]Air Force Research Laboratory

2:50 PM
H5, High-Temperature Behaviors of Strain in AlxGa1-xN/GaN Heterostructures With and Without Si3N4 Surface Passivation: *Chen Dunjun*[1]; Shen Bo[2]; Zhang Rong[1]; Zheng Youdou[1]; [1]Nanjing University; [2]Peking University

3:10 PM Break

3:30 PM
H6, Deeply Recessed Thick Capped AlGaN/GaN HEMTs with Epitaxial Field Plates: *Likun Shen*[1]; Sten Heikman[1]; Arpan Chakraborty[1]; Stacia Keller[1]; Umesh Mishra[1]; [1]University of California

3:50 PM
H7, Low Temperature Mo/Al/Mo/Au Ohmic Contacts for AlGaN/GaN HEMTs: *Anirban Basu*[1]; Fitih Mohammed[1]; Ilesanmi Adesida[1]; Shiping Guo[2]; Brian Albert[2]; Boris Peres[2]; Ivan Eliashevich[2]; [1]Micro and Nanotechnology Laboratory; [2]EMCORE Corporation

4:10 PM
H8, Excellent Surface Morphology and Low Contact Resistivity of Si/Ti/Al/Mo/Au Ohmic Contacts for Undoped-AlGaN/GaN HFETs: *Ho-Young Cha*[1]; X. Chen[1]; Y.-J. Sun[1]; H. Wu[1]; W. J. Schaff[1]; M. G. Spencer[1]; L. F. Eastman[1]; [1]Cornell University

4:30 PM Student
H9, Study of Si Diffused GaN for Enhancement-Mode MOSFET Applications: *Soohwan Jang*[1]; Brent P. Gila[1]; Hyuksu Yang[1]; Stephen Pearton[1]; Fan Ren[1]; [1]University of Florida

4:50 PM Student
H10, Digital Etching of III-N Materials Using a Two-Step Ar/KOH Technique: *David Keogh*[1]; Russell Dupuis[2]; Milton Feng[3]; Peter M. Asbeck[1]; [1]University of California, San Diego; [2]Georgia Tech; [3]University of Illinois

Session I:
ZnO: Doping and Devices

Wednesday PM Room: Flying A
June 22, 2005 Location: University Center

Session Chairs: Julia W.P. Hsu, Sandia National Laboratories; Yicheng Lu, Rutgers University

1:30 PM Student
I1, Realization of Phosphorus-Doped p-Type (Zn,Mg)O Thin Films via Pulsed Laser Deposition: *Yuan-Jie Li*[1]; YoungWoo Heo[1]; Jean Marie Erie[1]; Hyunsik Kim[1]; Kelly Ip[1]; Steven J. Pearton[1]; David P. Norton[1]; Jaujun Chen[1]; Fan Ren[1]; [1]University of Florida

1:50 PM
I2, Impact of As-Doping on the Optical Properties of ZnO: Isolation and Identification of a New As-Acceptor Related Emission Line: *Frank Bertram*[1]; J. Christen[1]; S. Giemsch[1]; A. Dadgar[1]; A. Krost[1]; [1]Otto-von-Guericke-University Magdeburg

2:10 PM
I3, Heteroepitaxial and Homoepitaxial Growth and Nitrogen Doping of Dense ZnO Films via MOVPE and a Low/High Temperature Sequence: *Robert F. Davis*[1]; [1]Carnegie Mellon University

2:30 PM
I4, Analysis of the Objectionable n-Background Conductivity in ZnO Crystals: *Peter Kiesel*[1]; Oliver Schmidt[1]; Chris G. van de Walle[2]; Noble Johnson[1]; [1]Palo Alto Research Center; [2]University of California, Santa Barbara

2:50 PM Student
I5, Ab Initio Study of Polarization and Piezoelectric Constants of the Binary Oxide System ZnO, MgO, CdO and Its Related Alloys: *Priya Gopal*[1]; [1]University of California, Santa Barbara

3:10 PM Break

3:30 PM
I6, Fabrication of ZnMgO:P/ZnO p-n Junctions on ZnO Substrates: *Hyucksoo Yang*[1]; Yuanjie Li[1]; David Norton[1]; Stephen Pearton[1]; Soohwan Jang[1]; Fan Ren[1]; Lynn Boatner[2]; [1]University of Florida; [2]Oak Ridge National Laboratory

3:50 PM Student
I7, Dynamic and Static Photoresponse in n-ZnO/p-Si Photodiode vs. n-ZnO Based Thin-Film Transistors: *Heesun Bae*[1]; Kimoon Lee[1]; Seongil Im[1]; [1]Yonsei University

4:10 PM Student
I8, Growth, Fabrication and Characterization of ZnO Based Single Nanorod Field Effect Transistor: *Byoung Sam Kang*[1]; Lichia Tien[1]; Patrick Sadik[1]; Youngwoo Heo[1]; David Norton[1]; Stephen Pearton[1]; Fan Ren[1]; [1]University of Florida

4:30 PM Student
I9, Highly Sensitive Hydrogen Sensor Using Pd Nanoparticles Coated ZnO Nanorods: *Hung-Ta Wang*[1]; Byoung Sam Kang[1]; Li-Chia Tien[1]; Patrick Sadik[1]; David Norton[1]; Stephen Pearton[1]; Fan Ren[1]; [1]University of Florida

4:50 PM
I10, Late News

Session J:
Spintronics II - Spin-Dependent Electronic Materials

Wednesday PM Room: Multicultural Theater
June 22, 2005 Location: Multicultural Center

Session Chairs: Michael E. Flatté, University of Iowa; Chris J. Palmstrom, University of Minnesota

1:30 PM Student
J1, Mechanical Stress Induced Instabilities in Tunnel Magneto Resistance Devices: *Pawan Tyagi*[1]; Bruce J. Hinds[1]; [1]University of Kentucky

1:50 PM
J2, Spin Gunn Effect: *Yunong Qi*[1]; Zhi-Gang Yu[1]; Michael E. Flatté[1]; [1]University of Iowa

2:10 PM Student
J3, Spin Injection from the Heusler Alloy Co_2 MnGe into $Al_{0.1}$ $Ga_{0.9}$ As/GaAs Heterostructures: *Xuying Dong*[1]; Xiaohua Lou[1]; Christoph Adelmann[1]; Jonathan Strand[1]; Amanda Petford-Long[2]; Paul Crowell[1]; Chris Palmstrøm[1]; [1]University of Minnesota; [2]University of Oxford

2:30 PM
J4, Ballistic Electron Transport in Spin Valve Transistors Studied by Scanning Tunneling Microscopy Techniques: *Rudolf Heer*[1]; Jürgen Smoliner[2]; Jan Bornemeier[3]; Hubert Brückl[1]; [1]ARC Seibersdorf; [2]TU-Wien; [3]Universität Bielefeld

2:50 PM
J5, Bi-Stable Current Voltage Characteristics Persistently Observed in an In81Ga19As Channel Spin Transistor with Fe Electrodes as Spin Injector/Detector: *Kanji Yoh*[1]; Marhoun Ferhat[1]; Joanna M. Millunchick[2]; [1]Hokkaido University, Japan Science and Technology Agency; [2]University of Michigan

3:10 PM
J6, Electric Field Driven Spin Resonances of a Magnetic Dopant in a Semiconductor: *Jian-Ming Tang*[1]; Jeremy Levy[2]; Michael E. Flatté[1]; [1]University of Iowa; [2]University of Pittsburgh

3:30 PM Break

3:50 PM Student
J7, Metalorganic Vapor Phase Epitaxy of MnAs Thin Films and Their Ferromagnetic Properties: *George Evan Sterbinsky*[1]; Steven J. May[1]; Philip T. Chiu[1]; Bruce W. Wessels[1]; [1]Northwestern University

4:10 PM Student
J8, Exchange Biasing of the Ferromagnetic Semiconductor (Ga,Mn)As: *K. F. Eid*[1]; M. B. Stone[1]; O. Maksimov[1]; K. C. Ku[1]; T. C. Shih[2]; C. J. Palmstrøm[2]; P. Schiffer[1]; Nitin Samarth[1]; [1]Pennsylvania State University; [2]University of Minnesota

4:30 PM Student
J9, Electric Field Dependence of the G Tensor of MBE-Grown Semiconductor Quantum Dots: *Joseph Pingenot*[1]; Craig E. Pryor[1]; Michael E. Flatté[1]; [1]University of Iowa

4:50 PM
J10, Late News

Session K: High-K Gate Dielectrics II

Wednesday PM, June 22, 2005 — Room: SB Harbor — Location: University Center

Session Chairs: Patrick Lenahan, Pennsylvania State University; Susanne Stemmer, University of California

1:30 PM Student
K1, Scanning Transmission Electron Microscopy Investigation of HfO_2/TiN Interfaces in High-*k* Gate Stacks: *Melody Pacifico Agustin*[1]; Leonardo R.L. Fonseca[2]; Jacob Hooker[3]; Susanne Stemmer[1]; [1]University of California, Santa Barbara; [2]Freescale Semiconductor; [3]Philips Research Leuven

1:50 PM Student
K2, Effect of Precursor Chemistry on the Composition, Structure and Electrical Properties of Ultra-Thin ALD-HfO_2 Gate Dielectrics: *Raghavasimhan Sreenivasan*[1]; Hyoungsub Kim[1]; Paul McIntyre[1]; Krishna Saraswat[1]; [1]Stanford University

2:10 PM Student
K3, The Effect of Nitrogen Incorporation on the Material and Electrical Properties of HfO_2 on Si: *Monica Sawkar*[1]; Jongwoo Choi[1]; Ragesh Puthenkovilakam[1]; Jane P. Chang[1]; [1]University of California, Los Angeles

2:30 PM Student
K4, Interface Defects in Si/HfO_2-Based Metal-Oxide-Semiconductor Field-Effect Transistors: *Thomas George Pribicko*[1]; Jason Campbell[1]; Patrick Lenahan[1]; Wilman Tsai[2]; Andreas Kerber[3]; [1]Pennsylvania State University; [2]Intel; [3]Infineon Technologies AG

2:50 PM Student
K5, Electron Paramagnetic Resonance Studies of Hafnium Oxide MOS Structures: *Jason Thomas Ryan*[1]; Patrick M. Lenahan[1]; Tom G. Pribicko[1]; Gennadi Bersuker[2]; Pat Lysaght[2]; Joel Barnett[2]; John Conley[3]; [1]Pennsylvania State University; [2]SEMATECH; [3]Sharp Laboratories of America

3:10 PM Break

3:30 PM
K6, Combinatorial Characterization of Metal Gate/High-k Oxide Interface: *T. Chikyow*[1]; P. Ahmet[2]; K. Nakajima[2]; T. Nagta[1]; G. Richter[3]; T. Wagner[3]; [1]National Institute for Materials Science, CREST-Japan Science and Technology Corporation; [2]National Institute for Materials Science; [3]Max Plank Institute

3:50 PM
K7, Impact of Thickness of Metal Nitride (TiN) in Poly Si/TiN Gate Stack on Electrical Performance and Reliability: *Sang Ho Bae*[1]; Seung-Chul Song[1]; Zhibo Zhang[2]; Johnny Sim[1]; Prashant Majhi[3]; Kisik Choi[1]; Paul Kirsch[4]; Naim Moumen[4]; Byoung Hun Lee[4]; [1]Sematech; [2]Sematech, Texas Instruments assignee; [3]Sematech, Intel assignee; [4]Sematech, IBM assignee

4:10 PM
K8, Imaging of Hafnium Atoms in Silicon Dioxide: *Dmitri O. Klenov*[1]; Evgeni Gusev[2]; Paul Saunders[2]; Susanne Stemmer[1]; [1]University of California; [2]IBM

4:30 PM
K9, Atomic Layer Deposition (ALD) of Thin Ruthenium Films for Next Generation CMOS Metal Gate Electrode Applications: *Filippos Papadatos*[1]; Steve Consiglio[1]; Mihir Tungare[1]; Kalyan Veranda[1]; Nathaniel Berliner[1]; Eric T. Eisenbraun[1]; Alain E. Kaloyeros[1]; [1]University at Albany, SUNY

4:50 PM
K10, Late News

Session L: Dilute Nitrides II

Wednesday PM Room: State Street
June 22, 2005 Location: University Center

Session Chairs: Rachel S. Goldman, University of Michigan; Wladek Walukiewicz, Lawrence Berkeley Laboratory

1:30 PM
L1, First Optical Pumped Lasing Operation of the Novel Ga(NAsP) Dilute Nitride Material System Pseudomorphically Grown on GaP Substrate by MOVPE: *Bernardette Kunert*[1]; Torsten Torunski[1]; Jörg Koch[1]; Kerstin Volz[1]; Sebastian Borck[1]; Jörg Heber[1]; Wolfgang W. Rühle[1]; Wolfgang Stolz[1]; [1]Philipps-University

1:50 PM
L2, 1.53-1.55µm Temperature-Tunable GaInNAsSb Laser Diodes Grown on GaAs(001): *James A. Gupta*[1]; Pedro Barrios[1]; Xia Zhang[2]; Greg Pakulski[1]; Xiaohua Wu[1]; [1]National Research Council of Canada; [2]University of Ottawa

2:10 PM Student
L3, Characteristics of GaAsN/GaAsSb Type-II MQWs on GaAs Substrates Grown by Metalorgnaic Vapor Phase Epitaxy: *A. A. Khandekar*[1]; B. E. Hawkins[1]; T. F. Kuech[1]; J. Y. Yeh[1]; L. J. Mawst[1]; J. R. Meyer[2]; I. Vurgaftman[2]; [1]University of Wisconsin; [2]Naval Research Laboratory

2:30 PM Student
L4, Effects of Growth Temperature on the Optical Behavior of GaInNAsSb Alloys: *Seth R. Bank*[1]; Homan B. Yuen[1]; Mark. A. Wistey[1]; Vincenzo Lordi[1]; Hopil Bae[1]; James S. Harris[1]; [1]Stanford University

2:50 PM Student
L5, Influence of Ion Flux and Ion Energy Distribution on the Optical Properties of Dilute Nitride Materials: *Michael M. Oye*[1]; Mark A. Wistey[2]; Jason M. Reifsnider[3]; Sumit Agarwal[4]; Sridhar Govindaraju[1]; Seth R. Bank[2]; Homan B. Yuen[2]; Terry J. Mattord[1]; James S. Harris[2]; Gary A. Hallock[1]; Archie L. Holmes[1]; [1]University of Texas at Austin; [2]Stanford University; [3]Samsung Austin Semiconductor; [4]University of Massachusetts-Amherst

3:10 PM
L6, Enhanced-Depletion-Width GaInNAs Solar Cells Grown by Molecular-Beam Epitaxy: *Aaron J. Ptak*[1]; Daniel J. Friedman[1]; Sarah Kurtz[1]; James Kiehl[1]; [1]National Renewable Energy Laboratory

3:30 PM Break

3:50 PM Student
L7, Ga(In)NP-Based Yellow-Red Light-Emitting Diodes Directly Grown on GaP (100) Substrates: *Vladimir A. Odnoblyudov*[1]; Charles W. Tu[1]; [1]University of California, San Diego

4:10 PM
L8, Investigations of GaN_xP_{1-x}/GaP LED Structure Optical Properties: *Lorant Peternai*[1]; Jaroslav Kovac[1]; Jan Jakabovic[1]; Volker Gottschalch[2]; Bernd Rheinlaender[2]; [1]Slovak University of Technology Bratislava; [2]University of Leipzig

4:30 PM
L9, Mid-Infrared Photoluminescence of Dilute Nitride InNxAs1-x/In0.53Ga0.47As/InP Multi-Quantum Wells: *Handong Sun*[1]; Antony H. Clark[1]; Stephan Calvez[1]; Martin D. Dawson[1]; D. K. Shih[2]; Hao-Hsiung Lin[2]; [1]University of Strathclyde; [2]National Taiwan University

4:50 PM
L10, Strong Increase of the Electron Effective Mass in GaAs Incorporating Boron and Indium: *Tino Hofmann*[1]; Mathias Schubert[1]; Eoin O'Reilly[2]; [1]University of Leipzig; [2]NMRC University College

Session M: Narrow Bandgap Semiconductors

Wednesday PM Room: Lobero
June 22, 2005 Location: University Center

Session Chairs: Christine Wang, Massachusetts Institute of Technology; Robert M. Biefeld, Sandia National Laboratories

1:30 PM Student
M1, Mid-IR Photoluminescence from InGaSb QWs on GaAs: *Peter Hill*[1]; L. Ralph Dawson[1]; Paul Rotella[1]; Sanjay Krishna[1]; Philip Dowd[1]; [1]University of New Mexico

1:50 PM Student
M2, InAs/GaSb SLS Infrared Photovoltaic Detectors Grown on GaAs Substrates: *Elena A. Plis*[1]; Nina Weisse-Bernstein[1]; Larry Ralph Dawson[1]; Sanjay Krishna[1]; [1]University of New Mexico

2:10 PM
M3, High-Quality InAs-GaSb Superlattices Grown by MOCVD on (001) GaAs Substrates for Mid-IR Photodetector Applications: *Xue-Bing Zhang*[1]; Jae-Hyun Ryou[1]; Russell Dupuis[1]; Shin Mou[2]; Shun Lien Chuang[2]; C. Xu[2]; Kuang-Chien Hsieh[2]; [1]Georgia Institute of Technology; [2]University of Illinois at Urbana-Champaign

2:30 PM
M4, Mid-Infrared "W" Diode Lasers Operating CW up to 218 K: William W. Bewley[1]; J. Ryan Lindle[1]; Chadwick L. Canedy[1]; Igor Vurgaftman[1]; *Chulsoo Kim*[1]; Mijin Kim[1]; Jerry R. Meyer[1]; [1]Naval Research Laboratory

2:50 PM Student
M5, Type II Photoluminescence of InGaAlAs/GaAsSb Heterostructures Grown by Molecular Beam Epitaxy: *Houssam Chouaib*[1]; Catherine Bru-

Chevallier[1]; Philippe Bove[2]; [1]Laboratoire de Physique de la Matière; [2]Picogiga

3:10 PM Student
M6, Density Functional Theory Studies of Al and Ga Diffusion in AlSb/GaSb Structures: *M. Gonzalez-Debs*[1]; A. A. Gokhale[1]; M. Mavrikakis[1]; T. F. Kuech[1]; [1]University of Wisconsin

3:30 PM Break

3:50 PM Student
M7, Shallow Ohmic Contacts to P-InAs: *Eric M. Lysczek*[1]; Joshua A. Robinson[1]; Sammy H. Wang[1]; Suzanne E. Mohney[1]; [1]Pennsylvania State University

4:10 PM Student
M8, InP Based Photodiodes Operating Beyond 2µm Using Lattice-Matched GaInAs-GaAsSb Type-II Quantum Wells: *Rubin Sidhu*[1]; Ning Duan[1]; Joe C. Campbell[1]; Archie L. Holmes[1]; [1]University of Texas at Austin

4:30 PM
M9, InAs Quantum Well Heterostructures for FETs with Ultra-Short Gates: *Brian R. Bennett*[1]; J. Brad Boos[1]; Mario G. Ancona[1]; Nicholas Papanicolaou[1]; Doewon Park[1]; Robert Bass[1]; [1]Naval Research Laboratory

4:50 PM
M10, Intersubband Transitions in HgTe/HgCdTe Superlattices and Deformation Potentials of the Semimetal HgTe: *Charles R. Becker*[1]; V. Latussek[1]; G. Landwehr[1]; R. Bini[2]; L. Ulivi[2]; [1]University Würzburg; [2]European Lab for Nonlinear Spectroscopy

Session N:
Group III-Nitride Growth

Thursday AM — Room: Corwin East
June 23, 2005 — Location: University Center

Session Chairs: Thomas Myers, West Virginia University; Christiane Poblenz, University of California, Santa Barbara

8:20 AM
N1, Effect of Mg on the Structure and Growth of GaN(0001): *John E. Northrup*[1]; [1]Palo Alto Research Center

8:40 AM
N2, Ga Adlayer Governed Surface Morphology Evolution of (0001) GaN Films Grown by Plasma–Assisted Molecular Beam Epitaxy: *Gregor Koblmueller*[1]; Jay Brown[1]; Robert Averbeck[2]; Henning Riechert[2]; Peter Pongratz[3]; James Speck[1]; [1]University of California, Santa Barbara; [2]Infineon Technologies; [3]Vienna University of Technology

9:00 AM Student
N3, Effects of SiC Surface Modification on the Defect Structure of Molecular Beam Epitaxy Grown GaN: *Mike Morse*[1]; Pae Wu[1]; April Brown[1]; Tong-Ho Kim[1]; Maria Losurdo[2]; Giovanni Bruno[2]; [1]Duke University; [2]Institute of Inorganic Methodologies and of Plasmas-CNR, and INSTM

9:20 AM Student
N4, Structural and Electrical Characterization of N-Face GaN Grown on C-Face SiC by MBE: *Siddharth Rajan*[1]; Feng Wu[1]; Manhoi Wong[1]; Yenyun Fu[1]; James S. Speck[1]; Umesh K. Mishra[1]; [1]University of California, Santa Barbara

9:40 AM
N5, Growth of AlGan Alloys Exhibiting Enhanced Luminexcence Efficiency: *Anand V. Sampath*[1]; Gregory A. Garrett[1]; Charles J. Collins[1]; Eric D. Readinger[2]; Wendy L. Sarney[1]; H. Shen[1]; Michael Wraback[1]; [1]US Army Research Laboratory; [2]University of Maryland

10:00 AM Student
N6, Effect of AlN Nucleation Layer Growth Conditions on Buffer Leakage in AlGaN/GaN High Electron Mobility Transistors Grown by Molecular Beam Epitaxy (MBE): *Christiane Poblenz*[1]; Patrick Waltereit[1]; Siddharth Rajan[1]; Umesh Mishra[1]; James S. Speck[1]; [1]University of California, Santa Barbara

10:20 AM Break

10:40 AM Student
N7, High Quality AlN Layers Grown on (0001) Sapphire: *Seungjong Lee*[1]; Daewoo Kim[1]; Subhash Mahajan[1]; [1]Arizona State University

11:00 AM Student
N8, Metalorganic Molecular Beam Epitaxy of Gallium Nitride: Towards an Understanding of Surface Reaction Chemistry: *David Pritchett*[1]; Shawn Burnham[1]; Walter Henderson[1]; W. Alan Doolittle[1]; [1]Georgia Institute of Technology

11:20 AM
N9, The Growth of GaN/InGaN HBTs by MOCVD: *Theodore Chung*[1]; Ben Chukung[2]; David Keogh[3]; Jae-Boum Limb[1]; Jae-Hyun Ryou[1]; Wonseok Lee[1]; Peng Li[1]; Dongwon Yoo[1]; Xue-Bing Zhang[1]; D. Zakharov[4]; Zusanne Lilienthal-Weber[4]; Peter Asbeck[3]; Milton Feng[2]; Shyh-Chiang Shen[1]; Russell Dupuis[1]; [1]Georgia Institute of Technology; [2]University of Illinois at Urbana-Champaign; [3]University of California, San Diego; [4]Lawrence Berkeley National Laboratory

11:40 AM
N10, Late News

Session O:
ZnO: Impurities and Characterization

Thursday AM — Room: Corwin West
June 23, 2005 — Location: University Center

Session Chairs: David P. Norton, University of Florida; David C. Look, Wright State University

8:20 AM Invited
O1, Important Impurities and Defects in ZnO: *David C. Look*[1]; [1]Wright State University

9:00 AM
O2, Acceptor Clustering Related Free-to-Bound-Transition (e, A0) in ZnO: *J. Christen*[1]; Frank Bertram[1]; S. Giemsch[1]; Th. Hempel[1]; S. Petzold[1];

A. Dadgar[1]; N. Oleynik[1]; A. Krost[1]; [1]Otto-von-Guericke-University Magdeburg

9:20 AM
O3, Electronic and Structural Properties of Native Point Defects in ZnO Revisited: *Anderson Janotti*[1]; Chris G. Van de Walle[1]; [1]University of California, Santa Barbara

9:40 AM
O4, High Quality Zinc Oxide Nanowires Grown on Silicon Dioxide by Metalorganic Chemical Vapor Deposition at Low Temperature: *Shizuo Fujita*[1]; Sang-Woo Kim[1]; [1]Kyoto University

10:00 AM Break

10:20 AM
O5, Ultrafast Exciton Dynamics in a ZnO Thin Film Studied with fs Pump-Probe Experiment and Time-Resolved Photoluminescence Spectroscopy: *Cheng-Yen Chen*[1]; Fang-Yi Jen[1]; Yen-Cheng Lu[1]; Hsiang-Chen Wang[1]; C. C. Yang[1]; Bao-Ping Zhang[2]; Yusaburo Segawa[2]; [1]National Taiwan University; [2]Institute of Physical and Chemical Research

10:40 AM
O6, Record Long Room-Temperature Spontaneous Emission Lifetime in ZnO Epilayers Grown by Laser-Assisted Molecular Beam Epitaxy on $ScAlMgO_4$ Substrates Using High-Temperature-Annealed Self-Buffer and Proper Defect Management: *Shigefusa F. Chichibu*[1]; Atsushi Tsukazaki[2]; Takeyoshi Onuma[1]; Akira Ohtomo[2]; Takayuki Sota[3]; Akira Uedono[1]; Masashi Kawasaki[2]; [1]University of Tsukuba; [2]Tohoku University; [3]Waseda University

11:00 AM
O7, Exciton Binding Energy in a ZnO/MgZnO Quantum Well Structure: *Cheng-Yen Chen*[1]; Fang-Yi Jen[1]; Yen-Cheng Lu[1]; Hsiang-Chen Wang[1]; C. C. Yang[1]; Bao-Ping Zhang[2]; Yusaburo Segawa[2]; [1]National Taiwan University; [2]Institute of Physical and Chemical Research

11:20 AM Student
O8, Photoconductive Behavior of ZnO for Below Bandedge Excitation: *Kaveh Moazzami*[1]; Timothy E. Murphy[1]; Jamie D. Phillips[1]; [1]University of Michigan

11:40 AM Student
O9, Infrared Absorption Characteristics of Bulk and Epitaxial ZnO and Relationship to Electronic Properties: *Pierre-Yves Emelie*[1]; Kaveh Moazzami[1]; Jeff Siddiqui[1]; Song Liang Chua[1]; Jamie Phillips[1]; [1]University of Michigan

Session P: Dielectric/Semiconductor Interfaces and Non-Ideal Behavior in Organic Transistors

Thursday AM
June 23, 2005

Room: Lotte Lehmann
Location: Music Hall

Session Chairs: Michael D. McGehee, Stanford University; David J. Gundlach, Eidgenossische Technische Hochschule

8:20 AM Invited
P1, Chemical Effects on the Device Characteristics of Polymeric Thin-Film Transistors: *Michael L. Chabinyc*[1]; [1]Palo Alto Research Center

9:00 AM Student
P2, Top-Gated Organic Field-Effect Transistors with Parylene Dielectric: *Christopher Robert Newman*[1]; Matthew Panzer[1]; C. Daniel Frisbie[1]; [1]University of Minnesota

9:20 AM
P3, Pentacene TFT on a Room-Temperature Formed Organic Gate Insulator and Its Applications: Iwao Yagi[1]; Jun Tanabe[2]; Keiichi Yanagisawa[1]; *Kazuhito Tsukagoshi*[3]; Yoshinobu Aoyagi[2]; [1]RIKEN; [2]RIKEN and Tokyo Tech.; [3]RIKEN and PRESTO, JST

9:40 AM Student
P4, Low-Voltage Operation of a Pentacene Field-Effect Transistor Realized Using a Polymer Electrolyte Gate Dielectric: *Matthew J. Panzer*[1]; Christopher R. Newman[1]; C. Daniel Frisbie[1]; [1]University of Minnesota

10:00 AM Break

10:20 AM Student
P5, Molecular *n*-Type Doping of 1,4,5,8-Naphthalene Tetracarboxylic Dianhydride (NTCDA) by Pyronin B (PyB): *Calvin K. Chan*[1]; Eung-Gun Kim[2]; Jean-Luc Bredas[2]; Antoine Kahn[1]; [1]Princeton University; [2]Georgia Institute of Technology

10:40 AM
P6, Morphological Effects on Charge Transport in Conjugated Polymers: *Michael D. McGehee*[1]; Joe Kline[1]; [1]Stanford University

11:00 AM
P7, Anomalous Behavior of Low Temperature Mobility in Copper Phthalocyanine Thin Film: Niladri Sarkar[1]; *Ajit Kumar Mahapatro*[2]; Subhasis Ghosh[1]; [1]Jawaharlal Nehru University; [2]Purdue University

11:20 AM
P8, Electrical Stress Induced Charged Defect Generation in P3HT Based Devices: *Maya N. Kutty*[1]; Roderick A.B. Devine[2]; [1]University of New Mexico; [2]Kirtland AFDB

11:40 AM
P9, Late News

Session Q:
Semiconductor Nanowires

Thursday AM — Room: Multicultural Theater
June 23, 2005 — Location: Multicultural Center

Session Chairs: Hou T. Ng, Hewlett-Packard Company; Timothy D. Sands, Purdue University

8:20 AM Student
Q1, *In Situ* Studies of Semiconductor Nanowire Growth Using Optical Reflectometry: *Teresa J. Clement*[1]; S. Ingole[1]; Jeff Drucker[1]; S. T. Picraux[1]; [1]Arizona State University

8:40 AM Student
Q2, Photoelectron Spectroscopic Studies of Passivation of Germanium Nanowires: *Hemant Adhikari*[1]; Paul C. McIntyre[1]; Christopher E.D. Chidsey[1]; [1]Stanford University

9:00 AM
Q3, Heterostructure Formation and Strain Mapping in Si-Ge Nanowires: *J. L. Taraci*[1]; M. J. Hÿtch[2]; T. Clement[1]; David J. Smith[1]; P. Peralta[1]; M. R. McCartney[1]; J. Shumway[1]; Jeff Drucker[1]; S. T. Picraux[1]; [1]Arizona State University; [2]Centre d'Etudes de Chimie Métallurgique, Centre National de Recherche Scientifique

9:20 AM Student
Q4, Oxidation of Silicon Nanowires: *Daniel Shir*[1]; Bangzhi Liu[1]; Suzanne E. Mohney[1]; Yanfeng Wang[1]; James B. Mattzela[1]; Theresa S. Mayer[1]; Kok-Keong Lew[1]; Joan M. Redwing[1]; Soham Dey[1]; Ahmad Mohammad[1]; [1]Pennsylvania State University

9:40 AM Student
Q5, Synthesis and Electrical Characterization of p-n Junctions in Silicon Nanowires: *Kok-Keong Lew*[1]; Yanfeng Wang[1]; Bangzhi Liu[1]; Suzanne E. Mohney[1]; Theresa S. Mayer[1]; Joan M. Redwing[1]; [1]Pennsylvania State University

10:00 AM
Q6, InP Nanowire Photodetectors: *David Paul Richard Aplin*[1]; Jenny R. Hu[1]; Clint Novotny[1]; Paul K.L. Yu[1]; S. S. Lau[1]; Deli Wang[1]; [1]University of California, San Diego

10:20 AM Break

10:40 AM
Q7, Epitaxially Aligned GaN Nanowires and Nanobridges by MOCVD: Jie Su[1]; Maria Gherasimova[1]; George Cui[1]; *Jung Han*[1]; Christine Broadbridge[2]; Ann Lehman[3]; T. Onuma[4]; S. F. Chichibu[4]; Yiping He[5]; Arto Nurmikko[5]; [1]Yale University; [2]Southern Connecticut State University; [3]Trinity College; [4]University of Tsukuba; [5]Brown University

11:00 AM Student
Q8, Synthesis and Characterization of Indium Arsenide Nanowires: *Shadi Ahmad Dayeh*[1]; David Aplin[1]; Xiaotian Zhou[1]; Paul Yu[1]; Edward T. Yu[1]; Deli Wang[1]; [1]University of California, San Diego

11:20 AM Student
Q9, High Yield GaN Nanowire FET Fabrication and Characterization: *Huaqiang Wu*[1]; Ho-Young Cha[1]; Mvs Chandrashekhar[1]; Goutam Koley[2]; Michael G. Spencer[1]; [1]Cornell University; [2]University of South Carolina

11:40 AM
Q10, Late News

Session R:
Si-Based Heterojunctions and Strained Si: Growth, Characterization, and Applications

Thursday AM — Room: SB Harbor
June 23, 2005 — Location: University Center

Session Chairs: Minjoo Larry Lee, Massachusetts Institute of Technology; Ya-Hong Xie, University of California

8:20 AM
R1, High Quality Germanium Films Grown Directly on Si(001) by Surfactant Mediated Epitaxy: *Tobias F. Wietler*[1]; Eberhard Bugiel[1]; Rainer Kurps[2]; Karl R. Hofmann[1]; [1]University of Hannover; [2]IHP

8:40 AM Student
R2, Growth of Strain-Symmetried Si/SiGe Superlattice for THz Quantum Cascade Emitters Using MBE: *Ming Zhao*[1]; Anders Elfving[1]; Adnane Bouchaib[1]; Wei-Xin Ni[1]; Paul Townsend[2]; Stephen A. Lynch[2]; Douglas J. Paul[2]; Chiung-Chih Hsu[3]; Mao-Nan Chang[3]; [1]Linköping University; [2]University of Cambridge; [3]National Nano Device Laboratories

9:00 AM
R3, A New Post-Epitaxial Process for Straining Monocrystalline Si Thin Films Allowing a Direct Use for Device Applications or as a Virtual Substrate: *Marty Olivier*[1]; Michel Pitaval[1]; Tatiana Nychyporuk[2]; Volodymyr Lysenko[2]; Daniel Barbier[2]; [1]LENaC - UCB Lyon1; [2]LPM - INSA Lyon

9:20 AM Student
R4, Dislocation Free Strained-Si/SiGe Membranes: *Michelle M. Roberts*[1]; Hao-Chih Yuan[1]; D. E. Savage[1]; Z. Q. Ma[1]; M. G. Lagally[1]; [1]University of Wisconsin-Madison

9:40 AM
R5, Assessment of Strained Silicon/SiGe with Different Architectures by Raman Spectroscopy: *Steve J. Bull*[1]; Peter Dobrosz[1]; Sarah Olsen[1]; Anthony O'Neill[1]; [1]University of Newcastle

10:00 AM
R6, Fowler-Nordheim Tunnelling in Strained Si/SiGe MOS Devices: Impact of Cross-Hatching and Nanoscale Roughness: *Kelvin S.K. Kwa*[1]; Sarah H. Olsen[1]; Anthony G. O'Neill[1]; Sanatan Chattopadhyay[1]; Goutam Dalapati[1]; Luke S. Driscoll[1]; [1]University of Newcastle

10:20 AM Break

10:40 AM Student
R7, Gate Oxide Reliability Studies for Strained Si on Relaxed SiGe MOS Devices: *Sachin Joshi*[1]; Doreen Ahmad[1]; Marylene Palard[1]; David Q. Kelly[1]; David Onsongo[1]; Sagnik Dey[1]; L. Fei[2]; T. Torack[2]; Mike Seacrist[2]; Bruce Kellerman[2]; Sanjay K. Banerjee[1]; [1]University of Texas at Austin; [2]MEMC Electronic Materials Inc.

11:00 AM Student
R8, $Ge_{1-y}C_y$ MOS Capacitors with HfO_2 Gate Dielectric and TaN Gate: *David Quest Kelly*[1]; Joseph Patrick Donnelly[1]; Sagnik Dey[1]; Sachin Vineet Joshi[1]; Sanjay K. Banerjee[1]; [1]University of Texas at Austin

11:20 AM Student
R9, Theoretical Study of Boron Diffusion in Strained Si: *Li Lin*[1]; Taras Kirichenko[1]; Bhagawan Sahu[1]; Joo Hwan Yoo[1]; Sanjay Banerjee[1]; [1]University of Texas-Austin

11:40 AM
R10, Late News

Session S: Materials Integration: Wafer Bonding and Alternative Substrates

Thursday AM Room: State Street
June 23, 2005 Location: University Center

Session Chairs: Peter D. Moran, Michigan Technological University; Karl Hobart, Naval Research Laboratory

8:20 AM
S1, Buckling Time-Scale for Compressively-Strained Thin Films on Compliant Layers of Various Thickness: *R. L. Peterson*[1]; K. D. Hobart[2]; F. J. Kub[2]; James C. Sturm[1]; [1]Princeton University; [2]US Naval Research Laboratory

8:40 AM Student
S2, Relaxed SiGe Donor Substrates Incorporating Engineered Hydrogen-Gettering Structures for Layer Transfer Applications: *David M. Isaacson*[1]; Arthur J. Pitera[1]; Eugene A. Fitzgerald[1]; [1]Massachusetts Institute of Technology

9:00 AM Student
S3, Si Layer Transfer Using Plasma Hydrogenation: *Peng Chen*[1]; S. S. Lau[1]; Paul K. Chu[2]; Kimmo Henttinen[3]; Tommi Suni[3]; I. Suni[3]; N. David Theodore[4]; Terry L. Alford[5]; J. W. Mayer[5]; Lin Shao[6]; Michael Nastasi[6]; [1]University of California, San Diego; [2]City University of Hong Kong; [3]VTT Information Technologies; [4]Freescale Semiconductor Inc.; [5]Arizona State University; [6]Los Alamos National Laboratory

9:20 AM
S4, Wafer Bonding with Partially-Cured Benzocyclobutene (BCB) for 3D Integration Applications: *Ravi J. Kumar*[1]; F. Niklaus[1]; J. Yu[1]; J. J. McMahon[1]; J.-Q. Lu[1]; P. D. Persans[1]; R. J. Gutmann[1]; [1]Focus Center - New York, Rensselaer: Interconnections for Hyperintegration

9:40 AM
S5, Adhesive-Free Bond Between Sapphire and Garnet Single Crystals: *Huai-Chuan Lee*[1]; Helmuth E. Meissner[1]; Oliver Meissner[1]; [1]Onyx Optics, Inc.,

10:00 AM Break

10:20 AM
S6, Dependence of Semiconducting Materials Properties on Exfoliation by Hydrogen Implantation: *Sumiko Lynn Hayashi*[1]; Calin Miclaus[1]; Geoge Malouf[1]; Ginga Yoshizawa[1]; David Bruno[1]; Mark S. Goorsky[1]; [1]University of California, Los Angeles

10:40 AM Student
S7, Low Resistance Ohmic GaAs/InP Bonded Heterojunctions for Lattice-Mismatched Multijunction Solar Cell Applications: *Katsuaki Tanabe*[1]; Anna Fontcuberta I. Morral[1]; Daniel J. Aiken[2]; Mark W. Wanlass[3]; Harry A. Atwater[1]; [1]California Institute of Technology; [2]Emcore Photovoltaics; [3]National Renewable Energy Laboratory

11:00 AM
S8, Wafer Bonding of Nitride and II-VI Compounds for Optoelectronic Applications: *Akihiko Murai*[1]; Carsten Kruse[2]; Lee McCarthy[3]; Katsuya Samonji[1]; Umesh Mishra[3]; Steven P. DenBaars[3]; Stephan Figge[2]; Detlef Hommel[2]; [1]ERATO JST, UCSB Group; [2]Bremen University; [3]University of California Santa Barbara

11:20 AM Student
S9, Crystallographic and Morphological Effects of Ge/Si Transferred Epitaxial Templates on GaInP and GaAs Heterostructure Growth: *Melissa J. Griggs*[1]; James M. Zahler[1]; Anna Fontcuberta I. Morral[1]; Harry A. Atwater[1]; [1]California Institute of Technology

11:40 AM
S10, Integration of Multi-Spectral Nanocrystal Quantum Dots with Laser Assisted Forward Transfer Technique: *Michael Gerhold*[1]; Jian Xu[2]; Justin Liou[2]; Y. Andrew Yang[3]; [1]Army Research Office; [2]Pennsylvania State University; [3]Nanomaterials & Nanofabrication Laboratories

Session T: Basic and Applied Optical Properties of Quantum Dots

Thursday AM Room: Lobero
June 23, 2005 Location: University Center

Session Chairs: Ben Shanabrook, Naval Research Laboratory; James L. Merz, University of Notre Dame

8:20 AM
T1, Radiative Recombination of Charged Excitons and Multi-Excitons in CdSe Quantum Dots: *Alberto Franceschetti*[1]; Claudia Troparevsky[1]; [1]Oak Ridge National Laboratory

8:40 AM Student
T2, Neutral and Charged Multi-Exciton Complexes in Single InAs Quantum Dots Grown on InP(001): *Nicolas Chauvin*[1]; Edern Tranvouez[1];

Georges Bremond[1]; Gérard Guillot[1]; Catherine Bru-Chevallier[1]; Emmanuel Dupuy[2]; Philippe Regreny[2]; Michel Gendry[2]; [1]LPM; [2]LEOM

9:00 AM
T3, Role of Crystal Field in the Formation of Dark and Bright Excitonic States in Nitride Quantum Dots: Subhasis Ghosh[1]; *Anjana Bagga*[1]; Pranab Kumar Chattopadhyay[2]; [1]Jawaharlal Nehru University; [2]Maharshi Dayanand University

9:20 AM
T4, Dependence of 1.3 µm Quantum Dot Laser Performance on P-Doping and Electronic Structure: *Sabine Freisem*[1]; Dennis G. Deppe[1]; [1]University of Texas at Austin

9:40 AM
T5, High Performance of Superluminescent Diodes Utilizing Chirped Quantum Dots: *Il Ki Han*[1]; Young Chae Yoo[1]; Young Ju Park[1]; Jin Dong Song[1]; Won Jun Choi[1]; Woon Jo Cho[1]; Jung Il Lee[1]; Joo In Lee[2]; Sam Kyu Noh[2]; Eun Kyu Kim[3]; [1]Korea Institute of Science and Technology; [2]Korea Research Institute of Standards and Science; [3]Hanyang University

10:00 AM Break

Session U: IR Quantum Dots and Wells

Thursday AM Room: Lobero
June 23, 2005 Location: University Center

Session Chairs: Diana Huffaker, University of New Mexico; Glenn S. Solomon, Stanford University

10:20 AM
U1, Self-Assembled Three-Dimensional Arrays of Quantum Dots for Infrared Detection: *Bogdan Lita*[1]; Alexana Roshko[1]; Todd E. Harvey[1]; Marion Greene[1]; Brittany Hyland[1]; Kristine A. Bertness[1]; John H. Lehman[1]; [1]National Institute of Standards and Technology

10:40 AM Student
U2, Growth and Characterization of In(N)Sb/InAs Infrared Quantum Dots for Smart Sensor Applications: *Homan B. Yuen*[1]; Seongsin M. Kim[1]; Fariba Hatami[1]; Kanji Yoh[2]; Akihiro Moto[3]; James S. Harris[1]; [1]Stanford University; [2]Hokkaido University; [3]Innovation Core SEI, Inc.

11:00 AM Student
U3, High Density Nanometer-Scale InSb Dots Formation using Droplets Heteroepitaxial Growth by MOCVD: *Sergey Shusterman*[1]; Ariel Sher[1]; Yossi Paltiel[1]; Yossi Rosenwaks[2]; [1]Soreq NRC; [2]Tel-Aviv University

11:20 AM
U4, Band-Edge Characterization of Intermixed InGaAsP/InP and InGaAs/GaAs Quantum Wells: *Gordon B. Morrison*[1]; James W. Raring[1]; Chad S. Wang[1]; Erik J. Skogen[1]; Larry A. Coldren[1]; [1]University of California, Santa Barbara

11:40 AM
U5, Growth of Ge/SiGe MQWs on Si Substrates Through Relaxed Ge-Rich SiGe Buffers for Long Wavelength Optical Devices: *Yu-Hsuan Kuo*[1]; Junxian Fu[1]; Xiaojun Yu[1]; Theodore I. Kamins[2]; Glenn S. Solomon[1]; James S. Harris[1]; [1]Stanford University; [2]Hewlett-Packard Laboratories

Session V: Group III-Nitrides: Characterization, Defects, and Ordering

Thursday PM Room: Corwin East
June 23, 2005 Location: University Center

Session Chairs: Leonard J. Brillson, Ohio State University; Christian Wetzel, Future Chips Constellation

1:30 PM Student
V1, Analysis of Leakage Current Mechanisms in GaN and AlGaN/GaN Schottky Diodes: *Hongtao Zhang*[1]; Edward T. Yu[1]; [1]University of California, San Diego

1:50 PM
V2, Time-Resolved Photoluminescence Measurement of Vertical Minority Carrier Transport in III-N Epilayers: *Gregory A. Garrett*[1]; H. Shen[1]; M. Wraback[1]; [1]U.S. Army Research Laboratory

2:10 PM
V3, Experimental and Theoretical Investigation of Thermal Conductivity of AlxGa1-xN Thin Films: Weili Liu[1]; *Alexander A. Balandin*[1]; [1]University of California

2:30 PM
V4, Picosecond Acoustics in Bulk Nitride Films and Multilayer Structures: *Michael Wraback*[1]; H. Shen[1]; A. V. Sampath[1]; C. J. Collins[1]; [1]U.S. Army Research Laboratory

2:50 PM
V5, Electrical and Optical Characterization Studies of $Al_xGa_{1-x}N$ Implanted with Silicon: *Mee-Yi Ryu*[1]; Yung Kee Yeo[2]; Timothy W. Zens[2]; Michael A. Marciniak[2]; Robert L. Hengehold[2]; Todd D. Steiner[3]; [1]Kangwon National University; [2]Air Force Institute of Technology; [3]Air Force Office of Scientific Research

3:10 PM Break

3:30 PM Student
V6, Surface Oxide Relationships to Fermi Level Pinning in GaN: *Michael A. Garcia*[1]; Scott D. Wolter[1]; Tong-Ho Kim[1]; April Brown[1]; Maria Losurdo[2]; Giovanni Bruno[2]; [1]Duke University; [2]IMIP-CNR

3:50 PM
V7, Giant Traps Observed on Top Surface of HVPE-Grown Freestanding GaN: *Zhaoqiang Fang*[1]; David Look[1]; Andre Krtschil[2]; Alois Krost[2]; [1]Wright State University; [2]Otto-von-Guericke-University Magdeburg

4:10 PM
V8, Anisotropy in the Quantum Lifetime in AlGaN/GaN Heterostructures: *William C. Mitchel*[1]; W. D. Mitchell[1]; S. Elhamri[2]; R. Berney[2]; [1]US Air Force; [2]University of Dayton

4:30 PM
V9, Spontaneous Atomic Ordering and Band Gap Narrowing in Epitaxial $Al_xGa_{1-x}N$: *Min Gao*[1]; Yong Lin[1]; Shawn T. Bradley[1]; Jeonghyun Hwang[2]; William J. Schaff[2]; Steven A. Ringel[1]; Leonard J. Brillson[1]; [1]Ohio State University; [2]Cornell University

4:50 PM Student
V10, Compositional Dependence of Ordering in AlxGa1-xN Epitaxial Layers: *Adam T. Wise*[1]; Nathan Newman[1]; Subhash Mahajan[1]; [1]Arizona State University

Session W: ZnO: Nanostructures

Thursday PM Room: Corwin West
June 23, 2005 Location: University Center

Session Chairs: Yicheng Lu, Rutgers University; Zhong Lin Wang, Georgia Institute of Technology

1:30 PM Invited
W1, Novel Nanostructures of ZnO - Synthesis, Growth Mechanism, Properties and Applications: *Zhong Lin Wang*[1]; [1]Georgia Institute of Technology

2:10 PM
W2, Catalyst Selection for ZnO Nanowire Growth Using an Integrated High-Throughput/Phase-Diagram Approach: *Albert Davydov*[1]; Babak Nikoobakht[1]; Norman A. Sanford[1]; Daniel Josell[1]; William J. Boettinger[1]; Mark A. Vaudin[1]; Lawrence H. Robins[1]; Igor Levin[1]; Carol Handwerker[1]; [1]National Institute of Standards and Technology

2:30 PM Student
W3, Evolution of ZnO Nanostructures on Si by Vapor-Solid Mechanism in a Single Reactor: Structural and Optical Properties: Yoon-Bong Hahn[1]; *Ahmad Umar*[1]; Sang Hoon Kim[1]; [1]Chonbuk National University

2:50 PM
W4, Studies on Growth, Morphology, and Property of ZnO-Based Nanostructures: *Debasish Banerjee*[1]; Zhifeng Ren[1]; [1]Boston College

3:10 PM Break

3:30 PM
W5, Step-By-Step Hierachical Growth of Complex ZnO Nanocrystals: *Thomas L. Sounart*[1]; Jun Liu[1]; James A. Voigt[1]; Julia Hsu[1]; Bonnie McKenzie[1]; [1]Sandia National Laboratories

3:50 PM
W6, Directed Assembly of ZnO Nanobridges on a Si Substrate Using a ZnO Seed Layer: *John F. Conley*[1]; Yoshi Ono[1]; Lisa H. Stecker[1]; [1]Sharp Laboratories of America

4:10 PM
W7, Directed Assembly of ZnO Nanorods on Surfaces: *Julia W.P. Hsu*[1]; Neil C. Simmons[1]; Carolyn M. Matzke[1]; Zhengrong R. Tian[1]; James A. Voigt[1]; Jun Liu[1]; [1]Sandia National Laboratories

4:30 PM Student
W8, Structural and Optical Properties of ZnO Nanotips Grown on GaN: *Jian Zhong*[1]; Gaurav Saraf[1]; Hanhong Chen[1]; Yicheng Lu[1]; H. M. Ng[2]; T. Siegrist[2]; A. Parekh[3]; D. Lu[3]; E. A. Armour[3]; [1]Rutgers University; [2]Lucent Technologies; [3]Veeco Inc

4:50 PM Student
W9, The Lattice Mismatch Effects of ZnO Nanorods on Al2O3 Substrate: *Sun-Hong Park*[1]; Soo-Young Seo[1]; Seon-Hyo Kim[1]; Sang-Wook Han[2]; [1]Pohang University of Science and Technology; [2]Chon-Buk University

Session X: Flexible Thin-Film Electronics

Thursday PM Room: Lotte Lehmann
June 23, 2005 Location: Music Hall

Session Chairs: William S. Wong, Palo Alto Research Center; Michael L. Chabinyc, Palo Alto Research Center

1:30 PM Invited
X1, Flexible, Conformally Shaped, and Elastic Electronic Surfaces: *Sigurd Wagner*[1]; [1]Princeton University

2:10 PM
X2, Carbon Nanotube Network Thin-Film Transistors for High-Performance Flexible Electronics: *Paul M. Campbell*[1]; Eric S. Snow[1]; Keith Perkins[1]; Jamie Novak[2]; [1]Naval Research Laboratory; [2]Applied Nanotech, Inc.

2:30 PM
X3, Thin-Film Gas Sensors on Heated Polymide Membrane: *John Hatfield*[1]; [1]University of Manchester

2:50 PM
X4, Electrical Properties of Biaxially-Oriented Si Thin Films on Flexible Polycrystalline Metal Tapes: *Woong Choi*[1]; Quanxi Jia[1]; Vlad Matias[1]; Alp Findikoglu[1]; [1]Los Alamos National Laboratory

3:10 PM Break

3:30 PM Student
X5, Enhanced Charge-Injection from NiO_x Electrode to Pentacene Channel in Flexible Thin-Film Transistors: *Jiyoul Lee*[1]; Jeong-M. Choi[1]; Seongil Im[1]; [1]Yonsei University

3:50 PM
X6, Rigid Device Islands on Elastomeric Substrates: *Stephanie P. Lacour*[1]; Sigurd Wagner[1]; [1]Princeton University

4:10 PM
X7, Low-Temperature a-Si:H Thin-Film Transistor Arrays Fabricated by Digital Lithography: *William S. Wong*[1]; Rene Lujan[1]; Juergen Daniel[1]; Robert A. Street[1]; [1]Palo Alto Research Center

4:30 PM Student
X8, Dimensionally Stable Processing of a-Si TFTs on Polymer Foils: *Alex Kattamis*[1]; I.-Chun Cheng[1]; Ke Long[1]; James C. Sturm[1]; Sigurd Wagner[1]; [1]Princeton University

4:50 PM
X9, Low Coherence Optical Interferometry for Flexible Electronic Device Metrology: *Wojtek J. Walecki*[1]; Alexander Pravdivstev[1]; Mihail Mihaylov[1]; Manuel Santos[1]; Kevin Lai[1]; Ann Koo[1]; [1]FSM

Session Y: Nanotubes and Nanowires

Thursday PM Room: Multicultural Theater
June 23, 2005 Location: Multicultural Center

Session Chair: Ray Tsui, Motorola Laboratories

1:30 PM Student
Y1, Air-Stable Carbon Nanotube Field-Effect Transistors with Top-Gate Structures on SiNX Passivation Films Formed by Catalytic Chemical Vapor Deposition: *Daisuke Kaminishi*[1]; Yasuhide Ohno[1]; Kenzo Maehashi[1]; Koichi Inoue[1]; Kazuhiko Matsumoto[1]; Yasuhiro Seri[2]; Atsushi Masuda[2]; Hideki Matsumura[2]; Toshikazu Niki[3]; [1]Osaka University; [2]Japan Advanced Institute of Science and Technology; [3]Ishikawa Seisakusho, Ltd.

1:50 PM Student
Y2, Electrical Transport Modeling of Carbon Nanotube Field Effect Transistors: *Tongsheng Xia*[1]; Leonard F. Register[1]; Sanjay K. Banerjee[1]; [1]University of Texas-Austin

2:10 PM Student
Y3, Staircase Characteristics of Oxygen-Free Carbon Nanotube Field Effect Transistors Desorbed by Electrical Heating: *Takafumi Kamimura*[1]; Masatoshi Maeda[2]; Chan Kyeong Hyon[3]; Kazuhiko Matsumoto[1]; [1]Osaka University; [2]University of Tsukuba; [3]CREST/ Japan Science and Technology Agency

2:30 PM
Y4, Bi-Functional Carbon Nanotubes by Sidewall Protection Using Aligned Carbon Nanotube Membranes: *Bruce J. Hinds*[1]; Nitin Chopra[1]; Bing Hu[1]; [1]University of Kentucky

2:50 PM
Y5, Calculations on Co-Solvents of Single-Wall Carbon Nanotubes: *Francisco Torrens*[1]; [1]Universitat de Valencia

3:10 PM Break

3:30 PM Student
Y6, Biologically Directed Synthesis for Gold Nanowires: *Chung-Yi Chiang*[1]; Yu Huang[1]; Soo-Kwan Lee[1]; Yan Gao[2]; Evelyn Hu[2]; Angela M. Belcher[1]; [1]Massachusetts Institute of Technology; [2]University of California, Santa Barbara

3:50 PM
Y7, Electrical Characterization of Bio-Templated Nanowires: *Yan Gao*[1]; Jing C. Zhou[2]; Chung-Yi Chiang[3]; Yu Huang[3]; Ki Tae Nam[3]; Angela Belcher[3]; Bruce Dunn[2]; Evelyn Hu[1]; [1]University of California, Santa Barbara; [2]University of California, Los Angeles; [3]Massachusetts Institute of Technology

4:10 PM
Y8, Room-Temperature Ferromagnetic Ordering in (Mn, Fe) Doped ZnS Nanobelts: W. Y. Shim[1]; J. Sung[2]; T. Kang[2]; B. Kim[2]; M. H. Jung[3]; *W. Y. Lee*[1]; [1]Yonsei University; [2]KAIST; [3]Korea Basic Science Institute

4:30 PM Student
Y9, Selective Growth, Diameter Control, and Mechanistic Study of Copper Oxide Nanowires Grown from Exposed Edge of Al2O3/Cu/Al2O3 Thin Film Multilayer Structure: *Nitin Chopra*[1]; Bing Hu[1]; Bruce Jackson Hinds[1]; [1]University of Kentucky

4:50 PM Student
Y10, Photoconductive NiSi Nanowires Formed by Metal – Induced Growth: *Joondong Kim*[1]; Dongho Lee[1]; Wayne A. Anderson[1]; [1]University at Buffalo

Session Z: Chemical and Biological Sensors: Materials, Interfaces, and Integration

Thursday PM Room: SB Harbor
June 23, 2005 Location: University Center

Session Chairs: Laura Rea, Air Force Research Laboratory; Lloyd Whitman, Naval Research Laboratory

1:30 PM Student
Z1, Composition and Contextual Influence of Peptide Specificity for Inorganic Material Surfaces: *Eric Krauland*[1]; Beau Peelle[1]; K. Dane Wittrup[1]; Angela M. Belcher[1]; [1]Massachusetts Institute of Technology

1:50 PM
Z2, New Biologically Inspired Low-Temperature Nanofabrication of Metal Oxide Semiconductors for Photovoltaic and Other Applications: *Daniel E. Morse*[1]; Kristian M. Roth[1]; David Kisailus[1]; [1]Institute for Collaborative Biotechnologies, California NanoSystems Institute and Materials Research Laboratory

2:10 PM
Z3, Chemical Sensing Based on Reversible Desthiobiotin Gated Ionic Transport through Aligned Carbon Nanotube Membranes: *Bruce J. Hinds*[1]; Pramod Nednoor[1]; Nitin Chopra[1]; Leonidas Bachas[1]; [1]University of Kentucky

2:30 PM
Z4, Controlled Assembly of Molecular-Scale, Electrically Conductive and Highly Aligned Carbon Nanotube Electrodes: *Nikolai A. Kouklin*[1]; W. E. Kim[2]; A. D. Lazareck[2]; Jimmy Xu[2]; [1]University of Wisconsin Milwaukee; [2]Brown University

2:50 PM
Z5, The Role of Interface Material on the Sensitivity of Metal/Carbon Nanotube/Metal Sensors to Hydrogen and Volatile Gases: *Frank E. Jones*[1]; Alec Talin[1]; Paul M. Dentinger[1]; Francois Leonard[1]; Robert J. Bastasz[1]; [1]Sandia National Laboratories

3:10 PM Break

3:30 PM Student
Z6, Electrowetting Based Fluid Flow: Impact of Surface Functionalization with Self-Assembled Monolayers (SAMs): *Suvid Nadkarni*[1]; Ananth Dodabalapur[1]; [1]University of Texas at Austin

3:50 PM Student
Z7, Chemically-Gated AlGaN/GaN Heterojunction Field Effect Transistors for Liquid Sensing: *Junghui Song*[1]; Hyunchul Jung[1]; Jeffrey S. Flynn[2]; George R. Brandes[2]; Wu Lu[1]; [1]Ohio State University; [2]Cree Inc

4:10 PM
Z8, Biosensors Based on InAs/AlGaSb and AlGaN/GaN Devices: *K. M. McCoy*[1]; J. C. Sullivan[1]; J. C. Culbertson[1]; E. S. Snow[1]; Stephen John Pearton; Lloyd Whitman; [1]Naval Research Laboratory

4:30 PM Student
Z9, Conduction-Based Gas Sensor Using Redox Molecules as an Active Sensing Component: *Kangho Lee*[1]; Wendy Fan[2]; Meyya Meyyappan[2]; David B. Janes[1]; [1]Purdue University; [2]NASA Ames Research Center

4:50 PM
Z10, Late News

Session AA: Lattice-Engineered Materials and Devices

Thursday PM, June 23, 2005
Room: State Street
Location: University Center

Session Chairs: Ralph L. Dawson, University of New Mexico; Steven A. Ringel, Ohio State University

1:30 PM Student
AA1, Effect of AlSb Metamorphic Buffer Layer Thickness on the Performance of InAs-Channel HEMT Structures: *Atif M. Noori*[1]; Randy Sandhu[2]; Sumiko Hayashi[1]; Erik Meserole[1]; Mike Lange[2]; Roger Tsai[2]; Augusto Gutierrez-Aitken[2]; Mark Goorsky[1]; [1]University of California, Los Angeles; [2]Northrop Grumman Space Technology

1:50 PM Student
AA2, Strong Room Temperature Photoluminescence from Metamorphic InGaAs Quantum Wells: Issues Beyond Dislocation Density: *Henry Choy*[1]; Clifton Fonstad[1]; [1]Massachusetts Institute of Technology

2:10 PM Student
AA3, The Effect of Dislocation Interactions on Strain Relaxation in GaAsSb/GaAs Heteroepitaxy: *Benny Perez Rodriguez*[1]; Joanna Mirecki Millunchick[1]; [1]University of Michigan

2:30 PM Student
AA4, Metamorphic InP/GaAsSb/InP HBTs on GaAs Substrates by MOCVD: *Min Chen*[1]; Wei Zhou[1]; Jia Zhu[1]; Yong Cai[1]; Wilson Tang[1]; Kevin J. Chen[1]; Kei May Lau[1]; [1]Hong Kong University of Science and Technology

2:50 PM Student
AA5, Defect Behavior in Metamorphic Buffer Layers on Lattice Constants Near InP Grown by Metal Organic Chemical Vapor Deposition (MOCVD) on GaAs: *Nate Quitoriano*[1]; Eugene Fitzgerald[1]; [1]Massachusetts Institute of Technology

3:10 PM Break

3:30 PM Student
AA6, Effects of High-Temperature Rapid Thermal Annealing on Structural, Optical, and Electrical Properties of Metamorphic $In_{0.52}Al_{0.48}As/In_{0.53}Ga_{0.47}As$ Heterostructures Grown on GaAs Substrates: *Soo-Ghang Ihn*[1]; Seong-June Jo[1]; Tae-Woo Kim[1]; Kyung-Hwan Oh[1]; Jong-In Song[1]; [1]Gwangju Institute of Science and Technology

3:50 PM Student
AA7, Metamorphic Growth of Wavelength-Extended InGaAs on InP with Cycling In-Situ Annealed Step-Graded InAlAs and InGaAs Buffers: *Junxian Fu*[1]; Xiaojun Yu[1]; Yu-Hsuan Kuo[1]; James S. Harris[1]; [1]Stanford University

4:10 PM
AA8, Ultra-Thin Low Threading Dislocation Density $In_xAl_{1-x}As$ Virtual Substrates for the Development of 6.00Å $In_{0.86}Al_{0.14}As/In_{0.86}Ga_{0.14}As$ HBT: *Rajinder Sandhu*[1]; Abdullah Cavus[1]; Cedric Monier[1]; Atif Noori[2]; Sumiko Hayashi[2]; Mark Goorsky[2]; Augusto Gutierrez-Aitken[1]; [1]Northrup Grumman Space Technology; [2]University of California, Los Angeles

4:30 PM Student
AA9, Metalorganic Vapor Phase Epitaxy of High Resistivity Lattice-Mismatched $InAs_xP_{1-x}$ (x=0.20 to 0.75) on InP Buffer Layer: *Steven Sontung Bui*[1]; Henry P. Lee[1]; [1]University of California, Irvine

4:50 PM Student
AA10, The Effects of As_2 Versus As_4 on Step-Graded $InAs_xP_{1-x}$ Mixed-Anion Alloys Grown on InP Substrates with Solid Source MBE: *Wanming Zhang*[1]; Changhyun Yi[1]; April Brown[1]; [1]Duke University

Session BB: Wide Bandgap Wells, Wires, and Dots

Thursday PM, June 23, 2005
Room: Lobero
Location: University Center

Session Chairs: Glenn S. Solomon, Stanford University; Mark S. Miller, University of Utah

1:30 PM
BB1, Synthesis and Biological Applications of GaN Nanoparticles: *Jifa Qi*[1]; Saeeda Jaffar[1]; Jennifer Hsieh[1]; Angela M. Belcher[1]; Yan Gao[2]; Evelyn Hu[2]; [1]Massachusetts Institute of Technology; [2]University of California

1:50 PM
BB2, Catalyst-Free Growth of GaN and AlGaN Nanowires: *Kris A. Bertness*[1]; N. A. Sanford[1]; J. M. Barker[1]; J. B. Schlager[1]; A. Roshko[1]; A. V. Davydov[1]; I. Levin[1]; [1]National Institute of Standards and Technology

2:10 PM
BB3, Spectroscopic Study of GaN and AlGaN Nanowires Grown by MBE: *Lawrence H. Robins*[1]; John B. Schlager[1]; Norman A. Sanford[1]; Kristine A. Bertness[1]; Joy Barker[1]; [1]National Institute of Standards and Technology

2:30 PM
BB4, Formation of Ni Nanodots and Controlled Growth of GaN Nanowires by Pulsed MOCVD: *Mark Holtz*[1]; D. Aurongzeb[1]; G. Kipshidze[1]; B. Yavich[1]; A. Chandolu[1]; V. Kuryatkov[1]; I. Ahmad[1]; H. Temkin[1]; [1]Texas Tech University

2:50 PM Student
BB5, GaN/AlN Multiple Quantum Wells Grown on GaN-AlN Waveguide Structures by Metalorganic Vapor Phase Epitaxy: *Chaiyasit Kumtornkittikul*[1]; Masakazu Sugiyama[2]; Yoshiaki Nakano[1]; [1]RCAST, University of Tokyo and JST-SORST; [2]University of Tokyo

3:10 PM Break

3:30 PM
BB6, Structural and Optical Characterization of CdSe/CdS Colloidal Quantum Dots Spin-Cast on GaAs Substrates for Application to Infrared Photodetectors: *Adrienne D. Stiff-Roberts*[1]; Wanming Zhang[1]; Hongying Peng[1]; Henry Everitt[1]; Jian Xu[2]; [1]Duke University; [2]Pennsylvania State University

3:50 PM Student
BB7, Electrical and Structural Characterization of Self-Assembled ZnO Nanoparticles in Diblock Copolymers on Si Substrates: *Hasina Afroz Ali*[1]; Agis Iliadis[1]; Luz Martinez-Miranda[1]; Unchul Lee[2]; [1]University of Maryland, College Park; [2]Army Research Laboratory

4:10 PM Student
BB8, Electrical Properties of ZnO Nano-Particles Embedded in Polyimide: Eun Kyu Kim[1]; *JaeHoon Kim*[1]; Hyung Gu Noh[1]; Young Ho Kim[1]; [1]Hanyang University

4:30 PM Student
BB9, Excitons and Optical Phonons in Wurtzite ZnO Quantum Dots: Theory and Experiment: *Vladimir A. Fonoberov*[1]; Alexander A. Balandin[1]; [1]University of California

Session CC: Bulk GaN

Friday AM
June 24, 2005

Room: Corwin East
Location: University Center

Session Chairs: Paul T. Fini, University of California, Santa Barbara; Zlatko Sitar, North Carolina State University

8:20 AM Student
CC1, Characterization of GaN Films Grown on Free-Standing GaN Seeds by Ammonothermal Growth: *Tadao Hashimoto*[1]; Kenji Fujito[2]; Feng Wu[2]; Benjamin A. Haskell[2]; Takeyoshi Onuma[3]; Shigefusa F. Chichibu[3]; James S. Speck[2]; Shuji Nakamura[2]; [1]ERATO, JST, University of California, Santa Barbara; [2]University of California; [3]University of Tsukuba

8:40 AM
CC2, Crystallization of Free Standing Bulk GaN by HVPE: *Bogdan Pastuszka*[1]; [1]Instytut Wysokich Cisnien PAN

9:00 AM
CC3, Optimization of the Ammonothermal Technique for the Production of Large Low Defect GaN Crystals: *Kelly Rakes*[1]; Buguo Wang[2]; Bunmi Adekore[3]; Shrinivas Pendurti[4]; Michael Callahan[1]; Lioniel Bouthillette[1]; David Bliss[1]; Sheng-Qi Wang[2]; Zlatko Sitar[3]; [1]Air Force Research Laboratory; [2]Solid State Scientific Corporation; [3]North Carolina State University; [4]Florida International University

9:20 AM
CC4, "Homoepitaxial" Growth of Bulk GaN by HVPE on Near Dislocation Free Pressure Grown GaN Substrates: *Boleslaw Lucznik*[1]; Bogdan Pastuszka[1]; [1]Instytut Wysokich Cisnien PAN

9:40 AM
CC5, Growth of GaN on Patterned with SiN Mask GaN/Sapphire Substrates by High Pressure Solution Method: *Michal Bockowski*[1]; [1]Institute of High Pressure Physics PAS

10:00 AM Break

Session DD: Properties of Nitrides for Electronics

Friday AM
June 24, 2005

Room: Corwin East
Location: University Center

Session Chairs: James Speck, University of California; Gregor Koblmueller, University of California, Santa Barbara

10:20 AM Student
DD1, Impact of Threading Dislocation Density on Forward Biased I-V-T Characteristics of n-Type Ni/GaN Schottky Diodes: *Aaron R. Arehart*[1]; B. Moran[2]; J. S. Speck[2]; U. K. Mishra[2]; S. P. DenBaars[2]; S. A. Ringel[1]; [1]Ohio State University; [2]University of California

10:40 AM
DD2, Threshold Voltage Control of AlGaN/GaN HEMTs by CF4 Plasma Treatment: *Yong Cai*[1]; Yu Gang Zhou[1]; Kevin Jing Chen[1]; Kei May Lau[1]; [1]Hong Kong University of Science and Technology

11:00 AM
DD3, Transient Self-Heating Effects in AlGaN/GaN HEMTs: *Jan Kuzmik*[1]; Sergey Bychikhin[1]; Martin Neuburger[2]; A. Dadgar[3]; Matej Blaho[1]; A. Krost[3]; Erhard Kohn[2]; Dionyz Pogany[1]; [1]Technical University Vienna; [2]University of Ulm; [3]Otto-von-Guericke University Magdeburg

11:20 AM
DD4, Micro-Raman Studies of Thermal Stress Effects in GaN Heteroepitaxial Layers and Nitride-Based HEMT Structures: *Jihyun Kim*[1]; J. A. Freitas[2]; E. R. Glaser[2]; D. S. Katzer[2]; J. Mittereder[2]; S. Guo[3]; B. Albert[3]; B. Peres[3]; I. Eliashevich[3]; [1]University of Florida ; [2]Naval Research Laboratory; [3]Emcore Corporation

11:40 AM
DD5, High Thermal Stability W_2B Ohmic Contacts to GaN: *Rohit Khanna*[1]; C. J. Kao[1]; I. Kravchenko[1]; F. Ren[1]; G. C. Chi[1]; S. J. Pearton[1]; A. Dabiran[2]; A. Osinsky[2]; [1]University of Florida; [2]SVT Associates

Session EE: ZnO: Thin-Film and Bulk Growth

Friday AM Room: Corwin West
June 24, 2005 Location: University Center

Session Chairs: David P. Norton, University of Florida; Thomas Myers, West Virginia University

8:20 AM
EE1, MBE Growth of High-Quality ZnO Layers on Sapphire: Abdel-Hamid El-Shaer[1]; Augustine Che Mofor[1]; Andrey Bakin[1]; Marc Kreye[1]; *Andreas Waag*[1]; Frank Bertram[2]; Jürgen Christen[2]; Johannis Stoimenos[3]; [1]Technical University Braunschweig; [2]Otto-von-Guericke-University Magdeburg; [3]Aristotele University Thessaloniki

8:40 AM Student
EE2, ZnO Growth on Si with Low-Temperature ZnO Buffer Layers by ECR-Assisted MBE: *Faxian Xiu*[1]; Zheng Yang[1]; Dengtao Zhao[1]; Jianlin Liu[1]; Khan K. Alim[1]; Alexander A. Balandin[1]; Mikhail Itkis[1]; Robert Haddon[1]; [1]University of California

9:00 AM
EE3, High Quality MBE-Grown ZnCdO Layers for Visible Light Emitters: *Jianwei Dong*[1]; Andrei Osinsky[1]; Junqing Xie[1]; Brian Hertog[1]; Amir Dabiran[1]; Peter Chow[1]; Alexander Mintairov[2]; James Merz[2]; David Look[3]; Olena Lopatiuk[4]; Leonid Chernyak[4]; [1]SVT Associates, Inc.; [2]University of Notre Dame; [3]Wright State University; [4]University of Central Florida

9:20 AM
EE4, Characteristics of ZnO Epilayers Grown by Plasma-Assisted Molecular Beam Epitaxy on GaN/Sapphire (0001): *C. J. Pan*[1]; W. M. Wang[1]; C. W. Tu[1]; J. J. Song[1]; G. Cantwell[2]; G. C. Chi[3]; [1]University of California, San Diego; [2]ZN Technology, Inc.; [3]National Central University

9:40 AM Student
EE5, Growth of Atomically-Flat ZnO and Related Alloy Films by Helicon-Wave-Excited-Plasma Sputtering Epitaxy Method: *Naoyuki Shibata*[1]; Takuya Ohmori[1]; Takahiro Koyama[1]; Takeyoshi Onuma[1]; Shigefusa F. Chichibu[1]; [1]University of Tsukuba

10:00 AM Break

10:20 AM
EE6, Reactivity of ZnO: Impact of Polarity and Nanostructure: *Maria Losurdo*[1]; Maria Giangregorio[2]; Pio Capezzuto[1]; Giovanni Bruno[1]; Graziella Malandrino[3]; Ignazio Fragala[3]; [1]IMIP-CNR; [2]INSTM; [3]University of Catania

10:40 AM
EE7, Metalorganic Chemical Vapor Deposition and Characterization of ZnO materials: *Shangzhu Sun*[1]; Tompa Gary[1]; Brent Hoerman[1]; Dave Look[2]; Bruce Claflin[2]; Catherine Rice[1]; Puneet Masaun[1]; [1]Structured Materials Industries, Inc.; [2]Wright State University

11:00 AM
EE8, Growth and Characterization of Hydrothermal ZnO and ZnMgO Bulk Crystals: *Michael Callahan*[1]; Buguo Wang[2]; Lioniel Bouthillette[1]; Erik Grant[1]; Sheng-Qi Wang[2]; Kelly Rakes[1]; Michael Suscavage[1]; David Bliss[1]; [1]Air Force Research Laboratory; [2]Solid State Scientific Corporation

11:20 AM
EE9, Late News

Session FF: Contacts to Semiconductor Structures

Friday AM Room: Lotte Lehmann
June 24, 2005 Location: Music Hall

Session Chairs: Suzanne E. Mohney, Pennsylvania State University; Jerry M. Woodall, Purdue University

8:20 AM Student
FF1, Annealed Ge/Ag/Ni Ohmic Contact on InAlAs/InGaAs HEMT for High Temperature Applications Using Silicon Nitride Passivation Layers: *Weifeng Zhao*[1]; Seiyon Kim[1]; Fitih Mohammed[1]; Liang Wang[1]; Ilesanmi Adesida[1]; [1]University of Illinois

8:40 AM
FF2, ITO-Based Ohmic Contacts on n- and p-Type ZnO Layers: Sang-Ho Kim[1]; Seong-Wook Jeong[1]; Jeong-Tae Maeng[1]; Dae-Kue Hwang[1]; Seong-Ju Park[1]; *Tae-Yeon Seong*[1]; [1]Gwangju Institute of Science and Technology

9:00 AM Student
FF3, Cr/Pt Ohmic Contacts to $B_{12}As_2$: *Sammy H. Wang*[1]; Eric M. Lysczek[1]; Bangzhi Liu[1]; Suzanne E. Mohney[1]; Rajamani Nagarajan[2]; Zhou Xu[2]; J. H. Edgar[2]; [1]Pennsylvania State Univeristy; [2]Kansas State University

9:20 AM Student
FF4, Contacts to Nanostructured Carbon Films: *Pranita B. Kulkarni*[1]; Lisa M. Porter[1]; Chuanbing Tang[1]; Tomek Kowalewski[1]; Krzysztof Matyjaszewski[1]; [1]Carnegie Mellon University

9:40 AM Student
FF5, Schottky Barrier Formation at Non-Polar Au/GaN Epilayer Interfaces: *Dennis E. Walker, Jr.*[1]; Leonard J. Brillson[1]; William J. Schaff[2]; [1]Ohio State University; [2]Cornell University

10:00 AM Break

10:20 AM Student
FF6, Fabrication and Characterization of Nanoscale Devices from Gallium Nitride Nanowires Utilizing Focused Ion Beam Induced Metal Deposition Techniques: *Abhishek Motayed*[1]; Albert V. Davydov[2]; Mark Vaudin[2]; John Melngailis[1]; S. N. Mohammad[3]; [1]University of Maryland; [2]National Institute of Standards and Technology; [3]Howard University

10:40 AM Student
FF7, Focused Ion Beam Induced Deposition of Platinum Ohmic Contacts on GaN Nanowires: *Chang-Yong Nam*[1]; John E. Fischer[1]; [1]University of Pennsylvania

11:00 AM Student
FF8, Low Resistance and High Transparency ZnO Contacts to p-GaN for High Performance GaN-Based LEDs: *Sung-Pyo Jung*[1]; Jae-Hong Lim[2]; Dae-Kue Hwang[2]; Ja-Yeon Kim[2]; Eun-Jeong Yang[2]; Denise Ullery[1]; Chien-Hung Lin[1]; Seong-Ju Park[2]; Henry P. Lee[1]; [1]University of California, Irvine; [2]Gwangju Institute of Science and Technology

11:20 AM Student
FF9, Holographically Patterned Transparent p-Type GaN Ohmic Contacts for High-Brightness LEDs: *Dong-Seok Leem*[1]; J. Cho[2]; J. S. Kwak[2]; Tae-Yeon Seong[1]; [1]Gwangju Institute of Science and Technology; [2]Samsung Advanced Institute of Technology

11:40 AM
FF10, Late News

Session GG: Silicon Carbide: Growth, Processing, and Characterization

Friday AM
June 24, 2005

Room: Multicultural Theater
Location: Multicultural Center

Session Chairs: Robert Stahlbush, Naval Research Laboratory; Robert S. Okojie, NASA Glenn Research Center

8:20 AM
GG1, Characterization of High-Purity 4H-SiC Substrates Using Microwave Photoconductivity Decay: *Ravi J. Kumar*[1]; J. R. Jenny[2]; D. P. Malta[2]; J. M. Borrego[1]; H. McD. Hobgood[2]; R. J. Gutmann[1]; [1]Rensselaer Polytechnic Institute; [2]Cree Inc.

8:40 AM Student
GG2, Relationship between Room Temperature IR Photoluminescence and Resistivity in Semi-Insulating 6H SiC: *Sashi K. Chanda*[1]; Yaroslav Koshka[1]; Murugesu Yoganathan[2]; [1]Mississippi State University; [2]Wide Band Gap Materials Group, II-VI, Inc.

9:00 AM Student
GG3, Effect of High Temperature Processing on the Creation of Boron-Related Deep Levels in 4H-SiC: *Hrishikesh Das*[1]; Yaroslav Koshka[1]; Michael S. Mazzola[1]; Swapna Geetha Sunkari[1]; Jeffery Wyatt[1]; [1]Mississippi State University

9:20 AM Student
GG4, Material and Electrical Properties of HfO_2 Thin Films on 4H-SiC: *Carey M. Tanner*[1]; Jongwoo Choi[1]; Jane P. Chang[1]; [1]University of California, Los Angeles

9:40 AM
GG5, Barrier Height Inhomogeneities in Schottky Diodes Fabricated on Differently Oriented 4H Silicon Carbide Wafers: *Xianyun Ma*[1]; Priyamvada Sadagopan[2]; Tangali Sudarshan[2]; [1]MaxMile Technologies, LLC; [2]University of South Carolina

10:00 AM Break

10:20 AM
GG6, A Study of Morphological Evolution in Heteroepitaxial 3C-SiC Growth by Chemical Vapor Deposition: *Jungheum Yun*[1]; Tetsuo Takahashi[1]; Takeshi Mitani[1]; Yuuki Ishida[1]; Hajime Okumura[1]; [1]National Institute of Advanced Industrial Science and Technology

10:40 AM Student
GG7, Effects of Variations of Processing Parameters in Deep-Level Centers in 4H and 6H-Silicon Carbide Metal Oxide Semiconductor Field-Effect Transistors: *Morgen S. Dautrich*[1]; David J. Meyer[1]; Patrick M. Lenahan[1]; Aviars J. Lelis[2]; [1]Pennsylvania State University; [2]Army Research Laboratory

11:00 AM
GG8, Extraction of Interface States in 4H- and 6H-SiC MOSFETs Using Subthreshold Characteristics at 25 and 150°C: *Yanqing Deng*[1]; Wei Wang[1]; Qizhi Fang[1]; Mahalingam Koushik[1]; T. Paul Chow[1]; [1]Rensselaer Polytechnic Institute

11:20 AM Student
GG9, Characterization of Ti Schottky Diodes on Epi-Regrown 4H-SiC: *Lin Zhu*[1]; Canhua Li[1]; T. Paul Chow[1]; I. Bhat[1]; [1]Rensselaer Polytechnic Institute

11:40 AM
GG10, Late News

Session HH: Molecular Electronics

Friday AM
June 24, 2005

Room: SB Harbor
Location: University Center

Session Chairs: David B. Janes, Purdue University; Mark C. Hersam, Northwestern University

8:20 AM Invited
HH1, Structural Characterization of Molecular Devices: Amy Walker[1]; [1]Washington University

9:00 AM
HH2, Bias-Sweep Effects in the Electrical Characteristics of Hg-Alkanethiol//Oligo(Phenlyene-Ethynylene)-Au Heterobilayer Molecular Junctions: *Richard A. Kiehl*[1]; James A. Skarie[1]; Thomas R. Hoye[1]; John D. Le[1]; Panglijen Candra[1]; Rebecca Hoye[2]; [1]University of Minnesota; [2]Macalester College

9:20 AM Student
HH3, Measurement of Single Molecule Conductance with Nanoscale Break Junctions: *Ajit Kumar Mahapatro*[1]; Kyung Jae Jeong[1]; Subhasis Ghosh[2]; Sugata Bhattacharya[1]; Gil Lee[1]; David B. Janes[1]; [1]Purdue University; [2] Jawaharlal Nehru University

9:40 AM Student
HH4, The Kondo Effect and Inelastic Electron Tunneling Spectroscopy in Transition Metal Based Single-Molecule Transistors: *Lam Yu*[1]; Zachary Keane[1]; Jacob Ciszek[1]; Long Cheng[1]; Michael Stewart[1]; James Tour[1]; Douglas Natelson[1]; [1]Rice University

10:00 AM Break

10:20 AM
HH5, Bistability, Switching, and Error Tolerance of Molecular Quantum-Dot Cellular Automata: *Yuhui Lu*[1]; Craig S. Lent[1]; [1]University of Notre Dame

10:40 AM Student
HH6, Metal-Molecule-Silicon Device Structures: *Adina Scott*[1]; David B. Janes[1]; [1]Purdue University

11:00 AM Student
HH7, BEEM Studies of Au/Molecule/n-GaAs Diodes: *Wenjie Li*[1]; Karen Kavanagh[1]; Carolyn Matzke[2]; Alec Talin[2]; François Léonard[2]; Sergey Faleev[2]; Julia Hsu[2]; [1]Simon Fraser University; [2]Sandia National Laboratories

11:20 AM Student
HH8, Minimization of Interface Oxide in Alkanethiold/GaAs Self-Assembled Monolayers: Richard A. Kiehl[1]; *Panglijen Candra*[1]; John D. Le[1]; James A. Skarie[1]; [1]University of Minnesota

11:40 AM Student
HH9, Shadow Evaporation Technique for Top Contacts of Molecular Devices: *Qingling Hang*[1]; Patrick D. Carpenter[1]; Adina Scott[1]; David B. Janes[1]; [1]Purdue University

12:00 PM
HH10, Late News

Session II: InN and In-Rich Nitrides

Friday AM — Room: State Street
June 24, 2005 — Location: University Center

Session Chairs: William Schaff, Cornell University; Joan M. Redwing, Pennsylvania State University; Wladek Walukiewicz, Lawrence Berkeley Laboratory

8:20 AM
II1, Growth and Structural Characterization of InN-Based Quantum Well Structures Grown by RF-MBE on (0001) Sapphire: *Tsutomu Araki*[1]; Masahito Kurouchi[1]; Hiroyuki Naoi[1]; Yasushi Nanishi[1]; [1]Ritsumeikan University

8:40 AM Student
II2, Room Temperature Photoluminescence Emission from InN/$In_{0.75}Ga_{0.25}N$ Multiple Quantum Wells: *Tatsuo Ohashi*[1]; Shunsuke Ishizawa[1]; Akihiko Kikuchi[1]; Katsumi Kishino[1]; [1]Sophia University

9:00 AM Student
II3, Structural and Optical Properties in the Whole Composition Range of AlInN Ternary Alloys Grown by RF-Molecular Beam Epitaxy: *Wataru Terashima*[1]; Song-Bek Che[1]; Yoshihiro Ishitani[1]; Akihiko Yoshikawa[1]; [1]Chiba University

9:20 AM Student
II4, Substrate Polarity Effects on the MOCVD Growth of InN: *Abhishek Jain*[1]; Joan M. Redwing[1]; Morad Abouzaid[2]; Pierre Ruterana[2]; Brenda VanMil[3]; Thomas H. Myers[3]; Protima Singh; [1]Pennsylvania State University; [2]SIFCOM; [3]West Virginia University

9:40 AM
II5, Optical Properties of InN Grown on 6H-SiC by Plasma Assisted Molecular Beam Epitaxy: *Maria Losurdo*[1]; Maria M. Giangregorio[2]; Pio Capezzuto[1]; Giovanni Bruno[1]; Tong-Ho Kim[3]; Soojeong Choi[3]; Pae Wu[3]; Michael Morse[3]; April Brown[3]; Akihiro Moto[4]; [1]IMIP-CNR; [2]INSTM-Bari; [3]Duke University; [4]Innovation Core SEI, Inc

10:00 AM Break

10:20 AM
II6, Structural Properties of Heteroepitaxial InN Grown on GaN(0001) by Molecular-Beam Epitaxy: *Maohai Xie*[1]; Yongge Cao[1]; Shihong Xu[1]; Y. F. Chan[2]; Ning Wang[2]; Wei Lu[3]; Xianqi Dai[1]; Ying Liu[1]; Huasheng Wu[1]; S. Y. Tong[4]; [1]University of Hong Kong; [2]Hong Kong University of Science and Technology; [3]Chinese Academy of Sciences; [4]City University of Hong Kong

10:40 AM
II7, Carrier Dynamics Study and Multiphoton Excitation of Strained InN/GaN Multi-Quantum-Well Systems: *Duksu Kim*[1]; Sangsu Hong[1]; Kyu-Han Lee[1]; [1]Samsung Electro-Mechanics

11:00 AM
II8, Quantum-Structure Dependent Excitonic Carrier Dynamics of $In_xGa_{1-x}N$/GaN Multi-Quantum-Wells: *Sangsu Hong*[1]; Yong Seok Kim[1]; Je Won Kim[1]; Gyu Han Lee[1]; Duksu Kim[1]; Young Joon Yoon[1]; Taiha Joo[2]; [1]Samsung Electro-Mechanics Co., Ltd.; [2]Pohang University of Science and Technology

11:20 AM Student
II9, Growth of In-Rich InGaN/GaN Multiple Quantum Wells and Their Optical Properties: *Soon-Yong Kwon*[1]; Sung-Il Baik[1]; Hee Jin Kim[1]; Young-Woon Kim[1]; Jung-Won Yoon[2]; Hyeonsik M. Cheong[2]; Yoon-Soo Park[1]; Euijoon Yoon[1]; [1]Seoul National University; [2]Sogang University

11:40 AM Student
II10, Growth Rate Dependence and Stability of Phase Separated Microstructures in InGaN: *Manu Rao*[1]; Nathan Newman[1]; Subhash Mahajan[1]; [1]Arizona State University

Session JJ: Epitaxial Quantum Dot Growth and Properties

Friday AM
June 24, 2005

Room: Lobero
Location: University Center

Session Chairs: James L. Merz, University of Notre Dame; Ben Shanabrook, Naval Research Laboratory

8:20 AM Student
JJ1, Control of Lateral Placement of InAs/GaAs Quantum Dots via Surface Patterning: *Weifeng Ye*[1]; Xiaojun Weng[1]; Matt Reason[1]; Rachel Goldman[1]; Fumiya Watanabe[2]; David Cahill[2]; [1]University of Michigan; [2]University of Illinois

8:40 AM
JJ2, Fabrication of Site-Controlled Quantum Dots on GaAs(100) and (111)A: *Jong Su Kim*[1]; Mitsuo Kawabe[1]; Nobuyuki Koguchi[1]; [1]National Institute for Materials Science

9:00 AM
JJ3, Growth of Multiple Stacked InP/In0.5Al0.3Ga0.2P Quantum Dots by Metalorganic Chemical Vapor Deposition: *Xue-Bing Zhang*[1]; Jae-Hyun Ryou[1]; Russell Dupuis[1]; Li He[2]; Robert Hull[2]; Gabriel Walter[3]; Nick Holonyak[3]; [1]Georgia Institute of Technology; [2]University of Virginia; [3]University of Illinois at Urbana-Champaign

9:20 AM
JJ4, Formation of Laterally Aligned InGaAs/GaAs Quantum-Dot Chains by Molecular-Beam and Atomic-Layer Epitaxy Techniques: *Sam Kyu Noh*[1]; Sang Jun Lee[1]; Jun Oh Kim[1]; Young Guk Kim[1]; Eun Kyu Kim[2]; Il Ki Han[3]; [1]Korea Research Institute of Standards and Science; [2]Hanyang University; [3]Korea Institute of Science and Technology

9:40 AM Student
JJ5, Characteristics of MOCVD Grown InGaAs QDs Embedded in GaAsP/InGaP Matrix: *Nam-Heon Kim*[1]; Luke J. Mawst[1]; Thomas F. Kuech[1]; Troy J. Goodnough[2]; Manoj Kanskar[2]; [1]University of Wisconsin-Madison; [2]Alfalight Inc.

10:00 AM Break

Session KK: Structure and Optical Properties of Complexes and Quantum Dots

Friday AM
June 24, 2005

Room: Lobero
Location: University Center

Session Chairs: James L. Merz, University of Notre Dame; Ben Shanabrook, Naval Research Laboratory

10:20 AM Student
KK1, Elimination of ErAs Luminescence-Quenching Complexes from Er-Doped AlGaAs Native Oxides: *Mingjun Huang*[1]; Douglas C. Hall[1]; [1]University of Notre Dame

10:40 AM
KK2, Structural and Optical Studies of Integrated Semiconductor Nanocrystals Embedded - Single Crystal Semiconductor Systems: *Atul Konkar*[1]; Siyuan Lu[1]; Yi Zhang[1]; Anupam Madhukar[1]; Steven M. Hughes[2]; A. Paul Alivisatos[2]; [1]University of Southern California; [2]University of California, Berkeley

11:00 AM
KK3, Optical and Structural Properties of InAs Quantum Dots Grown by Atomic Layer Molecular Beam Epitaxy and Conventional Molecular Beam Epitaxy: *Jin Dong Song*[1]; Y. J. Park[1]; W. J. Choi[1]; I. K. Han[1]; W. J. Cho[1]; J. I. Lee[1]; [1]Korea Institute of Science and Technology

11:20 AM Student
KK4, GaAs-Based Single Electron Y-Branch Switches for Hexagonal BDD Quantum Circuits: *Yuji Abe*[1]; Miki Yumoto[1]; Takahiro Tamura[1]; Seiya Kasai[1]; Hideki Hasegawa[1]; [1]Hokkaido University

Session LL: Group III-Nitrides: Non-Polar Structures

Friday PM
June 24, 2005

Room: Corwin East
Location: University Center

Session Chairs: Christian Wetzel, Future Chips Constellation; Russell Dupuis, Georgia Institute of Technology

1:30 PM
LL1, Radiative Lifetimes of Excitons in Non-Polar GaN/AlGaN Quantum Wells: *Sergey Rudin*[1]; G. A. Garrett[1]; M. Wraback[1]; [1]U.S. Army Research Laboratory

1:50 PM
LL2, Density-Dependent Radiative Lifetime Measurements of GaN/AlGaN Multiple Quantum Wells on Laterally Overgrown *a*-Plane GaN: *Gregory A. Garrett*[1]; H. Shen[1]; S. Rudin[1]; M. Wraback[1]; B. Imer[2]; B. Haskell[2];

J. S. Speck[2]; S. Keller[2]; S. Nakamura[2]; S. P. DenBaars[2]; [1]U.S. Army Research Laboratory; [2]University of California, Santa Barbara

2:10 PM
LL3, Recombination Dynamics in Nonpolar (11-20) $In_xGa_{1-x}N$ Multiple Quantum Wells Grown on GaN Templates Prepared by Lateral Epitaxial Overgrowth: *Takeyoshi Onuma*[1]; Arpan Chakraborty[2]; Benjamin A. Haskell[2]; Stacia Keller[2]; Takayuki Sota[3]; Steven P. DenBaars[2]; James S. Speck[2]; Shuji Nakamura[2]; Umesh K. Mishra[2]; Shigefusa F. Chichibu[1]; [1]University of Tsukuba and JST-ERATO; [2]University of California, Santa Barbara and JST-ERATO; [3]Waseda University

2:30 PM
LL4, Reconstructions and Adsorbates on Polar and Nonpolar GaN Surfaces: *David Segev*[1]; Chris G. Van de Walle[1]; [1]University of California, Santa Barbara

2:50 PM Student
LL5, Growth of Planar, Non-Polar (1 -1 0 0) m-Plane GaN Over m-Plane SiC by Metalorganic Chemical Vapor Deposition (MOCVD): *Bilge Imer*[1]; Feng Wu[1]; James Speck[1]; Steven DenBaars[1]; [1]University of California, Santa Barbara

3:10 PM Break

3:30 PM
LL6, Growth of p-Type m-Plane GaN on 6H m-Plane SiC via Plasma Assisted Molecular Beam Epitaxy: *Melvin McLaurin*[1]; Tom Mates[2]; James S. Speck[1]; [1]JST/ERATO University of California, Santa Barbara Group; [2]University of California, Santa Barbara

3:50 PM Student
LL7, DC and Pulsed Performance of Nonpolar InGaN/GaN Light Emitting Diodes: *Arpan Chakraborty*[1]; Benjamin A. Haskell[1]; Mathew C. Schmidt[1]; Stacia Keller[1]; James S. Speck[1]; Steven P. DenBaars[1]; Shuji Nakamura[1]; Umesh K. Mishra[1]; [1]University of California, Santa Barbara

4:10 PM
LL8, Late News

Session MM: Nanocharacterization

Friday PM
June 24, 2005

Room: SB Harbor
Location: University Center

Session Chairs: Susanne Stemmer, University of California; Julia W.P. Hsu, Sandia National Laboratories

1:30 PM Student
MM1, Three-Dimensional Self-Organization of Self-Assembled InAs/InP(001) Quantum Dot Multilayers: Transition from Aligned to Anti-Aligned Structures: *Annie Levesque*[1]; Remo A. Masut[1]; Patrick Desjardins[1]; [1]Ecole Polytechnique de Montreal

1:50 PM Student
MM2, Cross-Sectional Scanning Tunneling Microscopy and Spectroscopy of Confined States in InAs/GaAs Quantum Dots: *Vaishno D. Dasika*[1]; Jin Dong Song[2]; Rachel S. Goldman[1]; [1]University of Michigan; [2]Korea Institute of Science and Technology

2:10 PM
MM3, Anisotropic Lattice Deformation of InAs Self-Assembled Quantum Dots Strain Compensated with GaAsN Burying Layers: N. Matsumura[1]; S. Muto[2]; Sasikala Ganapathy[2]; *Ikuo Suemune*[2]; [1]Institute for Physical and Chemical Research; [2]Hokkaido University

2:30 PM
MM4, Optical and Near-Field Study of InGaN/GaN and InGaN/InGaN QDs Grown in a Wide-Pressure-Range MOCVD Reactor: D. S. Sizov[1]; V. S. Sizov[1]; V. V. Lundin[1]; E. E. Zavarin[1]; A. F. Tsatsul'nikov[1]; A. S. Vlasov[1]; N. N. Ledentsov[1]; A. M. Mintairov[2]; K. Sun[2]; *James L. Merz*[2]; [1]A.F. Ioffe Physico-Technical Institute; [2]University of Notre Dame

2:50 PM
MM5, Late News

Session NN: Epitaxy for Devices

Friday PM
June 24, 2005

Room: State Street
Location: University Center

Session Chairs: Charles Lutz, Kopin Corporation; Archie L. Holmes, University of Texas

1:30 PM Student
NN1, Enhanced Hall Mobility and Very Low Dislocation Density in $Si_{1-X}Ge_X$ Epitaxial Layers Grown by MBE on a Patterned Template: *Joo-Young Lee*[1]; Hyung-Jun Kim[1]; Miqiang Bao[1]; Kang L. Wang[1]; [1]University of California, Los Angeles

1:50 PM Student
NN2, Carrier Confinement in Almost Pure Ge Channels Grown on Si Substrates by Rapidly Graded $Si_{1-x}Ge_x$ Growth: *Sachin Joshi*[1]; Sagnik Dey[1]; Kevin Jones[2]; Michelle Chaumont[1]; Alan Campion[1]; David Q. Kelly[1]; Joseph Donnelly[1]; Sanjay K. Banerjee[1]; [1]University of Texas at Austin; [2]University of Florida at Gainesville

2:10 PM Student
NN3, Epitaxial Growth of $Ca_xMg_{1-x}F_2$ Alloy for Fluoride Ultra-Thin Heterostructures on Si Substrates: *Natsuko Matsudo*[1]; Motoki Maeda[1]; So Watanabe[1]; Kazuo Tsutsui[1]; [1]Tokyo Institute of Technology

2:30 PM
NN4, Oxide Desorption from GaP Substrates via Ga Pulsing Prior to MBE: *Jerry M. Woodall*[1]; A. J. SpringThorpe[2]; A. Yulius[3]; [1]Purdue University; [2]National Research Council of Canada; [3]Yale University

2:50 PM Student
NN5, ErAs-InAlGaAs: An Epitaxial Schottky Diode Materials System: *Jeramy David Zimmerman*[1]; Adam C. Young[1]; Dmitri O. Klenov[1]; Susanne Stemmer[1]; Elliott R. Brown[1]; Arthur C. Gossard[1]; [1]University of California, Santa Barbara

3:10 PM Break

3:30 PM Student
NN6, Quantum Well Intermixing and MOCVD Regrowth for the Monolithic Integration of UTC Type Detectors with Quantum Well Based Components: *James W. Raring*[1]; Erik J. Skogen[1]; Jonathon S. Barton[1]; Steven P. DenBaars[1]; Larry A. Coldren[1]; [1]University of California, Santa Barbara

3:50 PM
NN7, Defect Reduction at the AlGaAsSb/InP Interface for Optimized Long-Wavelength Vertical Cavity Lasers: *David Buell*[1]; Danny Feezell[1]; Larry Coldren[1]; [1]University of California, Santa Barbara

4:10 PM
NN8, Intracavity Grating- and Current-Confined All-Epitaxial Vertical-Cavity Surface-Emitting Laser Based on Selective Interface Fermi-Level Pinning: *Deepa Gazula*[1]; Jaemin Ahn[1]; Dingyuan Lu[1]; Hua Huang[1]; Dennis G. Deppe[1]; [1]University of Texas at Austin

4:30 PM Student
NN9, Reactive Ion Etch Damage and Plasma-Enhanced Chemical Vapor Deposition Repair of Vertical-Cavity Surface-Emitting Lasers: *Paul O. Leisher*[1]; James J. Raftery, Jr.[1]; Ansas M. Kasten[1]; Kent D. Choquette[1]; [1]University of Illinois

4:50 PM
NN10, Green-Orange InGaP LEDs Grown on $In_xGa_{1-x}P$/GaP Graded Buffer Substrate: *Lorant Peternai*[1]; Jaroslav Kovac[1]; Jozef Novak[2]; Stanislav Hasenöhrl[2]; Alexander Satka[3]; Andrej Vincze[3]; [1]Slovak University of Technology Bratislava; [2]Slovak Academy of Science; [3]International Laser Center